THE ROLE OF INTENSITY AND FREQUENCY OF STIMULUS EXPOSURE IN ATTENTIONAL AND LEARNING PROCESSES OF CHILDREN

By

Nadyne Gail Edison

A DISSERTATION

Submitted to
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in partial fulfillment of the requirements
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This study initially posed a perceptual approach to the effects of television on children which emerges from the social psychological perspective. The first chapter of this study sought to identify and explain stimulus variables that can provide a theoretical system for the analysis of children's attention to and learning processes of television behaviors. In examining the properties of a stimulus, theory suggests that certain properties will direct exploratory behavior in children and, in turn, influence selective attention. It is suggested that children investigate and attend to complex, moving, and changing stimuli. This type of stimulus has been categorized under the heading of "intensity." Theory predicts that repeated exposure to high intensity stimuli will enhance and maintain attention, arousal, positive effect, and learning of such stimuli, whereas repeated exposure to low intensity stimuli will produce boredom, and thus result in a decline in attention, arousal, positive affect, and social learning. High intensity stimuli can compensate for familiarization with the stimulus.

An experiment was then reported in which the level of intensity and frequency was manipulated at two levels, high and low. Three separate content areas were used to test the effects of frequency and intensity. They were physical aggression, verbal aggression, and altruism. Two hundred and sixty male and female subjects from fifth and sixth grade classes participated in the experiments. Subjects were asked to make ratio judgments for 18 hypothetical situations and a series of dependent measures. Analysis of these responses comprise the data base.

Results suggest the manipulations of the independent variables were inadequate, thus making subsequent interpretation of results difficult. An effect for intensity is predicted for dependent variables but found only for altruism. An effect for frequency is predicted and found for positive affect and verbal aggression. The hypothesis suggesting that greater amounts of the dependent variables will occur in the high frequency, high intensity condition as compared to the low frequency, low intensity condition is not confirmed.

The final chapter of this study consists of a critique and reconsideration of the methods and the theory used in the study, as well as a proposal for areas of future investigation.

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CHAPTER 1

ATTENTIONAL AND LEARNING PROCESSES

1.1 Introduction

1.11 Overview. Television has become an important tool in shaping and directing children's interactions with others as well as with the social system in which they are to live. How and why children learn from television is in need of empirical investigation. Research in the field of child psychology has long sought to explain the learning process in children. Recent investigation of the impact of television on children's social behavior has also tried to determine why and how a child learns from what he/she sees on television. Considerable research evidence has been provided which already indicates that children do learn from television (see for example, Goranson, 1970; Kaplan and Singer, 1976); however, the process by which this learning occurs still remains in need of theoretical and empirical inquiry. This dissertation will be directed to explicating the learning process in children. Specifically, the concern here will be with how and why a child learns to differentiate among television events, why certain behaviors are attended to and elicit responses, why children

exhibit preference for certain television content, and how continued exposure to television stimuli enhances or impedes learning in children. An examination of the *role of selected stimulus properties* and *repeated exposure* to stimuli will provide a theoretical framework for which empirical testing of the effects of television content on children's learning can be developed.

The study of how children learn has provided several theoretical perspectives from which the learning process can be examined. Early studies (Hull, 1943; Spence, 1950) considered learning to occur through the gradual strengthening of stimulus-response associations. In this view, the child was considered to respond to the environment in a passive and indiscriminate manner. Behavioral growth and change in the child was said to occur by continuous increase in the strength of stimulus-response relations. Although neither Hull nor Spence were particularly concerned with children's behavior, the stimulus-response notions have had considerable influence on research in child psychology. This theoretical perspective, however, has generally been inadequate in explaining children's behavior. Research endeavors using this approach have failed to provide supporting evidence for the theoretical assumptions (see Stevenson, 1972, pp. 10-34, for reviews of this literature). Reinforcement, the crucial concept in S-R theories, rather

than strengthening the stimulus-response relationship, has often brought about a change of response by the child. One-trial learning in discrimination studies (see Gibson, 1969, pp. 61-75, for reviews of research in discrimination learning) as well as "no-trial" learning has been demonstrated when children have had the opportunity to observe another individual's performance (see Bandura, 1965, for reviews of observational learning research). Studies in reinforcement and associative learning also suggest that not all stimuli are equally effective in eliciting responses from children, and that children respond to *salient* or *preferred* stimuli (cf. Gibson, 1969:114). These findings indicate that children actively attend to environmental cues and are not passive organisms waiting for experiences or events to impinge upon them.

The lack of confidence in stimulus-response theories of learning led the way to the consideration of cognitive and perceptual theories of learning in children. Piaget (1954) proposed a cognitive theory of learning in which the child is viewed as an active and discriminating organism who structures or changes the way of thinking rather than the mode of response. While the Piagetian approach to learning has been concerned with the changes in the child's cognitive structure, it has been less than

adequate in explaining the causal determinants of these changes. That is, research testing this view had not thoroughly investigated why or how specific combinations of a child's experience produce change in cognitive structure.

Another theoretical perspective has sought to explain why behavioral patterns change in children and why children respond differently to environmental stimuli. This is a theory of perceptual learning presented by Eleanor Gibson (1969). In accord with Piaget, this theory contends that the child is an active and self-regulating organism. However, unlike Piaget, the theory seeks to explain chidren's learning through the development of perceptual processes rather than cognitive ones. Perceptual learning is defined (Gibson, 1969:77) as:

> . . . an increase in the ability of an organism to get information from its environment, as a result of practice with the array of stimulation provided by the environment. This definition implies that there are potential variables of stimuli which are not differentiated within the mass of impinging stimulation, but which may be, given the proper conditions of exposure and practice. As they are differentiated, the resulting perceptions become more specific with respect to stimulation, that is, in greater correspondence with it. There is a change in what the organism can respond to. The change is not acquisition or substitution of a new response to stimulation previously responded to in some way, but is rather responding in any discriminating way to a variable of stimulation not responded to previously. The criterion of perceptual learning is thus an increase in

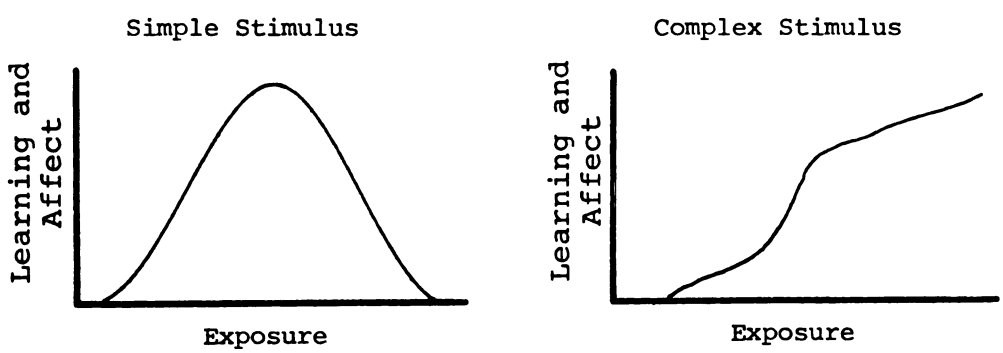
> specificity. What is learned can be described as detection of properties, patterns, and distinctive features.

Perceptual learning requires the child to explore and search for stimulation. Stimuli will be differentiated by their distinctive features. Berlyne (1960), interested in which types of stimuli will be responded to, sets forth a process by which an organism responds to oncoming stimuli. Berlyne isolates those stimulus properties which have the potential to bring about arousal and curiosity in the child. He posits that learning depends on the properties of the stimulus. If we imagine that social behaviors or actions, as portrayed on television, are sources of stimulation for the child, we should then be able to classify them according to their potential ability to stimulate a child's arousal and their potential to be perceptually learned. The goal here is to integrate the assumptions proposed by Berlyne with Gibson's theory of perceptual learning. In this discussion a system for categorizing stimuli for their potential in eliciting responses will be proposed. Specifically, it will be suggested that television stimuli vary with regard to a stimulus property labeled "intensity." Attention, positive affect, arousal, and learning of social behaviors will be said to be dependent on the "intensity" of the stimulus. Specification of these processes will be provided in the subsections to follow.

1.12 Stimulus Properties and Repeated Exposure.

The repetition of exposure to a stimulus has been considered a necessary component in children's learning. Regular television viewing provides children with an opportunity to observe repeated performance of diverse social behaviors. Generally it would be posited that the more a child sees these behaviors the more likely it is that they will elicit a response from the child. Zajonc (1968) proposes that "mere" exposure to a stimulus is a sufficient condition to enhance positive affect (pleasure and interest) and learning of a stimulus. However, considerable evidence from both the fields of child psychology and advertising suggests that the effectiveness of a stimulus in eliciting a response decreases as the child becomes more familiar with it (see Cantor, 1969a, 1969b, and Krugman, 1968, 1972). This decrease in effectiveness for repeatedly exposed stimuli is not found for all types of stimuli. Berlyne (1970, 1971) suggests that stimuli which contain qualities such as complexity, uncertainty, and arousal potential will maintain their effectiveness with regard to attention and learning when children are repeatedly exposed to them. Berlyne (1970) has proposed that repeated exposure to simple (non-complex) stimuli will produce a satiation effect. Initially, he suggests, repeated exposure to non-complex stimuli will enhance learning

and positive affect; however, since learning of this type of stimuli should occur quickly, subsequent exposures will lead to boredom and decrease in affect. An inverted U-shaped function is demonstrated for repeated exposure to non-complex stimuli. Complex and/or arousing stimuli, on the other hand, are more difficult to learn. Repeated exposure is necessary to learn complex stimuli. A learning curve function is suggested by Berlyne (1970) for repeated exposure to complex stimuli. These curves are illustrated below.



Examining the interrelationship between stimulus properties and repeated exposure to a stimulus is necessary to investigate the effects of television stimuli on children's behavior. However, before one can determine what happens after a child is exposed to stimuli, the process by which the child initially comes in contact with stimuli must be clarified.

It will be suggested here that selective *attention* to events is a necessary condition for perceptual and social learning, and that various stimulus properties determine selective attention. The subsequent sections of this chapter will (a) examine attention and perception processes in children's learning; (b) examine the determinants of attention; (c) explicate the stimulus properties that have been associated with attention; (d) conceptualize "intensity" of television stimuli; (e) indicate how "intensity" and repeated exposure (also refered to as frequency) are intimately linked in the learning process; and (f) provide hypotheses for the test of the intensity/frequency relationship using diverse social behaviors from commercial television programs as stimuli.

1.2 Children's Learning Processes

1.21 Stimulus Selection. Why does a child look at certain objects and places in the environment? Common sense would tell us it is because certain events are pleasing or exciting. Visual stimulation can also be arousing. However, a basic biological function of visual exploration is to investigate, examine, and learn about events in the environment that will be relevant to the child's growth (cf. Fantz, 1972). Through visual exploration, what a child discovers or learns may elicit immediate responses or may be filed for future reference or perhaps

both. The child must attend to and perceive a stimulus; a response or reaction to a social behavior in the form of a physical demonstration or verbal description will indicate that social behavior patterns for the child have developed. Perceptual learning, hence, is a twofold process. First, there is discrimination among stimuli and second there is response to stimuli.

Discrimination among stimuli requires the child's capacity to do so, plus the *act of attending* to a stimulus. Studies in visual preference indicate that infants from birth discriminate patterned stimuli and selectively attend to distinct events in the environment (e.g., Fantz, 1972). Visual events are structured in such a way that certain aspects of them attract attention. What determines this attention? Why are some visual stimuli preferred by the child? Certainly experience is a factor in stimulus selection but of equal importance is the actual "make-up" of the stimulus.

Early learning theorists were not concerned with the role of attention or perception in learning. Investigation of stimulus effects involved looking at "patterning" of stimuli (Hull, 1943) or "configural conditioning" (Razran, 1939). This research sought to determine what types of responses would be evoked by combining stimuli rather than determining which parts of the combination or pattern

would attract perceptual focus and attention. During the last 20 years, the study of cognitive and perceptual processes in learning has emphasized the role and definition of the stimulus.

The concept "stimulus" has had a long history in psychology (see Gibson, 1950, for early definitions of the stimulus). Skinner noted that "we frequently define the stimulus by the very doubtful property of its ability to elicit the response in question, rather than by any independent property of the stimulus itself" (1959:355). Similarly, a stimulus has been said to be ". . . any event to which a response can be so connected" (Miller and Dollard, 1941:59). Definitions of the stimulus which specify its independent components have also been provided. Estes claims that the stimulus "refers to environmental conditions, describable in physical terms without reference to the behavior or an organism" (Koch, 1959:455), or as Hayek states, "the distinction between different stimuli must be independent of the different effects they have on an organism" (1952:9). The different conceptions of the stimulus represent a controversy in psychology. That is, are stimuli defined by certain physical properties or by effects on behavior of perceivers? It would appear necessary to define the stimulus with regard to its individual components if we are to determine how and why stimuli are

discriminated. Gibson (1960) claims the crucial issue in defining the stimulus is the decision as to whether a stimulus is "that which *does* activate a sense organ or that which *can* activate a sense organ" (p. 696). To define a stimulus by its *potential* to excite an organism allows us to examine the stimulus in isolation from responses and to categorize stimuli for their potential ability to elicit perception and action. The issue then lies with determining those stimulus properties that are potential sources for excitation. By pursuing this line of thought we should be able to establish a systematic study of the laws by which children perceive and respond to environmental events.

Research investigations seeking to isolate those stimulus properties which will affect attention, excitement, or arousal and learning have generally manipulated the set of visual stimulus variables suggested by Berlyne (1960). They are complexity, novelty, physical intensity, and uncertainty of the stimulus. Much of the research generated on these properties of visual stimuli has relied on stimuli which have little meaning to subjects. Stimuli have been composed of polygons, varying in size and color (e.g., Day, 1967), Chinese ideographs (e.g., Harrison and Crandall, 1972), random figures (e.g., Munsinger and Kessen, 1964), nonsense words (e.g., Matlin, 1971), Turkish words (e.g., Stang, 1974, 1975), and Japanese characters (e.g., Zajonc,

Swap, Harrison and Roberts, 1971). The more meaningful stimuli used have been musical tones (e.g., Vitz, 1966), non-representational paintings (e.g., Zajonc, Shaver, Tavris, and vanKreveld, 1972), photographs of the environment (e.g., Wohlwill, 1968), and stereotyped pictures of black and white males (Perlman and Oskamp, 1971).

Of these many research studies, none have attempted to use moving stimuli, i.e., action stimuli, and only Perlman and Oskamp (1971) chose to relate the theoretical notions of stimulus qualities and repeated exposure to social learning from television. The authors, concerned with the development of stereotyped race attitudes because of the portrayal of minorities on television, tested the "mere exposure hypothesis," which states that "mere" repeated exposure to a stimulus will enhance positive evaluation of that stimulus, regardless of the content or consequences of the stimulus. Perlman and Oskamp (1971) found, however, that only repeated exposure to positive portrayals of black and white males increased positive evaluation. Repeated exposure to negative portrayals, however, did not increase or decrease evaluation. Perlman and Oskamp concluded that the learning process involves the content of the stimulus, as well as the frequency of exposure. This conclusion has been supported by others as well (cf. Burgess and Sales, 1971; Brickman, Redfield, Harrison, and Crandall, 1972).

Television provides a child viewer with a reservoir of possible stimuli to perceive and respond to. Social behaviors as portrayed on television are frequently learned by child viewers (Bandura, 1977). Three social behaviors, in particular, have received considerable attention with regard to children's learning. These behaviors are altruism, a socially positive behavior; verbal aggression, a socially negative behavior; and physical aggression, defined by acts of hitting, another socially negative behavior. These social behaviors as visual stimuli are portrayed on television frequently and vary in their representation (Greenberg, Atkin, Edison, Korzenny, 1976). Therefore, in the development of an empirical methodology for examining children's learning from television, these behaviors will be chosen as visual stimuli. The process by which children investigate and seek stimulation will now be discussed.

1.22 Stimulus Properties and Exploratory Behavior. The motivational effects of stimulus properties like complexity or variety have been investigated because of their influence on exploratory behavior in children (e.g., Cantor, 1968). These stimulus properties are major determinants of attention and, as such, are important independent variables in the regulation of exploratory and curiosity behavior in children (cf. Dember and Earl, 1957:91).

Intrinsic or cognitive motives have been said to cause exploratory behavior (cf. Gibson, 1969; Berlyne, 1960). Hunt (1963) suggests that incongruity or dissonance between incoming stimuli and a cognitive state such as expectation produces arousal and directs exploration.

Berlyne (1971) also suggests that when an individual is left in a state of uncertainty, conflict, or arousal, exploratory behavior will occur. Subjective uncertainty or arousal can cause curiosity which then becomes a motive for exploration. According to Berlyne, the curious adult or child will seek out stimulation. Stimulation can be sought specifically to alleviate uncertainties originally experienced. Berlyne (1960) calls this *specific exploration*. Stimulation can also be sought, regardless of its content or uncertainty reducing abilities. This latter type of exploration Berlyne termed *diverse exploration*. The curious child explores stimuli which offer an "optimum amount of novelty, surprisingness, complexity, change, or variety" (Berlyne, 1970:70). Specific exploration requires that an unpleasant degree of subjective uncertainty be reduced. Stimulation sought should have an interest value to the child. Diversive exploration takes place because the child is searching for exciting and pleasing stimuli. Exploratory behavior has been measured by both the amount of time spent on observing the stimulus (Berlyne, 1963)

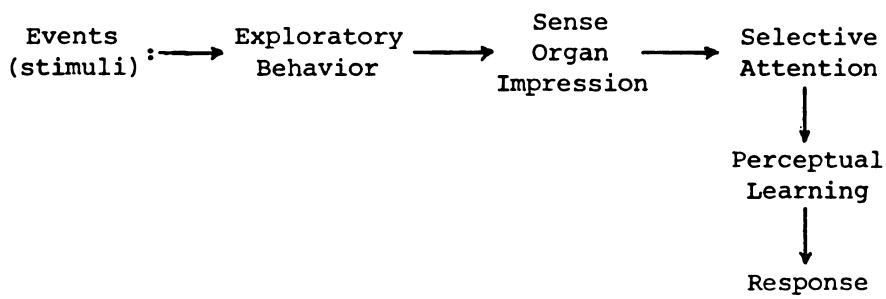
and measures of stimulus preference, pleasantness, interest, and liking (Wohlwill, 1968; Vitz, 1966; Munsinger and Kessen, 1964).

Considerable research suggests that children do prefer, seek out, and retain visual material that possesses a high degree of complexity or variety (e.g., Reese, 1970; Emmerich and Ackerman, 1976). Cantor (1968) reports that children verbally expressed a preference for more complex stimuli and more readily exposed themselves to such stimuli.

Television content provides children with an array of stimuli to explore. Whether exploration is motivated by subjective uncertainty, curiosity, or a desire for arousal, a child can find stimulation from television viewing. Obviously, all that is available on television will not be perceived by the child. The selective process which is central to the regulation of stimulus input is *attention*.

1.23 Selective Attention. Exploratory behavior can be thought of as attending to aspects of the environment that are peripheral to one's visual field (cf. Berlyne, 1960; Wohlwill, 1968). It is the first phase in the process of bringing a child in contact with stimuli. Exploratory behaviors *determine what kinds of stimuli will reach one's sense organs* before the sense organs are stimulated (cf. Gibson, 1969). Selective processes must control or limit which stimuli reach the sense organs. Selective attention

means *selecting or concentrating on elements which are in the stimulus field* (Gibson, 1969:115). Attention is the directive aspect of perception (Gibson, 1969:121). Selective attention becomes more systematic as the child matures or develops. Selective attention determines which stimuli will reach a sense organ and be perceived, and a response can or will be elicited. The process discussed thus far is illustrated below.



Above, there is an array of events or stimuli. The child explores and searches among these events. Exploratory behavior brings these into "focus." The selective process of attention filters out or rejects certain stimulus inputs and exposes the visual receptors to chosen aspects of the events which are potentially stimulating. Those aspects of the stimuli attended to will be perceived. Whatever is perceived now has the potential for evoking responses.

Next, the components or properties of the stimulus which determine selective attention will be specified.

1.24 Determinants of Attention. Stimuli can embody physical characteristics which are so visually distinct that attention to them will be assured. Studies in discrimination learning have used several different techniques to highlight the characteristics of a stimulus. The attributes of the stimuli that children are to learn have been shown in isolation of other stimulus patterns. Techniques such as fading-in (gradual emphasis) the stimulus (Caron, 1968), illuminating (by the use of lighting techniques) the stimulus (Spiker, 1959) and centering the stimulus (Bijou and Baer, 1963) have enhanced attention to features of the stimulus. In addition, spatial dimensions (size) (e.g., Stevenson and Langford, 1957) and spatial relations (location of the stimulus in the child's visual field) (e.g., Murphy and Miller, 1959) have influenced learning by determining where the child directs his/her attention.

Visual enhancement accomplished by exaggeration of distinctive stimulus features, such as cartoon caricatures, or by maximizing the number of possible feature contrasts, or by eliminating nondistinctive features have also enhanced a child's attention to stimulus objects (see Gibson, 1969: 102-105).

Bringing about attention to stimuli using these types of techniques usually requires manipulating some aspect of the stimulus object. While research of this nature gives

us an indication of what will influence attention, a set of invariant stimulus properties are still needed if one wishes to explain what a child attends to after he/she has developmentally matured and is capable of discriminating among stimuli that are in the environment.

The classical determinants of attention were set forth by Titchener (1903). His four conditions are as follows:

- *High Intensity of Stimulus*--defined by great strength (i.e., color, size, configuration) of stimulus that will not succumb to counter excitations.
- *Suddenness of Stimulus*--defined as increased or sudden changes of the stimulus.
- *Novelty of Stimulus*--novelty means, according to Tichener, "non-associatedness." A novel impression stands in isolation.
- *Movement of Stimulus*--the influence of movement is explained by the avoidance or reduction of fatigue in the parts of the organ stimulated. (pp. 207-208)

Berlyne (1960) has suggested that the complexity or variety or uncertainty, intensity and change or movement are factors of the stimulus which when combined will direct selective attention towards one stimulus rather than another. The conceptualizations of these properties will be provided and related to television stimuli.

1.3 Stimulus Properties and Television Stimuli

1.31 Intensity. Intensity of a stimulus was one of the first stimulus properties to be examined for its effects on attention (Berlyne, 1951). In the literature on

psychophysical aspects of stimuli, intensity generally refers to the brightness, color, and size of a stimulus object. Other stimuli examined for intensive traits have included sounds, ranging in pitch, color patterns varying in color combinations, and geometric figures varying in size, shape, or color (see Berlyne, 1950, for a general description of intense stimuli). The studies in discrimination learning of children generally manipulated some aspect of intensity. More intense stimuli attract greater interest and receive more visual attention (e.g., Bartlett, 1932; Caron, 1968; Spiker, 1959).

Relating this definition of intensity to television stimuli, it can be thought that television content, in general, shown in color rather than black and white would have greater intensity, as would television programs viewed on a larger television screen. Specifically, within a program, a scene which is brighter by the use of lighting or color or perhaps louder will be more intense than a scene where colors are muted or sounds are dull. Television stimuli can be described by psychophysical terms; however, intensity, as defined, alone will not account for selective attention. While intensity describes physical attributes of the individual elements of a stimulus pattern, it does not describe the interrelationships of the elements. The interrelationship of the components of a stimulus is best described by the stimulus property termed complexity.

1.32 Visual Complexity. Complexity is defined in terms of the amount of variety or diversity which exists in a stimulus pattern (Berlyne, 1960:38). A stimulus pattern becomes more complex as the number of elements or parts increases. In two stimulus patterns with the same number of elements, the one with less similarity among its elements or less redundancy of information will be judged more complex (e.g., Vitz, 1966; Dorfman and McKenna, 1966; Day, 1967).

We can imagine a scene from a movie increasing in complexity as the number of characters and actions increases. Complexity in music, likewise, increases as more instruments are introduced and as different sounds or notes are blended together. In this respect, complexity can be thought of as the degree of heterogeneity among the components of the stimulus pattern.

Complexity is often associated with other properties of a stimulus. Stimuli are said to be more complex when the stimulus pattern *changes* or when there is *movement* (Titchenor, 1903). A changing stimulus may in addition have an element of *surprise*. This implies that the stimulus was not expected to be different from the one that had preceded it (cf. Osgood, 1957).

As already noted, complexity is closely associated with the information-theoretic concepts of "relative

uncertainty," "information content" (Hochberg and McAlister, 1953; Atteneave, 1954; Berlyne, 1957). Complexity is also defined in terms of concepts such as "order," "diversity," and "structure" (e.g., Berlyne, 1970).

Similarly, complexity has been described with respect to picture detail (Emmerich and Ackerman, 1976). Degree of "detail" has been operationalized by adding color or additional lines to drawings (Reese, 1970) or by adding characters and movement in pictures (Wohlwill, 1968).

Complexity has been found to be positively associated with ratings of interest and pleasure, suggesting specific and diversive exploration (e.g., Berlyne, 1963). In general, the complexity of visual patterns has been demonstrated to increase attention and to influence the direction and duration of exploratory behavior with adult subjects (e.g., Berlyne, 1957, 1958, 1963) and with children (Smock and Holt, 1982; Clapp and Eichorn, 1965; Minton, 1963). Complexity also has influenced verbal expressions of preference (e.g., Munsinger and Kessen, 1964; Day, 1967; Berlyne and Peckham, 1966).

Complexity as defined by Berlyne and Tichener can be applied to the examination of action stimuli; i.e., behaviors or acts taken from television. Social behaviors (e.g., altruism, verbal aggression, physical aggression) as they appear in television content vary with regard to the amount

of diversity or variety of information, movement, and change. The complexity of such a stimulus can increase by adding more characters to the scene, or by using different types of characters. A fight scene between two men is less complex than a fight scene involving several men, all hitting one another. Complexity will also increase by changing the pace and by increasing the duration of the behavior. In an extended fight scene there is more potential for different types of blows (e.g., pushing one person, slapping another), more potential for greater and faster movement as well as more sudden changes. Movement and suddenness of change, two of Titchenor's (1903) determinants of attention, can be best operationalized with an action stimulus.

In addition to complexity, movement, and change in a stimulus, an action stimulus is also defined by another stimulus component to be called *involvement*. Involvement will refer to the amount of participation (both physical and emotional) exhibited by characters of action. Involvement will be discussed further in section 1.41.

1.33 Novelty. Berlyne (1960, 1970) and others (e.g., Cantor and Cantor, 1964; Cantor, 1968; Berlyne and Parkham, 1968) have examined the effects of novel, or unfamiliar stimuli on attention and learning. Children do prefer what is novel to what is familiar (Cantor, 1968). Novel stimuli

are more effective in attracting children's attention (e.g., Odom, 1964; Gullickson, 1966). Novelty, although defined in this literature as a property of a stimulus, is a function of a child's experience and development (cf. Gibson, 1969) and a function of repeated exposure to the stimulus, and thus, *not* an invariant property of a stimulus. Hence, the concept of novelty does not fit in a conceptualization of an attention-attracting stimulus property; however, it is necessary to discuss novelty in relation with the effects of repeated exposure to television stimuli. This discussion is found in section 1.5.

1.34 Summary. The stimulus properties of complexity, movement, and change provide a foundation for categorizing television stimuli for their ability to attract attention in children. Using this foundation as a beginning point, one can investigate the question of what types of television stimuli children will attend to, prefer, and respond to. A television stimulus, however, is different from an inanimate stimulus object, which for the most part has been used to study stimulus properties. Television stimuli in the form of social behaviors have action and movement and contain *human interaction.* A definition of an attention-attracting action stimulus needs to reflect these differences. In the following section a conceptualization of a television stimulus property termed "intensity," which is specific to action stimuli, will be provided.

1.4 Intensity of Television Stimuli

"Intensity" as a psychophysical property of a stimulus has been used to refer to the size or color or sound of a stimulus object. Stimulus objects were perceived as more intense if they were larger, brighter, or louder than other objects in a child's visual field. Intensity implied the physical visual/audio strength of an object. If one thinks of "intensity" not in terms of the physical attributes of a stimulus, but rather in terms of the strength or contribution of the elements or components of a stimulus pattern, one can begin to understand what is meant by the "intensity" of a television stimulus. Berlyne (1971:70) also discusses the strength of a stimulus pattern which he terms *arousal potential*, but here he is referring to the "psychological strength" of the pattern as a whole to attract attention. Specifically, he states that arousal potential denotes:

> the "psychological strength" of a stimulus pattern, the degree to which it can disturb and alert an organism, the ease with which a stimulus can take over control of behavior and overcome the claims of competing stimuli. . . . It will also represent the ease with which a stimulus can become associated with a response through learning and the likelihood that information of it will be retained in memory. (p. 70)

Although the reaction to high "intensity" stimuli as defined in this dissertation might be the same as the stimuli which have high arousal potential, "intensity" does not imply "effects." Rather, "intensity" refers to the actual

strength or representation of the stimulus pattern. It is a property of the stimulus and is *not* determined by its effects on attention and learning. More simply put, "high intensity of a television stimulus" would imply a greater degree of presence of the components which make up intensity. The components of intensity will now be specified.

1.41 Definition of Intensity. Intensity of television behaviors consists of stimulus complexity, stimulus movement, stimulus change, and character involvement. Intensity increases as its components increase.

Complexity is defined by the diversity or variety of the stimulus elements. Stimulus elements for television behaviors include the physical aspects of the environment (e.g., the setting or location in which the behavior takes place) and the number and types of characters participating in the behavior. Complexity increases as the physical setting becomes more diverse and as the number of characters and contrasts between them increase. Contrast between characters refers to demographic differences such as age, sex, race, nationality, and socioeconomic status.

Movement or motion refers to the pace and the duration of the behavioral act. Movement increases as the activity of characters increases and as the behavior continues to be exhibited.

Change in the stimulus refers to the suddenness of movement in the stimulus elements or the surprise or quickness of movement in the stimulus pattern. Change increases as the number of sudden movements increase.

Character involvement refers to the physical and emotional effort extended by the characters participating in the behavioral act. Effort includes elements such as the risk to one's well being and the costs (i.e., sacrifices) for performing the given behavior. Character involvement increases as the risks and costs involved for participants in the behavior increase. Let us illustrate intensity.

1.42 Example of Intensity. To illustrate "intensity" of a television behavior, two acts of *altruism* will be analyzed. One will be a low intensity act and one will be a high intensity act. Altruism is exemplified by acts of helping or sharing or cooperation (see Greenberg, Atkin, Edison, and Korzenny, 1976, for more detailed conceptualization and operationalization of altruism).

A low intensity act of altruism portrayed on television may consist of the following:

> One man, about 30 years old, is loading boxes on a truck. A second man, also about 30 years old and a friend of the first man, offers assistance. Both men are dressed casually and are caucasian. The second man then begins to lift some boxes and places them in the truck. He helps his friend for a short period of time and then leaves.

According to the definition of "intensity" the above act is not very intense. First, it is low in *complexity*. There are two characters. These two men are similar in age, appearance, and race. The physical setting in which the act takes place is a truck. The setting does not change throughout the act. Second, the *movement or motion* involved in the behavior is steady and consistent. The characters' activities do not increase nor do they decrease. In addition, the act of helping only lasts for a short time. Third, there is no marked *change* in this stimulus. There are no sudden or quick movements with regard to the characters or the setting. Fourth, *character involvement* is also low. There are few risks or costs involved in this act of altruism. However, if the helper was an older individual or had physical impairments (e.g., a broken arm) character involvement would be greater.

Now consider a high intensity act of altruism.

> An old barn begins to burn. An elderly black man is trapped inside. Two young, white paramedics rescue the man from the burning building as it begins to collapse. Once outside, they try to revive him. Fire fighters and on-lookers are also present.

First, this scene is higher in *complexity*. There are at least three main characters. There are distinct contrasts between these characters. Two are young and white and one is old and black. In addition, there are also minor characters, i.e., on-lookers and fire fighters. The

physical setting also provides diversity. There is a barn in flames as well as fire trucks and sirens. Second, there is considerable *movement* in this scene. The two paramedics are seen running into the building; the elderly man is dragged out of the building; fire fighters are preparing to arrest the blaze. In addition to the pace of movement, this act of altruism takes considerable time to complete. Third, there is sudden and surprising *change* in this stimulus pattern. The burning building begins to collapse. Fourth, there is considerable *character involvement*. This act of altruism involves life-threatening risks for the two paramedics. The risks for these two men are not as great as they might be for two less-trained individuals. This act of altruism has high intensity.

It can be seen comparing the first act of altruism with the second act of altruism that the second act has higher intensity. It should be noted that in scaling intensity for this study, for the actual measurement of act intensity, each particular behavioral act would be compared to a stimulus pattern of the same behavior which is chosen as a standard for comparison purposes. This "standard" stimulus of intensity for a given behavior will contain all stimulus elements to a certain degree. One could then determine the relative contribution of the components of intensity by evaluating them in relation to the stimulus standard. (Measurement procedures for

evaluating act intensity will be discussed in Chapter 2 of this dissertation).

Now, with a working definition of intensity, children's ability to perceive the components of itensity will be discussed.

1.43 Children's Discrimination of the Components of Intensity. A child's ability to discriminate among distinctive features or components of a stimulus increases with age (Gibson, 1969). Visual preference studies clearly indicate that children from birth are capable of receiving and discriminating patterned stimuli (e.g., Fantz, 1958). Although infants' visual attention to stimulus objects is more of a fixation than exploration (cf. Gibson, 1969:342), attention continues to be more exploratory, and thus more selective. The preference of and attention to "complex" patterns also increases with age. In early months of infancy a child can distinguish human faces (Kagan and Lewis, 1965). Differentiation of features of the face object begins with the eyes and then proceeds to the mouth, especially when it is moving (e.g., Kagan and Lewis, 1965; Fantz, 1966). Older children perceive movement as well as velocity (speed of movement) in a stimulus. Children aged 4½ to 5½ years correctly judged the speed of two objects (i.e., which was going faster; Fraisse and Vautrey, 1952, cited in Gibson, 1969:383).

Discrimination and perception of distinctive features of real, inanimate and animate moving stimuli increases with age; however, one might ask if stimuli as they appear in moving pictures (e.g., television and film) are discriminated and learned in the same way as real stimulus objects?

While there is very little evidence to date on perceptual learning of moving pictures, observation of young children tells us that they enjoy and are attracted to motion pictures of real adults as well as cartoons. It can also be observed that young children are especially attracted to television commercials. Television commercials have very fast pacing, considerable movement, and quick changes. Children are obviously attracted to such stimulus elements, but will children perceive these features in moving pictures? Gibson (1969:400) suggests that perceiving distinctive features in motion pictures should follow the same developmental pattern (as described above) as for perception of features of real objects. Thus children who have developed appropriate attentional and discriminative habits should be capable of applying those habits to an array of stimuli.

With regard to the components of intensity, older (i.e., ten years of age and older) children should be capable of distinguishing and perceiving variety in a

stimulus pattern as well as movement and change in the pattern. The component of character involvement might present some difficulty for children. It is possible that children will not distinguish between someone who is trained to do a certain job (e.g., fire fighters) and an untrained person. Children, also, may not have enough experience to discriminate possible life-threatening situations from relatively safe ones. Obviously, individual differences and experience will affect children's perception of character involvement; however, children ages 11 to 13 do appear to perceive character involvement (information gathered from children during interviews conducted by the author). When children were interviewed with regard to social behaviors on television, they were asked to discuss what they thought about television scenes such as the examples of altruism provided in the previous section. While the children did not use the exact labels for the components of intensity, they suggested that they liked scenes that were exciting, where things happened quickly and where unexpected events and actions occurred. When children were asked to specifically describe the high intensity act of altruism, they were capable of reenacting the scene as well as verbalizing that people might have been hurt or killed. Although these interviews only allow for a qualitative analysis of children's discrimination and perception of the components of intensity, the

interviews do imply that (1) children can and do discriminate and perceive the components of intensity; and (2) it is these types of stimulus elements that attract a child's attention.

At this point hypotheses concerning the effects of the stimulus property labeled "intensity" on children's attention, arousal level, affect, and learning can be suggested:

H_1-H_4: Attention, arousal, affect, and learning will be greater for children exposed to high intensity television stimuli than those exposed to low intensity stimuli.

The process by which children explore, attend to, perceive, and respond to stimuli has been explicated. The central focus thus far has been on the role of stimulus properties in children's attention to and learning of stimuli. Now concern must be focused on the effects of repeated exposure to a stimulus. Considerable research has sought to examine the effects of frequency of exposure to stimuli on children's attention and learning processes. This research will be reviewed, followed by a presentation of the theoretical relationship which exists for the stimulus property, intensity, and frequency of exposure.

1.5 Frequency and Intensity of Exposure

1.51 "Mere" Exposure Effects. It has generally been suggested that affect and learning are mostly influenced by complex, novel, *low frequency* stimuli (e.g., Berlyne,

1960, 1970; Cantor, 1968). Contrary to this contention, it has been posited (e.g., Harrison, 1969; Martin, 1970; Zajonc, 1968) that affect ratings and learning are dependent on common, familiar *high frequency* stimuli. This latter position falls under the heading of "mere" exposure effects. The general hypothesis states that "the mere repeated exposure of an individual to a stimulus is a sufficient condition for the enhancement of his/her attitude toward it" (Zajonc, 1968:1). By "mere exposure" is meant a condition which makes the stimulus available to the individual's perception. The exposure hypothesis suggests that in the absence of negative consequences associated with the encounter of the stimulus (negative consequences would enhance an avoidance reaction), as well as the absence of positive consequences associated with the encounter (positive consequences would strengthen an approach reaction), a favorable attitude will increase as exposure increases (cf. Zajonc, 1968; Mooreland and Zajonc, 1976). This would suggest the following hypothesis.

H_5-H_6: Children will respond with more positive affect (pleasure and interest) and learning to a high frequency stimuli than to low frequency stimuli.

A positive monotonic relationship between exposure and affect, however, is usually only found with complex stimuli (Harrison, 1968; Matlin, 1971; Mooreland and Zajonc, 1977). The mere exposure effect for this type of stimulus

is explained by the notion of *response competition* (cf. Harrison, 1968). It is suggested that a high complexity stimulus poses a problem to an individual because the individual has had little experience with such a stimulus and does not know how to respond to it. Initially, this stimulus will elicit negative affect. However, the stimulus will have some resemblance to prior stimuli experienced and through generalization of response many possible responses will be elicited. These possible responses will be in competition for selection. Repeated exposure will familiarize the individual with the high complexity stimulus and allow for one response to become dominant. Then initial negative affect will be reduced and the stimulus will be viewed more favorably (cf. Martin, 1970). For high complexity stimuli (e.g., Japanese ideographs) up to 81 exposures have produced a positive monotonic relationship with affect (Zajonc, Swap, Harrison and Roberts, 1971). However, a curvilinear relationship between frequency of stimulus exposure and affect is usually found with low complexity stimuli (e.g., non-complex drawings; Zajonc, Shaver, Tavis and van Kreveld, 1972).

Interestingly enough, similar patterns for exposure to stimuli are not found in the area of advertising effects. Krugman (1968, 1972) proposes that three exposures to television commercials are sufficient for perceiving and learning the message. He suggests that the first exposure

produces curiosity in the child, indicated by a reaction of "What is it?" The second exposure produces a more evaluative response of "What of it?" During the second exposure there is also recognition of the stimulus. Krugman suggests that by the third exposure a decision has been made with regard to what type of response the stimulus will elicit. Any further exposure to the message is unnecessary, according to Krugman, and will basically be ignored. Krugman's position has generated support in the area of advertising effects (e.g., see Appel, 1971; Bogart, Tolley and Orenstein, 1970).

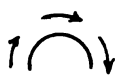
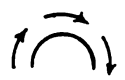
Perhaps "three" is not a deciding number in how many exposures are sufficient for positive affect and learning, but habituation or satiation does appear to be an effect of repeated exposure to stimuli. Repeated exposure to extremely violent television stimuli has produced a satiation effect as well (e.g., Berger, 1962; Bandura and Menlove, 1966; Lazarus, 1966). This research concludes that viewers of extremely violent stimuli become progressively less emotionally responsive as frequency of exposure increases (cf. Lazarus, 1966). The stimuli used in these studies were judged as extremely violent or gruesome (e.g., mutilation of the body).

Basically two relationships are found for repeated exposure to stimuli. One relationship suggests that affect

and learning will increase with the repeated exposure of high intensity stimuli (Harrison, 1968).

↑ Frequency of High Intensity Stimuli → Affect ↑; Learning ↑

A second relationship suggests that affect and learning will increase and then decrease with repeated exposure of low intensity stimuli or extremely high intensity stimuli (Berlyne, 1970; Lazarus, 1966, respectively).

Frequency of Low or Extremely High Intensity Stimuli → Affect  ; Learning 

While the research evidence suggesting these relationships has been generated with the use of adult subjects, similar findings should occur for children. An interpretation of the intensity/frequency relationship for children is provided below.

1.52 Interpretation of Intensity/Frequency Relationship. It has been suggested (Gibson, 1969) that children learn to extract information from the environment as they mature and as they have practice with the array of stimuli provided by the environment. One way to get practice or experience with stimuli is to be repeatedly exposed to them. Not all stimuli, however, need practice in order to be perceived and elicit responses. Stimuli that have easily distinguishable features (i.e., non-complex) should

require less practice. Thus repeated exposure to these stimuli should not be necessary for perception and learning. Complex stimuli, on the other hand, are more difficult to discriminate and contain more information to extract. Practice, through repeated exposure, should be a necessary condition for perception and response facilitation (c.f. Stang, 1975).

What is happening to the child when he/she is frequently exposed to a stimulus? As a stimulus pattern is frequently viewed by a child, he/she becomes more familiar with it. Through repeated exposure the child can explore and attend to different aspects of the pattern, and with each exposure the child can extract more information from it. However, children prefer unfamiliar stimuli to familiar stimuli (e.g., Cantor and Cantor, 1964; Cantor, 1968; Odom, 1963). Children have rated unfamiliar stimulus patterns more positively than familiar ones (Cantor, 1968) and give more attention to stimuli they have not seen before (Cantor and Cantor, 1964). Berlyne (1970) suggests that novel stimuli elicit arousal in individuals but through repeated exposure, novelty decreases and hence arousal and attention also decrease. Berlyne does suggest that the rate of this decrease will be dependent upon the properties of a stimulus. High complexity stimuli can endure more exposure before a decline in effectiveness. He attributes this

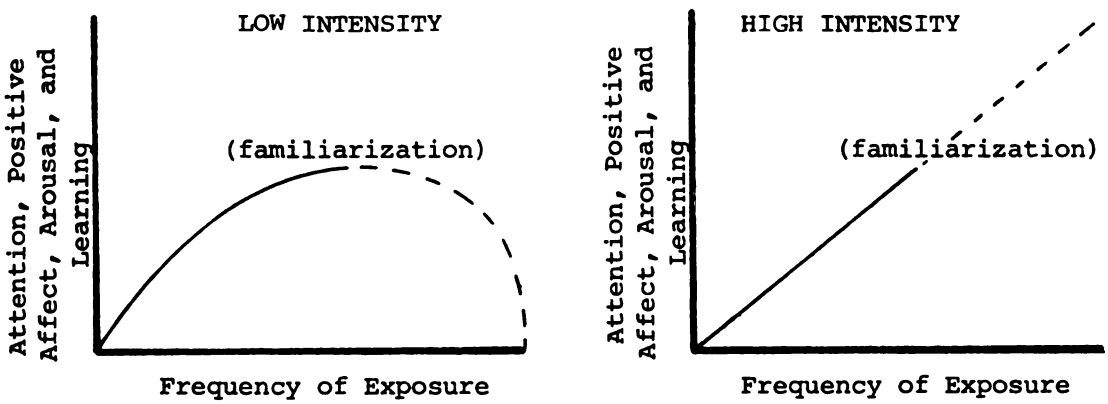
decline in stimulus effectiveness on attention and affect to a *satiation effect*. Exposure to a stimulus will initially increase attention and affect and stimulate or arouse the individual. Low complexity stimuli when repeatedly exposed cannot maintain arousal in the individual because he/she becomes familiar with this stimulus. Thus, repeated exposure produces tedium or boredom. While this process will occur for high complexity stimuli, it should, according to Berlyne, occur at a slower rate because it will take longer to become familiar with a high complexity stimulus. While it is agreed that the repeated exposure of low complexity stimuli, in Berlyne's terms, or low intensity stimuli, as defined here, will decrease in effectiveness with repeated exposure, a contrary explanation is provided for high intensity stimuli.

A paradox with regard to repeated exposure appears to exist. Repetition of a stimulus may be necessary for perceiving and learning certain stimuli, but repeated exposure to it may, in turn, reduce a child's attention. Perhaps the situation is not as dismal as it appears. Repeated exposure to a stimulus will *not* always diminish a child's attention and response to the stimulus. It is suggested here that, first, repeated exposure to high intensity stimuli is necessary for discriminating distinctive features and for social learning to occur.

It is also suggested that repeated exposure to high intensity stimuli will not distract a child's attention from the stimulus. The process suggested is as follows: through repeated exposure the child becomes familiar with high intensity stimuli. Familiarization is necessary if discrimination, perception, and social learning are to occur. Once familiarization has occurred and hence learning, there must be something about the stimulus that will maintain attention, arousal, positive affect, and reinforce learning, or in other words, "compensate" for this familiarization with the stimulus pattern; a high intensity stimulus offers such compensation. It is recalled that the intensity of a stimulus does not change; it is an invariant property of the stimulus. Thus, even though a child becomes familiar with the stimulus, the components of a high intensity stimulus are still present and should be effective in assuring attention, positive affect, and arousal as well as reinforcing learning.

This will not be the case for low intensity stimuli. Repeated exposure to this type of stimulus will produce familiarization. Once the child is familiar with the stimulus, the low intensity will *not* be sufficient to maintain attention and learning. That is, it was the novelty of the stimulus that originally attracted the child's attention. Once the novelty wears off (this

occurs with repeated exposure) the low intensity stimulus cannot compensate for familiarization. It is recalled that a low intensity stimulus generally will not receive much attention. Any attention given to this stimulus will be due to its unfamiliarity, rather than any inherent attention-getting properties. Thus, attention, positive affect, arousal, and learning will decline with the repeated exposure to low intensity stimuli. These relationships are illustrated below.



The following is predicted:

H_7-H_{10}: Attention, arousal, positive affect, and learning will be greater for children exposed to high intensity, high frequency television stimuli than for children exposed to low intensity, high frequency television stimuli.

1.6 Summary and Perspective

This chapter has sought to identify and explain stimulus variables that can provide a theoretical system for the analysis of children's attention and learning processes of television behaviors. In examining the properties of a stimulus, theory suggests that certain properties will direct exploratory behavior in children and, in turn, influence selective attention. It is suggested that children investigate and attend to complex, moving, and changing stimuli. This type of stimulus has been said to have the property labeled "high intensity." Theory predicts that repeated exposure to high intensity stimuli will enhance and maintain attention, arousal, positive affect, and learning of such stimuli, whereas repeated exposure to low intensity stimuli will produce boredom and thus result in decline in attention, arousal, positive affect, and learning. High intensity stimuli can compensate for familiarization with the stimulus.

The goal of this chapter was to explicate the stimulus property termed "intensity," examine its role in children's attention and learning of television behaviors, and formulate the relationship between "intensity" and "frequency" of stimulus exposure.

CHAPTER 2

METHOD

2.1 Overview of Design

An experiment was conducted to test the effects of stimulus frequency and intensity of televised social behaviors on children's perceptions, affect, and learning. Stimulus frequency was manipulated at two levels, high (12 exposures) and low (2 exposures). Intensity was manipulated at two levels, high and low. Three separate content areas were used to test the effects of frequency and intensity. They were physical aggression, verbal aggression, and altruism. In each of the four conditions for each content area there were 20 subjects. The subjects were fifth and sixth grade boys and girls from the Perry Elementary and Middle Schools, Perry, Michigan. The subjects were exposed to edited excerpts from commercial television programming. A control group of 20 subjects did not view any video tape. All subjects were asked to make direct magnitude (ratio) judgments for 18 hypothetical situations. Six of the hypothetical situation items pertained to acts of physical aggression, six items pertained to acts of verbal aggression, and six dealt with acts of

altruism. For each content area, the same six hypothetical situation items were repeated using an ordinal scale. Control group subjects responded to the 18 hypothetical situation items using the ratio-scaling technique. These 18 items were then repeated with an ordinal scale. The control group answered to 36 situations in all. Subjects in experimental conditions also were asked to make ratio assessments of their responses to the video tape. The items measured the subject's degree of arousal, positive affect, and attention to the video tape. The data obtained were analyzed with a univariate analysis of variance procedure. The design for each content area consists of two independent variables, frequency and intensity, each with two levels. Figure 1 illustrates the design for each content area.

2.2 Experimental Design

2.21 Design Considerations.

In choosing an appropriate design to test the relationships of the independent and dependent variables, many issues needed consideration. The first issue was the measurement of act intensity of televised behaviors. The second issue was how to manipulate stimulus intensity and stimulus frequency. When deciding upon a manipulation, the questions were how to determine the levels of the independent variables and how televised social behaviors which vary in intensity and

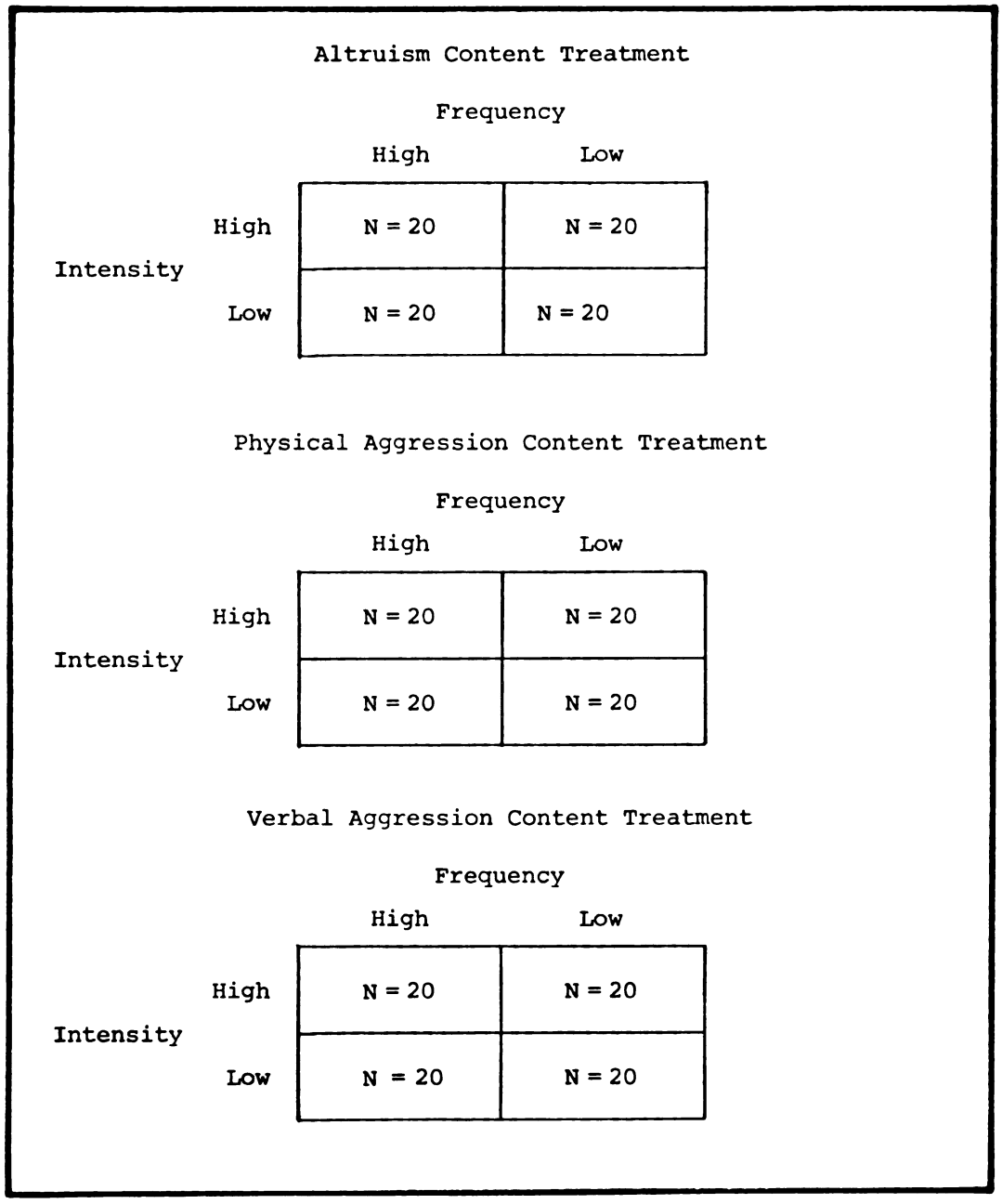


Figure 1. Design for Each Content Area.

frequency can be presented (i.e., in what form) to groups of children. A further issue that required attention was the probability that an already high level of attention and arousal would exist due to the nature of the situation, that is, the experiment.

Other issues were concerned with the content of the stimulus tapes and the presentation of the stimulus to the subjects. These design considerations will be discussed below.

2.22 Measurement Procedures for Act Intensity. Both stimulus intensity and stimulus frequency were independently manipulated at high and low levels. The intensity was defined by ratio scores assigned by trained coders to segments of commercial television which had been content analyzed for acts of altruism, verbal aggression, and physical aggression (see Appendix A for a discussion of content analysis). Three coders[1] were trained to rate the intensity level of the three social behaviors. The coders were trained to quantify the extent to which the behavior was expressed, that is, they assessed the amount of stimulus complexity, stimulus movement, stimulus change, and character involvement that was exhibited for a given act, and then assigned an intensity level. To understand how levels of intensity were assigned, it is necessary at this point to briefly explain the measurement procedures.

The coders were trained to make ratio comparisons between a standard example for each content behavior defined as "average intensity" and the coded acts of that content behavior. This average intensity example (hereafter referred to as a yardstick) was developed for each content behavior. Each yardstick was a televised segment which portrayed the given behavior. The criteria used for determining the yardstick were: (1) that the yardstick should display all the components of the conceptualization of the given behavior (see Greenberg, Atkin, Edison, and Korzenny, 1976, and Appendix A for conceptualizations of the behaviors); (2) that the yardstick displayed some degree of all the components of the conceptualization of intensity; and (3) that its intensity was such that there could be segments compared to it that were less and more intense.

To clarify this, let us examine the yardstick for *altruism*. It depicted one man helping a crippled man pick tobacco. It was an overt act of helping someone. There was a moderate level of *complexity*: two characters and a tobacco field. *Movement or motion* was displayed as the characters picked tobacco in the field. A minimal amount of *change* was present and is displayed as the characters move from the field to a truck. *Character involvement* was demonstrated through one character's expressed concern for

the crippled man and by the time and energy the helper expended performing the act. The risk to the helper was not too great. This scene was deemed the yardstick for altruism. Thereafter, if one viewed another incident of altruism, where these components were displayed to a greater degree (e.g., where one was risking his/her life to help someone and expending greater effort), this was judged more intense. In selecting a segment that would be used as the yardstick, it was considered how these behaviors were typically portrayed on television, and then a segment that appeared to be a normative portrayal of the behavior on television was selected (see Appendix B for yardsticks for physical aggression and verbal aggression).

A ratio scale was used for rating intensity, where "0" represented non-existence of the given behavior, and "100" was anchored as "average," for the yardstick. For any behavior from the content analysis, the coder made a ratio comparison between that act and the corresponding yardstick. Thus, if an act of altruism was coded, the intensity coders would compare it to the yardstick for altruism and then assign it a score. If the behavior was considered twice as intense as the yardstick, a score of 200 would be given; if it was estimated as half as intense as the yardstick, a score of 50 would be given. The coders could assign any non-negative integer to each act.

In practice, the first step in training was to familiarize the coders with the yardstick for each of the three content behaviors. The coders came to associate the yardstick with the numerical value of 100. Extended discussion prevailed as to why the yardstick segment was deemed as average intensity, how this segment corresponded to the conceptualization of intensity, and what more and less intense examples of the behaviors might look like. They were trained to use only the yardstick for comparison and no other subjective criteria. After this discussion of the yardstick took place, the coders practiced independently on several television examples. Discussion followed as to why the viewed examples received a score of perhaps five times average (the yardstick), or one-third average. The coders discussed each other's conception of the quantitative scale, until they were able to agree upon comparable meanings for the scale. This training process extended over two weeks for approximately 50 hours.

When actual scoring began, two intensity coders viewed the same show and then independently estimated the intensity of each behavior. These intensity coders examined acts already identified by another group of coders. Pearson correlations were calculated for the two coders for four shows. The act intensity correlations across all acts were .98, .97, .94, and .81. Based on these reliabilities, the

intensity coders were then assigned to individual shows, and paired coding ceased.

This analysis of act intensity provided a large selection of television segments as candidates for experimental stimuli.

2.23 Manipulations. The major consideration in the manipulations of stimulus intensity and stimulus frequency was how to determine what constituted their high and low levels. An issue of concern was possible differences between adults and children in their perception of intensity. That is, it was conceivable due to different cognitive processing abilities of children and adults, that children would interpret intensity in a way other than as it was coded. Children were used to validate the levels of intensity already established by the adult coders. Groups of children from the Dimondale Middle School, Dimondale, Michigan, were shown several segments of altruism, verbal aggression and physical aggression which varied in coder-rated intensity. Through extended discussions the researcher learned how school age children conceived of and interpreted the intensity levels and what types of acts they called high intensity and low intensity. Their perceptions were very similar to those of the adult judges.

Based on this exercise it was decided that television segments of the given behaviors assigned scores of 100 units below the mean intensity of that behavior for all commercial television would be used as low intensity stimuli. Segments assigned scores of 100 units above the mean intensity of that behavior for all commercial television would be used as high intensity stimuli. Table 2.1 contains the means for each experimental condition per content, and the overall means for each content area. The intensity coders confirmed that they conceived of high intensity for each variable in the range of 250-300 and low intensity in the range of 40-80. The interviews with the children also suggested that low intensity and high intensity stimuli were in these ranges.

The selection of the levels of frequency presented fewer problems. There was considerable empirical and theoretical information from which the levels of high and low frequency could be established. Frequencies of 2 and 12 were used for the low and high frequency conditions. The selection of high frequency was based on the actual frequency of the behaviors for a given hour of commercial television. High frequency corresponds approximately to the average occurrence of each behavior for any given hour of commercial television (Greenberg et al., 1976). Low frequency is defined by two exposures

Table 2.1

Intensity Means for Altruism, Verbal Aggression, and Physical Aggression by Experimental Condition

Experimental Condition	Content		
	Altruism	Verbal Aggression	Physical Aggression
Overall mean[a]	160.6	146.6	184.3
High intensity High frequency	254.8	248.3	295.8
High intensity Low frequency	250.0	237.5	300.0
Low intensity High frequency	77.1	79.2	83.7
Low intensity Low frequency	75.0	82.5	80.0

[a]Overall mean represents the mean intensity of each behavior for all commercial television, 1976 (see Greenberg et al., 1976).

of a given behavior because two exposures have typically been used in "mere" exposure research (e.g., Zajonc, 1968; Harrison, 1968) and in advertising research (e.g., Krugman, 1968) as low frequency exposure.

2.24 General Manipulation Considerations and Stimulus Presentation. The manipulations in this study are introduced in a tape of television segments of one of the three social behaviors (i.e., altruism, verbal aggression, or physical aggression). For each social behavior there were four experimental stimulus tapes. Each tape presented either 2 or 12 segments of low or high intensity scenes. One issue considered in the introduction of the manipulations was whether to present the segments one after another or to embed them in additional television program content. Here, the concern was whether relatively short presentations (especially in low frequency conditions) would be substantial enough to have an impact. Three minutes of neutral television content were added to the beginning of each stimulus tape. This increased the time of viewing for the subjects and gave the researcher control over extraneous variables such as new or additional social behaviors, character recognition, and/or show recognition.

Another issue was the time lag between the presentation of the stimulus and the actual completion of the post-experimental questionnaire. Since subjects had to be

trained for approximately 15 minutes in the ratio scaling techniques, it was feared that the training process would interfere with the impact of the stimulus. To avoid this problem, training occurred immediately prior to viewing the experimental stimulus.

A final consideration in the introduction of the experimental manipulations was whether or not to show some kind of television content to the control group. If the control group was to see some television content, the content would have to be void of any of the social behaviors. Since it was virtually impossible to find video without such content it was decided that they view no television.

2.25 Stimulus Tapes. Experimental stimulus tapes were created for each of the four treatments in each content area. The content of the altruism tapes consists of acts of helping, sharing, or cooperation. The verbal aggression tapes contain acts of verbal insults, e.g., yelling. The physical aggression tapes present acts of hitting, pushing, or shoving. All segments were taken from a sample of television shows which had been content analyzed for these social behaviors (see Appendix A for discussion of content analysis).

The construction of the stimulus tapes posed many problems which had to be resolved. One problem was how to select segments which were similar in intensity ratings.

Other issues involved the selection of similar acts, the varying lengths of the tapes, the use and selection of filler content, and how and what variables to control for in the tapes.

The task of selecting segments similar in intensity ratings that had similar character and act portrayals was a difficult one. Depending on the experimental condition, each segment had to fall within the appropriate intensity range, be of similar length, consist of the same type of behavior, and have all the demographic controls. Four content analysis coders[2] viewed many hours of television programs. From the viewing of these programs the selection process began. First, they chose segments that had the appropriate content behavior and intensity scores. They then selected from these segments the ones that portrayed human (non-animated) non-star characters. At this point, the original intensity coders reviewed the selected segments to reinsure that the segments were being cut at the appropriate intervals.

The coders were instructed that the variables to control for were sex and race of character who was the agent of the behavior, character portrayal (minor character), and length of scene. They were instructed that controlling on these dimensions involved, for instance, either using scenes with all male agents or with one-half

male and one-half female agents. Tables 2.2-2.7 contain a description of each scene, its intensity score and length for each experimental condition for the three contents. All agents of behavior were white males.

One problem in the development of the stimulus tapes that could not be resolved easily was the varying lengths of the completed tapes. However, after reviewing this problem it became apparent that this could not be helped. The reasons were, first, a behavior such as altruism, typically requires more time to demonstrate than a behavior such as verbal aggression. Second, the high frequency conditions were going to be longer. Third, within content areas, based on the conceptualization of intensity, high intensity acts contain more information and thus have greater length than low intensity acts. Hence, it appeared that the variation in tape lengths was an inherent factor in the experimental design and, therefore, could not and should not be controlled. However, to both ensure a minimum viewing time and to ease the subject into the tape a three minute neutral cartoon filler ("The White Seal") was added to all stimulus tapes.

2.26 Pilot Study. A pilot study of the complete design was conducted in the first week of May, 1977, at the Dimondale Middle School, Dimondale, Michigan. One fifth grade and one sixth grade class (sixty subjects),

Table 2.2

Description, Intensity Score, and Length in Seconds of Each Act of High Intensity, High Frequency Altruism[a]

Act Number	Description	Intensity	Length (Seconds)
1	Two men help a wounded man.	260	19
2	Two men give first aid to an unconsious man.	265	27
3	A man offers to help a woman with personal problems.	250	68
4	Two men help a sick man.	250	86
5	A man tells a girl about a job in the mines.	250	63
6	Two men give aid to an attempted suicide victim.	250	56
7	A man helps with school bus explosion casualties.	250	44
8	A man rescues a girl from a burning building.	270	28
9	A man gives an important gift to another man.	250	39
10	A man helps a girl locked in a store.	250	86
11	Two men help a man out of a fire.	250	53
12	A man helps an injured man in a truck.	260	30
			599

[a]High intensity, low frequency altruism contains act numbers 9 and 11.

Table 2.3

Description, Intensity Score, and Length in Seconds of Each Act of Low Intensity, High Frequency Altruism[a]

Act Number	Description	Intensity	Length (Seconds)
1	A man cleans a woman's shoes.	70	7
2	A man offers cold drink to a man and woman.	70	11
3	A man offers to help deliver a gift.	60	15
4	A man brings another his mail.	70	14
5	A man offers to help a woman with personal problem.	70	31
6	A man offers to buy another a cup of coffee.	90	10
7	A man offers another man a cigarette.	80	13
8	A man offers to share a rare wine with another man.	90	13
9	A man shares food with another man.	80	23
10	A man offers to help his brother.	75	25
11	A man helps a woman pick up her books.	80	33
12	A man gives a boy and girl a ride home.	90	14
			224

[a]Low intensity, low frequency altruism contains act numbers 3 and 8.

Table 2.4

Description, Intensity Score, and Length in Seconds of Each Act of High Intensity, High Frequency Verbal Aggression[a]

Act Number	Description	Intensity	Length (Seconds)
1	A man yells at a woman.	250	25
2	Two men yell at each other in a car.	250	10
3	A man yells at a woman.	275	35
4	Two male pilots yell at each other.	240	8
5	A man yells at a woman.	240	5
6	A man yells at a woman.	250	35
7	A man yells at a woman.	250	9
8	A man yells at his wife and another man.	230	30
9	A man yells at another man.	250	11
10	A man yells at another man.	250	17
11	A man yells at a group of musicians.	270	35
12	A man in ditch yells to another man.	225	8
			228

[a]High intensity, low frequency verbal aggression contains act numbers 10 and 12.

Table 2.5

Description, Intensity Score, and Length in Seconds of Each Act of Low Intensity, High Frequency Verbal Aggression[a]

Act Number	Description	Intensity	Length (Seconds)
1	A man yells at a woman.	70	7
2	A male doctor yells at a female nurse.	90	22
3	A man yells at a man.	80	16
4	A male doctor yells at another male doctor.	90	11
5	A man yells at a group of men.	80	15
6	A man yells at a man.	65	7
7	A man yells at a man.	70	9
8	A male doctor yells at a female nurse.	90	18
9	A man yells at a man.	90	9
10	A man yells at a man.	65	13
11	A male pilot yells at a man.	80	15
12	A man yells at a man.	80	15
			157

[a]Low intensity, low frequency verbal aggression contains act numbers 2 and 10.

Table 2.6

Description, Intensity Score, and Length in Seconds of Each Act of High Intensity, High Frequency Physical Aggression[a]

Act Number	Description	Intensity	Length (Seconds)
1	A man slaps a woman.	300	35
2	A man slaps a man in a casino.	300	10
3	Two men fight in a restaurant.	300	10
4	Two men fight in a laboratory.	300	15
5	A man hits a man.	300	25
6	Two men jump another man.	350	6
7	Two men fight.	300	10
8	Two men fight.	300	15
9	A man knocks another down the stairs.	250	17
10	Four men fight on a patio	250	17
11	Two men punch each other.	250	10
12	Two men fight.	300	20
			173

[a]High intensity, low frequency physical aggression contains act numbers 3 and 12.

Table 2.7

Description, Intensity Score, and Length in Seconds of Each Act of Low Intensity, High Frequency Physical Aggression[a]

Act Number	Description	Intensity	Length (Seconds)
1	A man hits a man.	80	12
2	A man pulls a man out of a car.	85	25
3	A man throws two men.	80	12
4	A man grabs a woman.	90	27
5	A man twists a man's arm.	90	5
6	A man pulls a man out of a plane.	75	8
7	A man grabs two men.	80	7
8	A man pulls a woman.	80	13
9	Four men fight.	90	16
10	Three men fight.	80	10
11	A man pushes and grabs a man.	90	15
12	Two men fight on fire escape.	85	10
			160

[a]Low intensity, low frequency physical aggression contains act numbers 1 and 10.

participated. The purpose of the pilot study was: (1) to determine how much time was needed to run the experiment, (2) to talk about the manipulations, (3) to practice the training procedures for the scaling techniques, and (4) to verify the language of the questionnaire for clarity and comprehension. From the pilot it was determined that: (1) one hour was needed to complete the experiment, (2) several items should be included in the questionnaire to measure the effectiveness of the manipulations (see section 2.33), (3) scale training required approximately 15 minutes and that the use of pictures helped the subjects understand the scales, and (4) the children experienced no problems with the language of the questionnaire. This information was gathered through extensive discussion with subjects during the experiment and in post-experimental interviews. Suspicions, reactions to the stimulus and the questionnaire were also determined in post-experimental interviews. Based on these interviews, minor changes were made in the questionnaire training instructions and in the procedures of administering the experiment.

2.27 Subjects. Subjects were from fifth and sixth grade classes at the Perry Elementary and Middle School, Perry, Michigan. Six fifth grade and seven sixth grade classes participated in this field experiment. Classes were randomly assigned to a content treatment: altruism,

verbal aggression, or physical aggression. Within a content area, subjects were randomly assigned to the experimental conditions and the control condition. For each content treatment, a total of 80 subjects participated, 20 per experimental condition. Twenty subjects participated in the control condition. The male/female distribution was based on the actual proportion of males to females in the sample pool. Each condition had 10 fifth grade subjects and 10 sixth grade subjects.

2.3 Questionnaire Instruments

2.31 Instrument Considerations.

The issues of concern in constructing the experimental instrument were the type of items to use to assess learning of social behaviors; how these items should be generated; if these items should be measured with both ordinal and ratio scales; how to ask subjects to make direct numerical magnitude estimations on the degree of arousal, positive affect, and attention they experienced as a result of the manipulations; and how to create items to check manipulations.

The foremost issue of concern was whether fifth and sixth grade school children could reliably use a ratio-scaling measurement technique. In considering the use of ratio-scale measures, an issue that required attention was how to design an instrument that would provide suitable

training examples. Discussion of these considerations follows below.

2.32 Development of Dependent Variables. The dependent variables were *social learning*, *attention*, *positive affect*, and *arousal*. To assess the degree of social learning, hypothetical situations were used to measure future physical aggressive behavior, verbal aggression behavior, and altruistic behavior. The items needed to be relevant to the subjects and to represent realistic situations. We chose to generate the situations from same-age subjects. The content validity can be ensured by the plan and procedures of construction, since content validity is mainly determined by rational thinking rather than empirical testing (see Nunnally, 1967). Hence, a two-step procedure was followed.

The first step involved interviewing fifth and sixth grade children from the Grand Ledge School System with regard to the definitions of the three social behaviors. These children were asked to list all the times that they might help another person, hit another person, and yell at another person. These lists were gathered from two fifth grade classes and two sixth grade classes (an N of approximately 120 students). This information was then tallied for frequency of response. Those situations (responses) that occurred ten times or more generated the questions

to be used in a second interview with two different fifth and sixth grade classes in Grand Ledge (N of approximately 120 students; see Appendix C for Instrument for Response Categories). The purpose of this second interview was to generate the responses to the most frequently mentioned situations. For example, when students were asked to list situations where they might hit someone (physical aggression), a frequently mentioned answer was "when a kid at school threatens to beat me up." This statement then formed the question, "What do you do when a kid at school threatens to beat you up?" and was presented to the second group of students. The most frequent response from the second interviews was "fight with the kid," thus the item, "A kid at school threatens to beat you up, so you fight with this kid. How often do you do this?" was generated (see page three, item number two of Post-Experimental Questionnaire, Appendix D). The purpose of this second interview, as mentioned, was to generate the responses to the situations, and also, to validate the content area to which the situation belonged (e.g., physical aggression). If, for example, the subjects would have frequently responded to an identified physical aggression item with a verbal aggression type response, this item would not be used as a physical aggression item. The reason for this would have been that it was too ambiguous as to

which content area the item fit best. Through this process, 18 hypothetical situations (six for each content area) were generated. These 18 items were constructed with the exact language used by the children.

The six items for altruism were:

1. A friend of yours is frightened by a thunderstorm, so you comfort him/her by telling them why they shouldn't be scared. (AL 1)

2. You are playing ball during recess and one of your teammates is about to get hit with the ball so you tell them to watch out. (AL 5)

3. You are swimming in a lake, and someone drops their ring in the water, so you dive in and try to get it. (AL 7)

4. One of your classmates is sad, so you try to cheer them up. (AL 12)

5. A friend is feeling bad because they keep making silly mistakes trying to play a new game, so you teach them how to play the game right. (AL 14)

6. A classmate doesn't have a pencil and wants one of yours, so you give him/her one. (AL 17)

The six items of verbal aggression were:

1. Someone calls you a turkey, so you call him/her a name back. (VA 3)

2. One of your classmates says you copied their homework, but it isn't true, so you call the kid a liar. (VA 6)

3. One of your classmates constantly talks during class so you tell the person to shut up. (VA 9)

4. A kid teases you, so you tease the kid back. (VA 10)

5. You are going to recess and someone runs into you in the hall, so you yell that they better watch it. (VA 15)

6. Suppose you are playing a ball game and a kid throws the ball at your head while you aren't looking and it hits you. You scream at the kid not to do it again. (VA 18)

The six items for physical aggression were:

1. A kid at school threatens to beat you up, so you fight with him/her. (PA 2)

2. A kid steals your marbles, so you beat the kid up. (PA 4)

3. Someone hits your friend, so you hit them back. (PA 8)

4. Someone won a boulder off you, but you know they cheated, so you grab it away from them. (PA 11)

5. You work real hard to finish your homework. Some kid takes your papers and rips them up, so you hit the kid. (PA 13)

6. You are waiting in line at the water fountain at school and someone cuts in front of your, so you push him/her out. (PA 16)

The scale used for these 18 items was a ratio scale where "0" equals "I would never do this," and "10" equals "I would probably do this." Six of these 18 items were repeated on the last page of the questionnaire labeled either AL, VA, or PA. These items were measured with the four-point scale of "almost always," "usually," "sometimes," "almost never." Depending on which content area the children were in, only the six items assessing that social

behavior (e.g., physical aggression) were repeated. The purpose of repeating these items was to enable the researcher to have a check on the consistency of the subject's responses. The control group responded to all 18 items with the ratio scale and with the four-point scale.

Multiple items were used to measure the effects of the experimental treatments on arousal, positive affect, and attention. Arousal was measured with three items. These items assessed how angry, how sad, and how scared the film made the child feel. For instance, one item states, "Sometimes people feel angry." Imagine someone borrowing something of yours without asking. *Call how angry you are* 10. *Not being angry at all* we'll call 0. Now think about the film. "How angry did the film make you feel?" Positive affect was measured with four items. These items assessed how happy, pleased, and excited the child felt after viewing the film, and how willing the child was to view it again (exploratory behavior). Attention was measured by asking the subject to assess how much he/she paid attention to the film, and how interesting the subject thought the film was.

2.33 Manipulation Checks. Several items served as manipulation checks. These items measure the subject's understanding of the content and perception of intensity and frequency. Four items served as content manipulation checks. The first three items measure the subject's

perception on how much hitting, yelling, and helping was portrayed in the film. For instance, to the item asking, "How much hitting was there in the film?" it was expected that subjects in the altruism and verbal aggression content groups would respond zero, for "no hitting at all." The fourth content manipulation check item asked the subjects to circle the answer which best described the film they saw. The three choices were: "People Helping People," "People Hitting People," and "People Yelling at People."

Three items served as checks for the intensity manipulation. These items asked the subjects to assess "how hard" people in the film were yelling, "how strongly" people were helping others in the film, and "how hard" people were hitting others in the film. The frequency manipulation check was determined by items which asked the subject "how many times" did someone help another person, hit another person, and yell at another person in the film. The measures for all the manipulation checks items used a direct magnitude estimation scale.

2.34 Consideration for Direct Magnitude-Estimation Procedures. One issue that arises when direct-magnitude estimation procedures are used for the measurement of psychophysical stimuli is the ability of the subject to make reliable judgments.

The scales found in the Post-Experimental Questionnaire (see Appendix D) were constructed by the methods of magnitude and ratio estimation. These methods were developed by S. S. Stevens (cf., 1956) over the past forty years. Considerable work on these scales has been provided by Ekman (1961) and Shinn (1969b, 1974) in their use in sociology and political science; Sellin and Wolfgang (1964) in research on juvenile delinquency; and by Hamlin (1971, 1974) in their application in sociology. The procedures of direct magnitude estimation require subjects to give direct estimates of the magnitudes of some stimuli on some continuum (cf., Torgerson, 1958). These methods yield scales constituting measurement at the ratio level. Torgerson (1958, p. 96) defines a ratio judgment as "a subjective estimate with (a) the origin anchored at an absolute zero and (b) the value of one of the two non-zero stimuli specified." The foremost advantage of a ratio scale is that there are no numerical boundaries, that is, it is infinite and can take on any numerical value. The subject is not limited in his/her estimates. In addition, because the model underlying a ratio scale is that of the real number system, it is susceptible to the fundamental operations of algebra: addition, subtraction, division, and multiplication, thus allowing all the power of mathematics, including algebra, calculus,

analytic geometry, and all the powerful statistical methods (see Nunnally, 1967). One goal of the research was to study and assess the feasibility of using such techniques with elementary school-age subjects. If it can be determined that children can use these scaling procedures, then this research will have methodological importance. Many studies (e.g., Shinn, 1969a, 1969b; Selling & Wolfgang, 1964) have reported the reliable use of such scaling procedures; however, none to date have demonstrated its reliability with children. With adult samples (college-age subjects), success has been reported when there has been no training of subjects (Shinn, 1969a, 1969b; Sellin & Wolfgang, 1964), as well as when subjects have been trained to make magnitude estimates (see Hamlin, 1974). In these studies success was demonstrated with high reliabilities between two samples responding to the scales. Rainwater (1972) reports that his samples of adults learned very quickly how to do magnitude estimation and that his attitudinal experiments have turned out to be replicable.

2.35 Development of Direct-Magnitude Estimation Procedures. First, a method had to be devised which would allow the researcher to acquire information on school-age children's ability to make numerical estimations of stimuli. Second, a training program which would provide examples for

practice and instructions needed to be developed. No studies to date had used such elaborate scaling methods with elementary school-age subjects and there was little information available as to how to proceed. The first task was to evaluate how children (ages 11 to 13) use the required number system. Direct-magnitude estimation requires multiplication and division skills. A series of interviews were arranged with fifth and sixth grade classes in Grand Ledge and Dimondale, Michigan. A sample of 100 children was used. The purpose of these interviews was threefold. First, it was necessary to establish how children in this age group used the number system; second, it had to be determined if such age groups could make ratio comparisons to the stimulus anchor; and third, it had to be decided how to fix (i.e., at what level) the non-zero anchor point. These interviews were conducted in the first two weeks of May, 1977. Appendix E is a sample of the interview instrument used.

The interview instrument contained a set of questions and instructions on how to use the ratio-scaling technique. For instance, the first practice item states: "If I said to you that eating a piece of cake is an amount of happiness equal to 10, and no happiness at all equals 0, how happy would eating an ice cream sundae make you?" The scale was presented to look like the following:

0 = no happiness

10 = happiness of eating a piece of cake ——— = happiness of eating an ice cream sundae

The scale was followed by a set of instructions. The instructions for the above example stated that "if eating an ice cream sundae makes you happier than eating a piece of cake you would answer with a number *LARGER THAN* 10; if eating an ice cream sundae makes you less happy than eating cake, you would answer with a number *SMALLER THAN* 10." They were then given an example that stated, "If ice cream sundaes make you two times as happy as a piece of cake, you would answer *20*. If they made you ten times as happy, you would answer *100*. What would you answer if they only made you half as happy?" Subjects were then asked a series of questions to assess their abilities in multiplication and division. Here, they were asked, for example, what they would respond if they were three and one-half times as happy eating ice cream as compared to cake, or only one-fourth as happy. They were also asked to explain their answers verbally.

From these interviews several things became apparent. First, from quizzing the sample of subjects on multiplication and division operations, their consistently correct answers made it evident that they were capable of making ratio comparisons. Second, in discussions, the subjects

demonstrated that they were able to translate the numbers into accurate verbal statements. For instance, when questioned what a score of 20 meant, the subjects were able to respond that it was two times as much as the yardstick or that a score of 11 was "just a little bit more" than the yardstick. Third, the subjects seemed happy with and very responsive to the scaling process. When they were asked if they found the scale difficult to use, they generally replied that it was easy and fun. Fourth, it appeared that an anchor of 10 was easy for the subjects to use as a comparison.

This exercise also indicated that this age group of children were capable of making finite discriminations with the numbers. For example, in the above question, some children responded using numbers such as 8, 9, 11, 13, and 14, with regard to how much happiness they derived from eating an ice cream sundae. When asked why they chose such numbers, typical responses were that they liked eating ice cream sundaes either "a little less" or "a little more" than eating cake. These types of responses suggested two points. First, the children were not conceiving the scale in multiples of five or ten, which was feared might be the case. Second, that they were, in fact, using the stimulus anchor as a comparison with which to derive their answer.

As a result of this exercise, it was decided that a direct-magnitude estimation procedure was a viable scaling method. The interviews provided evidence to support the validity of the procedures. Reliability estimates, determined from actual testing, will be presented in the results section of the dissertation. The information obtained from the interviews also indicated that training subjects in the use of the scale would require several examples and a discussion of the number system. Discussion of the training procedures follows.

2.36 Ratio-Scale Training Procedures. The post-experimental questionnaire contained several ratio-scale training items. The first set of training items provided the scale to be used for the measurement of the 18 hypothetical situations. Here, the yardstick instructed that "0" represents total absence of a behavior and "10" represents the probable occurrence of a behavior. An example item and the scale were presented and accompanied by verbal and pictoral explanations, as illustrated below.

The verbal explanations of the scale were repeated throughout the questionnaire to reinforce the scaling techniques. The use of pictoral explanations for practice items helped to highlight sample answers. They provided an easy method to acquaint the subjects with comparable meanings for the ratio judgments. Each practice item was

We would like to ask you some questions *about things that might happen to your*. The way we are going to answer these questions is very easy. Let's do an example.

EXAMPLE

When someone cries *you laugh* at them. How often would you do this?

REMEMBER ⟶ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER* ⟶ [ ]

INSTRUCTIONS

If you would *PROBABLY* do this, WRITE 10.

The *MORE OFTEN* or the *MORE LIKELY* you are to do this, *WRITE A NUMBER BIGGER THAN 10.*

The *LESS OFTEN* or *LESS LIKELY* you are to do this, *WRITE A NUMBER SMALLER THAN 10.*

If you *NEVER* do this, *WRITE 0.*

*YOU CAN WRITE ANY NUMBER YOU WISH.

For example:

80

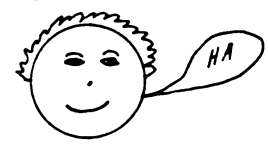
Mike would laugh *VERY OFTEN* at someone crying.

35

Linda would laugh *OFTEN* at someone crying.

10

Marcia would *PROBABLY* laugh at someone crying.



4

Charley is *LESS LIKELY* to laugh at someone crying.

0

Bob would *NEVER* laugh at someone crying.

REMEMBER!! The *BIGGER* the number, the *MORE OFTEN* or *MORE LIKELY* you would do this.

The *SMALLER* the number, the *LESS OFTEN* or the *LESS LIKELY* you are to do this.

Figure 2. Ratio-Scale Training Form.

accompanied with a yardstick. The subjects were instructed how to use the yardstick as a guide for each question. The yardstick provided the anchors with which all ratio comparisons were made. The practice and discussion of ratio judgments and the meanings of the numerical system gave the subjects the opportunity to learn comparable meanings for the ratio judgments. Discussion took place as to what it meant to give a score of, e.g., twice or one-half the yardstick. By continued discussion the subjects soon appreciated how to use the quantitative scale. Practicing on the training items also helped to get the subjects into the habit of comparing each question to the yardstick for that question and not to a previous question.

2.37 Description of Post-Experimental Questionnaire. The instrument administered was titled *School Survey* (see Appendix D). All questionnaires were identical for all experimental treatments within each content area. The questionnaires were color coded for content areas. Blue covered questionnaires were administered to the groups in the physical aggression treatments, pink to the groups in altruism, yellow to the groups in verbal aggression, and white to the control group. The cover of the questionnaire supplied a bogus purpose of the research. It was simply stated that several questions were going to be asked to find out how people react to different events. The

instructions on the cover also informed the subjects that only the researchers at Michigan State University would be privy to their answers.

An outline description of the questionnaire content follows.

Pages	Content	Purpose
1-2	Ratio-scale practice items	To train on use of ratio scale for hypothetical behavior situations
3-7	Hypothetical situation items	To assess social behavior learning
8-10	Ratio-scale practice items	To train on use of ratio scale items for stimulus effect variables
11-13	Arousal items	To assess effects of stimulus
14-15	Positive affect and attention items	To assess effects of stimulus
15-19	Content, intensity, and frequency manipulation checks	To check manipulation success
AL, VA, or PA	Repeated hypothetical situation items	To check response consistency
21	Demographic items	To obtain background information

2.38 Schedule of Interviews. Several interviews were conducted with different groups of children during the development of the stimulus tapes and the post-experimental questionnaire instrument. An outline of the schedule, and purpose of these interviews is presented below.

Date	School	Sample Size	Variable and/or Scale Studied	Purpose
2/77	Dimondale Middle School	50	Intensity scores	To validate the levels of intensity manipulation; to determine children's perceptions of intensity levels.
3/77	Grand Ledge	120	Social learning items (hypothetical situations)	To obtain lists of situations in which children help, yell, and hit other people.
3/77	Grand Ledge	120	Social learning items (hypothetical situations)	To generate responses to the most frequently mentioned situations of altruism, verbal aggression, and physical aggression.
4/77	Grand Ledge and Dimondale Middle School	100	Ratio scores	To develop training procedures and to determine children's ability to use direct-magnitude estimation techniques.
5/77	Dimondale Middle School	60	Pilot study	A trial run of all experimental procedures.

2.4 Experimental Procedures

The field experiment was conducted on June 6 and June 7, 1977. The study was carried out between 11:15 a.m. and 6:00 p.m. Ten persons assisted in the collection of data. Four testers[3] and their four assistants[4] were randomly assigned to an experimental condition. There was a general manager[5] who was responsible for insuring that all scheduled

subjects were accounted for and in the appropriate testing room. The general organizer was also responsible for assigning extra subjects to experimental conditions with missing subjects. A technical assistant[6] was in charge of operating all video equipment. Prior to testing, the testers, assistants, and general manager were given the testing schedules, lists of names of the subjects per condition, testing assignments, and maps of the facilities. Also, an intensive training session was held. During this training session the testers and assistants were familiarized with the experimental procedures. They were instructed on how to train the subjects in using the ratio scales on the post-experimental questionnaires. A set of written instructions was given to the testers and assistants (see Appendix F). These instructions were carefully reviewed. Pre-testing training required six hours.

Each content treatment had four experimental conditions or cells. For each cell, randomly assigned subjects from two fifth and two sixth grade classes were used. For a given cell within a content treatment, ten fifth graders were tested and then ten sixth graders were tested. Testing for each group lasted one hour. At the beginning of a testing period the tester and assistant each went to the assigned classrooms and read the names of subjects needed for the particular experimental condition. Each then

brought her set of subjects to an experimental (testing) room. When the ten subjects were gathered and settled in the testing room, the tester introduced herself and her assistant. She told the subjects that they wanted to ask them about "things that might happen to you and what you think about things you see on television." The experimental questionnaire was given to each subject. The tester explained that first they were going to go over some examples in the questionnaire, watch some clips from television shows and then fill out the questionnaire. The tester proceeded to teach the subjects how to use the ratio scale in the instrument (see Appendix D, Post-Experimental Questionnaire for practice items). Training took approximately fifteen minutes. After the tester answered questions and believed all the subjects knew how to use the scale, she told them they were going to watch some television; first, there was a cartoon (neutral filler). The lights were turned out and the cartoon shown. During the fifteen-second break between the cartoon and TV clips, the tester announced that the subjects would see some clips of real television shows. When the tape was over the tester announced that they were now going to fill out the questionnaire. The tester asked the subjects to turn to page one of the questionnaire. She reviewed the examples and the scale with the subjects and answered any questions. The

subjects were then instructed to turn to page three of the questionnaire. The hypothetical items were read to the subjects. When these items were completed, the subjects were asked to turn to page eight. The subjects were told that they were going to answer some questions about the part of the film that followed the cartoon. Once again the tester and subjects did an example together (see Appendix D) Post-Experimental Questionnaire, pages 8-10). After completing the examples, the subjects continued to fill out the questionnaire. Each item was read to the subjects, with the tester stressing what zero and ten represented for the particular item. When these items were completed the tester stated that they were almost finished and that there were only a few more questions.

For the final part of the questionnaire which sought personal information from the subjects, the tester assured the subjects that only the researchers at Michigan State University would be using this information. When all subjects completed the questionnaire, if there were time remaining, the subjects were given crayons to color the front of the questionnaire. At the end of the testing period, the tester asked the subjects not to discuss the study with any other students because many students in the school would be participating. The subjects were thanked for their assistance and taken back to their classroom.

2.5 Facilities and Apparatus

The field experiments were conducted at the Perry Elementary and Middle School, Perry, Michigan.[7] Both the elementary and middle schools had not previously participated in any communication research studies. This eliminated the potential problem of experiment-wise subjects. The schools had a large class of fifth and sixth grade students from which to select. The facilities at the schools were naturalistic and comfortable. The available facilities allowed for relatively easy execution of the experimental procedures.

Several testing rooms were made available to the research group. Each testing room was spacious and comfortably accommodated a color video tape recorder and monitor and ten tables and chairs for subjects.

All experimental stimulus tapes were played on a 19 inch color monitor. The monitor was placed in the center of the testing room. All subjects had a good view of the television monitor. A video tape technician provided assistance with the technical aspects of data gathering. Four graduate students and five undergraduate students from the Department of Communication, Michigan State University, assisted in the collection of data.

2.6 Ethical Considerations

In this research several ethical issues must be addressed. The first involves the use of children as experimental subjects. This issue has received considerable attention from the scientific community, government agencies, and the public. Guidelines and recommendations have been set forth by the United States Commission on the Use of Human Subjects in Scientific Research (1977), with regard to the appropriate procedures for the use of children in scientific experiments. The Commission has requested that the parents, as legal guardians of the child, determine if the child is to participate in an experiment. Written consent must be obtained in order to use the child as a subject. In compliance with this guideline, written permission for participation in this field experiment was sought from the parents of all subjects prior to testing. In a letter to parents (Appendix G) the nature of the experiment was explained and the content of the stimulus tapes described. Parents were requested to respond whether they chose to have their child participate. Only those children who had written consent participated in the experiment. Written consent was obtained from 100% of the available subjects.

Another concern in the use of children in experiments deals with the question of possible physical or

psychological repercussions to the child as a result of his/her participation in scientific research. Physical risk was minimal or absent. They were not asked to demonstrate any social behaviors and there was no physical contact between subjects. The psychological effects appeared to be positive as opposed to negative. The subjects expressed that they enjoyed watching the television segments and participating in the study. A further issue related to possible harmful psychological effects on the subjects deals with the ethics of exposing school children to segments of televised physical and verbal aggression. This issue is one which is considered by all social scientists studying the effects of television on children. For this particular research project, it is believed that the segments of physical and verbal aggression that were shown to the subjects are typical of their daily television experiences (see Greenberg, 1980), and that the subjects were not being exposed to any type of content which would be unfamiliar or to which they have not been previously exposed. In addition, the antisocial behaviors were limited to hand-to-hand fighting and non-illicit verbal insults. In the high intensity conditions, the physical and verbal aggression acts were typical of television action (see Greenberg, 1980, pp. 99-128).

To insure that the subjects understood the nature of the research project, the author gave a guest lecture to the participating classes on the nature of the study and television and its effects. This lecture was delivered the last week of June, 1977.

CHAPTER 2

FOOTNOTES

[1]The three intensity coders, Chip Steinfeld, Sue Schimmel, and Ken Zgraggen, undergraduate students at Michigan State University.

[2]Marcia Richards, Linda Hogan, Nancy Hale, and Jan Crosby, undergraduate majors in communication, Michigan State University were content analysis coders. They reviewed and selected the segments for the experimental stimulus tapes. The intensity coders verified the intensity scores for each selected segment.

[3]The experimental testers, other than the author, were Nancy Buerkel, Kathy Sherry, graduate students in the Department of Communication, Michigan State University, and Jayne Zenaty, graduate student in the Department of Telecommunication, Michigan State University.

[4]The four assistants in this study were Linda Hogan, Sue Schimmel, Patricia McKay, and Kim Burek, undergraduate students at Michigan State University.

[5]Janice Spodarek, an undergraduate student in the Department of Communication, Michigan State University, acted as general manager and organizer.

[6]Ken Zgraggen, the technical assistant, was responsible for operating all video equipment.

[7]Thanks are extended to Duane Seastrom, Principal of the Perry Middle School and Diana Stuart, Principal of the Perry Elementary School, for providing the facilities and subjects used in this study.

CHAPTER 3

RESULTS

In this chapter the results of the experiment will be presented. This chapter will attempt to discuss the procedures used for index construction, to evaluate the validity on the manipulations, to present information on reliability and analytical procedures, and finally to discuss the effects of the independent variables. Each issue will be discussed in a section of this chapter. A brief summary will conclude the chapter.

3.1 Index Construction

3.11 Dependent Variables. Several methods were used to determine the most appropriate technique for constructing indices for the dependent variables. The first step involved analyzing the intercorrelations of the dependent variables. Tables 3.1-3.9 contain the correlations of the items for each dependent variable. Tables 3.1-3.3 contain the intercorrelations for the *ratio-scaled social learning* items. Tables 3.4-3.6 contain the intercorrelations for the *Likert-scaled social learning* items. Tables 3.7-3.9 contain the intercorrelations of the items for the arousal, positive

Table 3.1

Intercorrelations[a] for Ratio Scaled Physical Aggression Social Learning Items for Three Content Treatment Groups (N = 240)[b]

Dependent Items[c]	PA2	PA4	PA8	PA11	PA13
PA4	.5594				
PA8	.4069	.3821			
PA11	.4215	.4599	.2676		
PA13	.5430	.5422	.4053	.4459	
PA16	.3542	.4075	.2596	.4896	.5539

[a]All correlations significant at $p < .001$, one-tailed test.

[b]Logarithmically transformed variables averaged over physical aggression, verbal aggression, and altruism subjects.

[c]See Chapter 2, Section 2.32 for description of items.

Table 3.2

Intercorrelations[a] for Ratio-Scaled Verbal Aggression Social Learning Items for Three Content Treatment Groups (N = 240)[b]

Dependent Items[c]	VA2	VA6	VA9	VA10	VA15
VA6	.4586				
VA9	.4091	.4332			
VA10	.5970	.3961	.4674		
VA15	.3778	.3476	.3902	.3839	
VA18	.3610	.4251	.4231	.3532	.4857

[a]All correlations significant at $p < .001$, one-tailed test.

[b]Logarithmically transformed variables averaged over physical aggression, verbal aggression, and altruism subjects.

[c]See Chapter 2, Section 2.32 for description of items.

Table 3.3

Intercorrelations[a] for Ratio-Scaled Altruism Social Learning Items for Three Content[b] Treatment Groups (N = 240)

Dependent Items[c]	AL1	AL5	AL7	AL12	AL14
AL5	.3690				
AL7	.2520	.4585			
AL12	.4759	.4928	.4702		
AL14	.4265	.3912	.4298	.6803	
AL17	.2857	.4238	.4203	.4797	.5149

[a] All correlations significant at $p < .001$, one-tailed test.

[b] Logarithmically transformed variables averaged over physical aggression, verbal aggression, and altruism subjects.

[c] See Chapter 2, Section 2.32 for description of items.

Table 3.4

Intercorrelations[a] for Likert-Scaled Physical Aggression Social Learning Items for Physical Aggression Treatment Group (N = 80)

Dependent Items[c]	PA2	PA4	PA8	PA11	PA13
PA4	.5936				
PA8	.4100	.4347			
PA11	.3588	.4237	.3814		
PA13	.5214	.4792	.5019	.4847	
PA16	.4236	.4700	.3666	.3809	.4039

[a]All correlations significant at $p < .001$, one-tailed test.

[b]Logarithmically transformed variables.

[c]See Chapter 2, Section 2.32 for description of items.

Table 3.5

Intercorrelations (and One-Tail Levels of Significance) for Likert-Scaled Verbal Aggression Social Verbal Aggression Treatment Group[a]

Dependent Items[b]	VA3	VA6	VA9	VA10	VA15
VA6	.5374 (.001)				
VA9	.3033 (.003)	.2522 (.012)			
VA10	.5417 (.001)	.3007 (.003)	.2906 (.004)		
VA15	.4867 (.001)	.2332 (.019)	.2585 (.010)	.3324 (.001)	
VA18	.4733 (.001)	.2611 (.010)	.1588 (.080)	.2373 (.017)	.4352 (.001)

[a]Logarithmically transformed variables.

[b]See Chapter 2, Section 2.32 for description of items.

Table 3.6

Intercorrelations (and One-Tail Levels of Significance) for Likert-Scaled Altruism Social Learning for Altruism Treatment Group (N = 80)[a]

Dependent Items[b]	AL1	AL5	AL7	AL12	AL14
AL5	.2222 (.024)				
AL7	.2723 (.007)	.3152 (.002)			
AL12	.5357 (.001)	.3283 (.001)	.1628 (.075)		
AL14	.4328 (.001)	.4569 (.001)	.2674 (.008)	.3673 (.001)	
AL17	.1118 (.162)	.3693 (.001)	.1742 (.061)	.2974 (.004)	.2870 (.005)

[a]Logarithmically transformed variables.

[b]See Chapter 2, Section 2.32 for description of items.

Table 3.7

Intercorrelations[a] for Arousal Items for Three Content Treatment Groups (N = 240)[b]

Dependent Items[c]	Angry	Sad
Sad	.4498	
Scared	.3012	.4330

[a]All correlations significant at $p < .001$, one-tailed test.

[b]Logarithmically transformed variables averaged over physical agression, verbal aggression, and altruism subjects.

[c]See Chapter 2, Section 2.32 for description of items.

Table 3.8

Intercorrelations[a] for Positive Affect Items for Three Content Treatment Groups (N = 240)[b]

Dependent Items[c]	Happy	Pleased	Excited
Pleased	.5504		
Excited	.4851	.5745	
Do Again	.4105	.4250	.4470

[a]All correlations significant at $p < .001$, one-tailed test.

[b]Logarithmically transformed variables averaged over physical aggression, verbal aggression, and altruism subjects.

[c]See Chapter 2, Section 2.32 for description of items.

Table 3.9

Intercorrelations[a] for Attention Items for Three Content Treatment Groups (N = 240)[b]

Dependent Items[c]	Interest
Pay attention	.6530

[a]One-tailed test, $p < .001$.

[b]Logarithmically transformed variables averaged over physical aggression, verbal aggression, and altruism subjects.

[c]See Chapter 2, Section 2.32 for description of items.

affect and attention variables. The intercorrelations demonstrate a strong relationship among the sets of items for each dependent variable. Based on this analysis, the next step involved performing a factor analysis on the items. Table 3.10 contains the factor scores, the factor score coefficients, means and standard deviations for all dependent items. As seen in Table 3.10 the six ratio-scaled items for physical aggression load on one factor with factor scores ranging from .41 to .79. The six ratio-scaled items for verbal aggression load on one factor with factor scores ranging from .50 to .71. The six ratio-scaled items for altruism also load on one factor with factor scores ranging from .53 to .81. The items for arousal: angry, scared, and sad, load on one factor with factor scores of .53, .50, and .81, respectively. One factor also emerges for positive affect with the four items: happy, pleased, excited, and do again. Here the factor scores range from .52 to .73. The items "how much attention did you pay to the film" and "how interested were you in the film," load on one factor with factor scores of .62 and .72 respectively.

Table 3.11 presents the factor scores, coefficients, means and standard deviations for the social learning items measured with a Likert (four-point) scale. The same factor structure emerges as found with the ratio-scaled items, except two factors appear for altruism.

Table 3.10

Factor Score Coefficients, Means, and Standard Deviations for All Dependent Items for Three Content Treatment Groups[a]

Dependent	Items[b]	Factor Score	Factor Score Coefficients	Mean	Standard Deviation
PA2	(N = 240)	.69	.16380	.9131	.8474
PA4	(N = 240)	.64	.11578	.7993	.8832
PA8	(N = 240)	.41	.02886	.9880	.8227
PA11	(N = 240)	.58	.11199	.9347	.8410
PA13	(N = 240)	.79	.23636	1.6278	1.1659
PA16	(N = 240)	.66	.10398	1.3943	.9510
VA3	(N = 240)	.71	.15580	1.5332	.8905
VA6	(N = 240)	.57	.10666	1.3684	.9799
VA9	(N = 240)	.62	.09865	1.4666	.9181
VA10	(N = 239)	.65	.10927	1.3488	.8322
VA15	(N = 240)	.54	.09431	1.0403	.8575
VA18	(N = 240)	.50	.07458	1.4619	1.1247
AL1	(N = 240)	.53	.09023	1.2476	.6708
AL5	(N = 240)	.64	.15949	1.7240	.8843
AL7	(N = 240)	.62	.15399	1.2931	.8695
AL12	(N = 240)	.81	.34910	1.5996	.9661
AL14	(N = 239)	.74	.24683	1.5917	.7774
AL17	(N = 240)	.63	.14115	1.5488	.8433
Angry	(N = 240)	.53	.16593	.6413	.7791
Scared	(N = 239)	.50	.12027	.3161	.5859
Sad	(N = 240)	.81	.60456	.4379	.6479
Happy	(N = 240)	.63	.25976	.8735	.7233
Pleased	(N = 238)	.62	.23228	.8628	.7445
Excited	(N = 237)	.73	.40856	.8645	.7153
Do again	(N = 235)	.52	.16800	1.2132	.7204
Pay attn.	(N = 235)	.62	.31841	1.2408	.8286
Interest	(N = 236)	.72	.55580	.9256	.7165

[a]Logarithmically transformed variables averaged over physical aggression, verbal aggression, and altruism subjects.

[b]See Chapter 2, Section 2.32 for description of variables.

Table 3.11

Factor Score Coefficients, Means, and Standard Deviations of Likert-Scaled Social Learning Items for Each Content Treatment Group[a]

Dependent Items[b]		Factor Score	Factor Score Coefficients	Mean	Standard Deviation
PA2	(N = 80)	.71	.22280	2.1500	1.0446
PA4	(N = 80)	.74	.26728	2.0000	1.1024
PA8	(N = 80)	.62	.16424	2.1875	1.0565
PA11	(N = 80)	.60	.15148	2.1750	1.1112
PA13	(N = 80)	.73	.26416	2.7875	1.1980
PA16	(N = 79)	.61	.15874	2.5570	1.1065
VA3	(N = 79)	.90	.65572	2.6709	.9570
VA6	(N = 78)	.54	.07208	2.5385	1.0653
VA9	(N = 79)	.40	.09531	2.7215	1.0493
VA10	(N = 79)	.58	.10277	2.4557	1.0102
VA15	(N = 78)	.58	.14648	2.0513	1.0051
VA18	(N = 79)	.53	.09637	2.5570	1.1739
AL1	(N = 71)	.99 (Factor 1)	1.05852	3.0563	.9984
AL5	(N = 71)	.75 (Factor 2)	.53081	3.3803	.8679
AL7	(N = 71)	.34 (Factor 2)	.11419	2.6901	1.0636
AL12	(N = 71)	.48 (Factor 1)	-.04912	3.0141	.9334
AL14	(N = 71)	.51 (Factor 2)	.25311	3.0986	.9127
AL17	(N = 71)	.50 (Factor 2)	.19332	3.3239	.8581

[a]Logarithmically transformed variables. PA items for physical aggression treatment group, VA items for verbal aggression treatment group, and AL items for altruism treatment group.

[b]See Chapter 2, Section 2.32 for description of items.

Indices were constructed for physical aggression, verbal aggression, altruism, arousal, positive affect, and attention using the factor score coefficients as a weighting device. Two indices were constructed for the two factors of the Likert-scaled altruism variable. The following formula was used to construct the indices:

Variable = Factor Score (Item-Mean)/Standard Deviation +
Factor Score (Item-Mean)/Standard Deviation +
... n Item

All subsequent analyses to be reported are performed on the constructed indices.

3.12 Reliability of Indices. To test the reliability of constructed indices, Cronbach's measure for reliability was performed. Table 3.12 presents Cronbach's reliability coefficients (α's) for each dependent variable. Cronbach's α is equivalent to the correlation of the true (reliable) score with the observed score from adding the items (Nunnally, 1967). As seen in Table 3.12, the range for α is .6535 (arousal) to .8263 (physical aggression, Likert scale). All coefficients are significant at $p < .00001$. Cronbach's alpha is a precise estimate of reliability. The indices are highly reliable for each of the dependent variables.

Table 3.12

Reliability Estimates[a] for Constructed Indices

Constructed Dependent Variable	Cronbach's Internal Consistency Reliability Coefficient (α)[b]	Standardized Item Alpha	N
Physical aggression (ratio scale)	.8206	.8210	240
Verbal aggression (ratio scale)	.8091	.8133	240
Altruism (ratio scale)	.8244	.8239	240
Arousal	.6535	.6617	240
Positive affect	.7886	.7883	240
Attention[c]	----	----	---
Physical aggression (Likert scale)	.8263	.8263	80
Verbal aggression (Likert scale)	.7500	.7557	80
Altruism, factor 1[c] (Likert scale)	----	----	--
Altruism, factor 2 (Likert scale)	.7221	.7263	80

[a]Logarithmically transformed variables.

[b]All reliability coefficients significant at $p < .00001$.

[c]Cronbach's alpha could not be computed for attention and factor 1 altruism since at least three items are needed.

3.2 Effectiveness of Manipulations

3.21 Content Manipulation.

Four items on the post-experimental questionnaire served as checks on the manipulation of media content. Subjects were asked to respond to the following questions:

How much hitting was there in the film?

How much yelling was there in the film?

How much helping was there in the film?

The scale used for these items was a ratio scale in which *0 = no such behavior occurred*, and *10 = an average amount of the behavior had occurred*. Subjects made ratio estimates, using any non-negative integer. A fourth item asked the subjects to circle the answer which best described the film they saw. The three choices were: *People Hitting People*, *People Yelling at People*, and *People Helping People*.

Eighty-one percent (65 out of 80) of the subjects who saw the physical aggression content circled the response *People Hitting People*. Seventy-eight percent (62 out of 80) in the verbal aggression treatment circled the response *People Yelling at People*. Eighty-nine percent (71 out of 80) in the altruism treatment circled the response *People Helping People*.

Table 3.13 presents the statistical results of t-tests performed on the content manipulation check items for each treatment group. All data have been logarithmically transformed (see Section 3.3). Table 3.13 contains the results for the physical aggression content check ("how much hitting was there in the film?"). Here, the physical aggression treatment group is compared to the verbal aggression plus altruism group. It is clear that subjects in the physical aggression are significantly different in reporting the amount of hitting in the film from subjects in the two other groups (t = 15.033, 238 $d.f.$, $p < .001$).[1] The physical aggression treatment subjects report significantly more hitting.

For the verbal aggression content manipulation item ("how much yelling was there in the film?"), we find significant differences between the verbal aggression groups and the two other combined content groups ($t = 5.770$, 238 $d.f.$, $p < .001$). The verbal aggression treatment subjects report significant more yelling occurring in the film than the other two groups.

Similar findings are also seen in Table 3.13 for the altruism content manipulation item. Subjects in the altruism treatment report significantly more helping than the combined subjects in the physical and verbal aggression treatments ($t = 7.138$, 238 $d.f.$, $p < .001$).

Table 3.13

Results[a] of t-Tests (One-Tailed) for Content Manipulation Item for Each Content Treatment Group by Two Other Treatment Groups (N = 240)

Dependent Variable	Content Treatment Group (N = 80) $\bar{X}$	Two Other Treatment Groups (N = 160) $\bar{X}$	t	d.f.	p
How much *hitting*? (physical aggression treatment group)[b]	1.52	.28	15.033	238	.001
How much *yelling*? (verbal aggression treatment group)[c]	1.20	.68	5.770	238	.001
How much *helping*? (altruism treatment group)[d]	1.15	.51	7.138	238	.001

[a]Logarithmically transformed variables.

[b]Compared to combined verbal aggression and altruism treatment groups.

[c]Compared to combined physical aggression and altruism treatment groups.

[d]Compared to combined physical and verbal aggression treatment groups.

It appears that subjects clearly recognized and were able to identify the type of content they viewed.

3.22 Frequency Manipulation. To determine if subjects could differentiate between the high level of frequency (twelve segments) and the low level of frequency (two segments), subjects within each content group were asked to assess how often the content behavior had occurred. That is, subjects in the physical aggression treatment group were asked: "How *many times* did someone hit another person in the film?" Subjects in the verbal aggression treatment were asked, "How *many times* did someone *yell* at another person in the film," and subjects in the altruism treatment were asked, "How *many times* did someone *help* another person in the film?" The scale used for these items was an open-ended type scale in which *0 = no hitting at all in the film,* or *no yelling at all in the film,* or *no helping at all in the film,* depending on content group. Subjects were asked to write the *number of times someone hit, yelled, or helped in the film.*

Table 3.14 contains the statistical results of t-tests performed for each frequency manipulation item. The analyses were performed on logarithmically transformed data (see Section 3.3).

Table 3.14

Results[a] of t-Tests (One-Tailed) for Frequency Manipulation Item for Each Content Treatment Group by Level of Frequency (N = 80)

Dependent Variable	Frequency: High ($N = 40$) $\bar{X}$	Frequency: Low ($N = 40$) $\bar{X}$	t	d.f.	p
How *many times* was someone hit? (physical aggression treatment group)	1.61	1.34	1.721	78	.089
How *many times* did someone yell? (verbal aggression treatment group)	1.08	.84	1.557	78	.123
How *many times* did someone help another? (altruism treatment group)	.95	.71	1.959	78	.052

[a]Logarithmically transformed variables.

We do not find significant mean differences for the frequency manipulation item in the physical treatment group (t = 1.721, 78 d.f., $p < .089$) nor in the verbal aggression treatment (t = 1.557, 78 d.f., $p < .123$).

We do see mean differences approaching significance for the frequency manipulation item in the altruism group (t = 1.959, 78 d.f., $p < .052$).

These results indicate that the frequency manipulation was not successful, although the direction of all mean differences was as desired.

3.23 Intensity Manipulation. To determine the success of the manipulation of intensity, subjects were asked to make ratio estimates as to "how hard" or "strongly" the given content behavior occurred. The item used to assess intensity in the physical aggression treatment was "How hard were people hitting in the film?" The scale used was a ratio scale in which *0 = no hitting at all in the film* and *10 = as hard as hitting someone in the face.* The item used in the verbal aggression treatment was "How *hard* were people yelling in the film?" For this item, *0 = no yelling at all,* and *10 = as hard as someone yelling, shut up.* For the altruism treatment, the item was "How *strongly* were people helping in the film? The scale here was *0 = no helping at all in the film,* and *10 = as strongly as helping a hurt friend.*

Table 3.15 presents the results of t-tests performed on the intensity manipulation item for each content treatment group. The analyses were performed on logarithmically transformed data (see Section 3.3).

The mean differences for intensity in the physical aggression treatment approach significance at $p < .065$ ($t = 1.770$, 78 d.f.). Intensity does not have a significant effect in the verbal aggression treatment ($t = 955$, 78 d.f., $p < .337$) nor is it significant in the altruism treatment ($t = 1.676$, 78 d.f., $p < .094$). Although not significant, all mean differences are in the appropriate direction.

In summary, subjects were able to differentiate the type of content they viewed. However, they did not differentiate between the two levels of frequency or the two levels of intensity. Discussion of this issue will be presented in Chapter 4 of this dissertation.

3.3 Establishing a Metric

3.31 Problem of Heteroscadacity. One important assumption of the analysis of variance is homogeneity of the error variance. The F statistic is said to be robust enough to withstand moderate deviations and such deviations will not seriously affect the sampling distribution of the resulting F statistic. However, when examining the effects of the treatments upon the variance in the experimental data set, we find that we do not have equal variances.

Table 3.15

Results[a] of t-Tests (One-Tailed) for Intensity Manipulation Item for Each Content Treatment Group by Level of Intensity (N = 80)

Dependent Variable	Intensity: High (N = 40) $\bar{X}$	Intensity: Low (N = 40) $\bar{X}$	t	d.f.	p
How *hard* was someone hitting another? (physical aggression treatment group)	1.50	1.23	1.770	78	.065
How *hard* was someone yelling? (verbal aggression treatment group)	1.27	1.13	.995	78	.337
How *hard* was someone helping another? (altruism treatment group)	1.19	.94	1.676	78	.094

[a]Logarithmically transformed variables.

From an examination of cell variance for the four experimental conditions, we see that the ratio of treatment variances often differ dramatically for the raw data. For example, examining the first altruism social learning item (ALI) for the altruism content group, we find in the high frequency, high intensity condition (N = 20) a mean of 534.4, standard deviation of 928.4. In the high frequency, low intensity condition, the mean is 29.0 and standard deviation is 2.2 (see Appendix H for a comparison of untransformed and transformed means and standard deviations for all dependent items and manipulation items). Such heteroscadacity of variance may pose a problem for ANOVA, which assumes homogeneity of variance.

3.32 Logarithmic Transformations. In the data analysis, the data are transformed logarithmically, such that if X is the original score and X' the transformed score,

$$X' = \log_{10} (X + 1).$$

This transformation is relatively successful in eliminating heteroscadacity in the sample data, and it corrects for non-linearities expected in magnitude estimation data (Hamblin, 1974).

Logarithmic transformations are appropriate when psychophysical measurements are at the ratio level. Stevens (1957, 1960) found that stimulus-response relationships can be described by a power law: $\psi = C\phi^n$, where ψ is the magnitude of the sensory response, ϕ is the magnitude of the related physical stimulus, and C and n are empirical parameters. Using a logarithmic transformation, the above equation becomes linear:

$$\log \psi = \log C + n \log \phi.$$

What is implied here is that the subjective response (which is a direct ratio estimation of the physical stimulus by the subject) will increase as a power function of the magnitudes of the related physical stimuli (cf. Stevens, 1960). Thus, by performing a logarithmic transformation, a linear relationship is established, thus allowing standard analyses utilizing the general linear model to be performed.

In summary, there appear to be two very important and valid reasons for performing logarithmic transformations on ratio data: (1) because it stablizes unequal variances, and (2) because the psychophysical law implies that psychological responses of a related physical stimuli increase as power functions of the magnitudes of that related physical stimuli.

3.4 Treatment of Missing Data

For all items that were missing data, the logarithmic mean for that item was used. For one subject, missing data had to be estimated for the ratio-scaled verbal aggression item (VA10): "A kid teases you, so you tease him back." For one subject, missing data had to be estimated for the ratio-scaled altruism item (AL14): "A friend is feeling bad because they keep making silly mistakes trying to play a new game, so you teach them how to play the game right." For one subject, missing data had to be estimated for the item asking, "How scared did the film make you feel?" For two subjects, missing data had to be estimated for the item asking, "How pleased did the film make you feel?" Three subjects were missing data for the item, "How excited did the film make you feel?" Five subjects were missing data for the item: "Would you want to see the film again." Five subjects were also missing data for the item, "Did you pay attention?" For four subjects, the logarithmic means were used for the item, "How interesting was the film you watched?"

For the Likert-scaled social learning items, one subject was missing data for physical aggression item PA16. For verbal aggression, items VA3, VA9, VA10, and VA18 were each missing one subject response and items VA6 and VA15 were each missing two responses. Nine subjects were missing

data for each of the six altruism items. The logarithmic means were used.

3.5 Analytical Procedures

An univariate analyses of variance was performed for each dependent variable for each of the three content treatment groups. This analysis examines the main effects for intensity and frequency. A second analysis (t-test) examines the mean differences for intensity under the high frequency condition. Since some of the dependent variables are correlated (see Table 3.16 for intercorrelations among dependent variables), the analyses to be reported cannot be said to have an experiment-wise error of .05. Experiment-wise error rate is the probability that at least one comparison will be said to be significant when in actuality the null hypothesis is supportable for all comparisons (Hummel and Sligo, 1971). Another error that is involved when dependent variables are correlated and univariate analyses are performed is the error rate per comparison. This error rate is the probability that any given comparison will be said to be significant when in actuality the null hypothesis is true for that comparison (Ryan, 1959).

The expected dependency among the variables can affect the type I error rates. If the dependent variables are correlated, then the comparisons based on these variables will be dependent. The probability level for the error

Table 3.16

Intercorrelations (and One-Tail Levels of Significance) Among Dependent Variables[a]

Dependent Variables[b]		X_1[c]	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
X_2	Verbal aggression	.7296								
		(.001)								
X_3	Altruism	.0964	.3227							
		(.068)	(.001)							
X_4	Arousal	.1798	.0879	.0416						
		(.003)	(.087)	(.261)						
X_5	Positive affect	.2863	.2309	.1579	.1531					
		(.001)	(.001)	(.007)	(.009)					
X_6	Attention	.3195	.2983	.3328	.0232	.4769				
		(.001)	(.001)	(.001)	(.360)	(.001)				
X_7	Physical aggression (Likert)	.7771	.5014	.0453	.0279	.3477	.2818			
		(.001)	(.001)	(.345)	(.403)	(.001)	(.006)			
X_8	Verbal aggression (Likert)	.6283	.6444	.0287	.0882	.1544	.0373	....[d]		
		(.001)	(.001)	(.400)	(.218)	(.086)	(.371)			
X_9	Altruism (Likert, factor 1)	-.4623	-.3183	.2434	-.2516	-.1228	-.0348	....[d]	....[d]	
		(.001)	(.002)	(.015)	(.012)	(.139)	(.380)			
X_{10}	Altruism (Likert, factor 2)	-.2471	-.0921	.4696	-.2076	-.1390	-.1654	....[d]	....[d]	....[d]
		(.014)	(.208)	(.001)	(.032)	(.109)	(.071)			

[a] Logarithmically transformed variables averaged over physical agression, verbal aggression, and altruism for ratio variables (N = 240); and averaged over subjects within experimental group for Likert variables (N = 80).

[b] Dependent variables index of dependent items, see Section 3.1.

[c] Physical aggression.

[d] Uncomputable.

rates with uncorrelated variables is $\underline{\alpha}$; with ρ dependent and uncorrelated variables, the probability level is $1 - (1 - \underline{\alpha})^{\rho}$. It should be noted, though, when only univariate analyses are performed and one is dealing with multivariate data, the experiment-wise error rate is affected and would rarely equal $1 - (1 - \underline{\alpha})^{\rho}$, and the actual probability generally would not be known (Bock & Haggard, 1968; Hummel & Sligo, 1971).

A multivariate technique, such as multivariate analysis of variance (MANOVA) would correct this problem in the abstract but would leave us with additional problems. First, it would not be correct to assume a simple factor structure for the dependent variables, since they are viewed as causally related. Thus, with a multivariate analytical procedure, the true interdependency of the dependent variables would not be taken appropriately into account. Second, MANOVA only allows for an overall test that "a nonchance relationship exists between the independent and response variables and that there exists at least one linear combination of responses which significantly discriminates among the K treatments" (Bockner & Fitzpatrick, 1980, 168). A MANOVA test will not provide information about underlying dimensions, the amount of variance accounted for by each variable, or the most significant linear combinations of dependent variables. Univariates F-test do provide the information to examine these issues (Finn, 1974).

It has been suggested (e.g., Finn, 1974; Bockner & Fitzpatrick, 1980) that univariate F-tests can be performed on each dependent variable of a multivariate data set and that these variables can be protected against inflated error rates by setting the critical level of $5\%/\rho$ for each F-test. Thus, considering the structure of the data set and the problems of a MANOVA test, univariate ANOVAs appear to be the most informative technique for statistical analysis.

Discussion of the univariate ANOVAs and t-tests follows in the next section.

3.6 Effects of Independent Variables

3.61 Main Effect for Intensity. Hypotheses 1-4 predict a main effect for intensity on each of the dependent variables. They read:

> H_1-H_4: Social learning, arousal, positive affect, and attention will be greater for children exposed to high intensity television stimuli than children exposed to low intensity stimuli.

Tables 3.17-3.23 contain the statistical results of an analysis of variance for intensity on each dependent social learning variable for each content treatment group. For each social learning variable there are two ANOVA results. The first is for the ratio-scaled variable, the second is for the Likert-scaled variable.

Tables 3.17-3.18 present the cell means and results of the analysis of variance for the physical aggression social

Table 3.17

Results[a] of Analysis of Variance for Physical Aggression
Social Learning Variable[b] for Physical Aggression
Treatment Group by Level of Frequency
and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	-.09	.08	-.01
	Low	.08	.07	.07
		-.01	.08	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	.259	2	.129	.349	.706
Frequency	.132	1	.132	.357	.552
Intensity	.127	1	.127	.342	.561
Interaction Frequency x Intensity	.182	1	.182	.491	.485
Explained	.441	3	.147	.397	.756
Residual	28.163	76	.371		
Total	28.604	79	.362		

[a]Logarithmically transformed variable.

[b]Ratio-scaled dependent variable.

Table 3.18

Results[a] of Analysis of Variance for Physical Aggression Social Learning Variable[b] for Physical Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	-.03	.10	.03
	Low	-.09	.02	-.03
		-.06	.06	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	.371	2	.185	.215	.807
Frequency	.281	1	.281	.326	.470
Intensity	.090	1	.090	.105	.747
Interaction Frequency x Intensity	.002	1	.002	.002	.963
Explained	.373	3	.124	.144	.933
Residual	65.430	76	.861		
Total	65.802	79	.833		

[a]Logarithmically transformed variable.

[b]Likert-scaled variable.

learning variable for the physical aggression treatment group. First, there is no effect for intensity on the ratio-scaled variable (F 1,79 = .342, $p < .561$), nor is the cell mean for high intensity greater than the cell mean for low intensity. Second, for the Likert-scaled physical aggression variable (Table 3.18) there is no main effect for intensity, although the mean differences are in the desired direction.

Tables 3.19-3.20 contain the cell means and the ANOVA results for the verbal aggression social learning variable for the verbal aggression treatment group. No significant main effect for intensity is found on either scale, nor are the mean differences in the predicted direction for either scale.

Tables 3.21-3.23 present the cell means and the results of the analysis of variance for the altruism social learning variable for the altruism group. First, in Table 3.21, a significant main effect for intensity is found (F 1,79 = 4.558, $p < .036$). The mean differences are in the expected direction. Second, in Table 3.22, a significant main effect for intensity for factor 1 of the Likert-scaled altruism variable is found (F 1,79 = 4.553, $p < .018$). Here too, altruism is greater in the high intensity condition than in the low intensity condition. Third, for factor 2 of the Likert-scaled altruism variable

Table 3.19

Results[a] of Analysis of Variance for Verbal Aggression Social Learning Variable[b] for Verbal Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	-.04	-.15	-.09
	Low	.16	-.24	-.04
		.06	-.19	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	1.382	2	.691	4.234	.018
Frequency	1.316	1	1.316	8.066	.006
Intensity	.066	1	.066	.402	.528
Interaction Frequency x Intensity	.407	1	.406	2.492	.119
Explained	1.788	3	.596	3.653	.016
Residual	12.400	76	.163		
Total	14.189	79	.180		

[a]Logarithmically transformed variable.

[b]Ratio-scaled dependent variable.

Table 3.20

Results[a] of Analysis of Variance for Verbal Aggression
Social Learning Variable[b] for Verbal Aggression
Treatment Group by Level of Frequency
and Level of Intensity (N = 80)

Cell Means

		Frequency: High	Frequency: Low	
Intensity	High	.02	-.21	-.09
	Low	.40	-.22	.09
		.21	-.21	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main Effects	4.239	2	2.119	2.600	.081
Frequency	3.563	1	3.573	4.382	.040
Intensity	.666	1	.666	.817	.369
Interaction Frequency x Intensity	.753	1	.753	.924	.340
Explained	4.992	3	1.664	2.041	.115
Residual	61.964	76	.815		
Total	66.956	79	.848		

[a]Logarithmically transformed variable.

[b]Likert-scaled dependent variable.

Table 3.21

Results[a] of Analysis of Variance for Altruism Social Learning Variable[b] for Altruism Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	.44	.20	.32
	Low	-.43	.29	-.07
		.01	.24	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	4.234	2	2.117	3.109	.050
Frequency	1.130	1	1.130	1.660	.202
Intensity	3.104	1	3.104	4.558	.036
Interaction Frequency x Intensity	4.554	1	4.554	6.688	.012
Explained	8.788	3	2.929	4.302	.007
Residual	51.751	76	.691		
Total	60.539	79	.766		

[a]Logarithmically transformed variable.

[b]Ratio-scaled dependent variable.

Table 3.22

Results[a] of Analysis of Variance for Altruism
Social Learning Variable[b] for Altruism
Treatment Group by Level of Frequency
and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	.18	.25	.22
	Low	-.67	.24	-.22
		-.24	.24	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	8.550	2	4.275	5.181	.008
Frequency	4.793	1	4.793	5.809	.018
Intensity	3.757	1	3.757	4.553	.036
Interaction Frequency x Intensity	3.439	1	3.439	4.168	.045
Explained	11.989	3	.825	4.843	.004
Residual	62.710	76	.946		
Total	74.699	79			

[a]Logarithmically transformed variable.

[b]Likert-scaled dependent variable, factor 1.

Table 3.23

Results[a] of Analysis of Variance for Altruism
Social Learning Variable[b] for Altruism
Treatment Group by Level of Frequency
and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	.08	.19	.14
	Low	-.57	.30	-.14
		-.25	.25	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	6.320	2	3.160	6.212	.003
Frequency	4.813	1	4.813	9.462	.003
Intensity	1.507	1	1.507	2.963	.089
Interaction Frequency x Intensity	2.919	1	2.919	5.738	.019
Explained	9.239	3	3.080	6.054	.001
Residual	38.659	76	.509		
Total	47.897	79	.609		

[a]Logarithmically transformed variable.

[b]Likert-scaled dependent variable, factor 2.

(Table 3.23), we find a main effect for intensity approaches significance at $p < .089$ (F 1,79 = 2.963). Again, this is in the desired direction.

Although an interaction effect between the independent variables, intensity, and frequency, is not predicted, a significant interaction is found for all three factors of the altruism social learning variable for the altruism group.[2]

In summary, high intensity results in greater altruism than low intensity, but not in greater physical aggression or verbal aggression.

Tables 3.24-3.26 contain the cell means and results of the analysis of variance for arousal for the physical aggression, verbal aggression, and altruism treatment groups. We do not find a greater amount of arousal in the high intensity conditions as compared to the low condition for any of the treatment groups, nor is there a main effect for intensity on arousal in any of the groups.

A significant interaction effect between intensity and frequency on arousal in the physical aggression group is found (F 1,78 = 4.018, $p < .049$).[3]

Tables 3.27-3.29 contain the cell means and ANOVA results for positive affect for each of the three content treatment groups. As with arousal, we do not find a greater amount of positive affect in the high intensity condition

Table 3.24

Results[a] of Analysis of Variance for Arousal for Physical Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	.21	-.14	.03
	Low	.02	.39	.20
		.11	.12	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	.559	2	.279	.431	.651
Frequency	.003	1	.003	.005	.946
Intensity	.556	1	.556	.858	.357
Interaction Frequency x Intensity	2.605	1	2.605	4.018	.049
Explained	3.163	3	1.054	1.627	.190
Residual	49.270	76	.648		
Total	52.433	79	.664		

[a]Logarithmically transformed variable.

Table 3.25

Results[a] of Analysis of Variance for Arousal for Verbal Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency: High	Frequency: Low	
Intensity	High	.04	-.19	-.08
	Low	.04	-.08	-.02
		.04	-.13	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	.625	2	.313	.579	.563
Frequency	.652	1	.562	1.040	.311
Intensity	.063	1	.063	.117	.733
Interaction Frequency x Intensity	.062	1	.062	.114	.736
Explained	.687	3	.229	.424	.736
Residual	41.059	76	.540		
Total	41.746	79	.528		

[a]Logarithmically transformed variable.

Table 3.26

Results[a] of Analysis of Variance for Arousal for Altruism Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency: High	Frequency: Low	
Intensity	High	-.24	-.06	-.15
	Low	.18	-.16	.01
		-.03	-.11	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	.643	2	.321	.626	.537
Frequency	.138	1	.138	.269	.606
Intensity	.505	1	.505	.984	.324
Interaction Frequency x Intensity	1.339	1	1.339	2.608	.110
Explained	1.982	3	.661	1.287	.285
Residual	39.010	76	.513		
Total	40.992	79	.519		

[a]Logarithmically transformed variable.

Table 3.27

Results[a] of Analysis of Variance for Positive Affect for Physical Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	-.17	-.14	-.15
	Low	.21	-.23	-.01
		.02	-.18	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	1.238	2	.619	1.059	.352
Frequency	.830	1	.830	1.421	.237
Intensity	.408	1	.408	.698	.406
Interactions					
Frequency x Intensity	1.114	1	1.114	1.906	.171
Explained	2.352	3	.784	1.341	.267
Residual	44.420	76	.584		
Total	46.771	79	.592		

[a]Logarithmically transformed variable.

Table 3.28

Results[a] of Analysis of Variance for Positive Affect for Verbal Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	-.19	-.38	-.29
	Low	.30	-.51	-.10
		.05	-.44	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	5.647	2	2.824	4.844	.010
Frequency	4.965	1	4.965	8.518	.005
Intensity	.682	1	.682	1.170	.283
Interaction Frequency x Intensity	1.973	1	1.973	3.386	.070
Explained	7.621	3	2.540	4.358	.007
Residual	44.299	76	.583		
Total	51.920	79	.657		

[a]Logarithmically transformed variable.

Table 3.29

Results[a] of Analysis of Variance for Positive Affect for Altruism Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	.23	.19	.21
	Low	.56	.13	.34
		.39	.16	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	1.497	2	.748	.931	.398
Frequency	1.122	1	1.122	1.396	.241
Intensity	.375	1	.375	.467	.497
Interaction Frequency x Intensity	.776	1	.776	.966	.329
Explained	2.273	3	.758	.943	.424
Residual	61.063	76	.803		
Total	63.335	79	.802		

[a]Logarithmically transformed variable.

as compared to the low intensity condition for the physical aggression treatment (Table 3.27), the verbal aggression treatment (Table 3.28), or the altruism treatment (Table 3.29). Nor do we find a main effect for intensity on positive affect for any of the three treatment groups.

The cell means and results of the analysis of variance for intensity on attention for physical aggression, verbal aggression, and altruism treatment groups are found in Tables 3.30-3.32, respectively.

Table 3.30 presents the ANOVA results for attention for the physical aggression treatment group. Here, the main effect for intensity approaches significance at $p < .077$ (F 1,79 = 3.210). The mean differences are in the predicted direction.

Table 3.31 contains the statistical results for the verbal aggression treatment group. There is no main effect for intensity on attention, nor are the mean differences in the desired direction.

In Table 3.32 we do not find a main effect for intensity on attention for the altruism treatment group, although high intensity does result in somewhat greater attention than low intensity.

In summary, in general there is no consistent evidence that high intensity of television stimuli will produce greater social learning from physical and verbal aggression

Table 3.30

Results[a] of Analysis of Variance for Attention for Physical Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	.29	.04	.16
	Low	-.21	-.15	-.18
		.04	-.06	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	2.512	2	1.256	1.733	.184
Frequency	.186	1	.186	.256	.614
Intensity	2.327	1	2.327	3.210	.077
Interaction Frequency x Intensity	.468	1	.468	.645	.424
Explained	2.980	3	.993	1.370	.258
Residual	55.093	76	.725		
Total	58.073	79	.735		

[a]Logarithmically transformed variable.

Table 3.31

Results[a] of Analysis of Variance for Attention for Verbal Aggression Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency: High	Frequency: Low	
Intensity	High	-.17	-.32	-.24
	Low	.18	-.42	-.12
		-.01	-.37	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	3.131	2	1.565	5.017	.009
Frequency	2.825	1	2.825	9.054	.004
Intensity	.306	1	.306	.981	.325
Interaction Frequency x Intensity	1.010	1	1.010	3.236	.076
Explained	4.140	3	1.380	4.424	.006
Residual	23.711	76	.312		
Total	27.852	79	.353		

[a]Logarithmically transformed variable.

Table 3.32

Results[a] of Analysis of Variance for Attention for Altruism Treatment Group by Level of Frequency and Level of Intensity (N = 80)

Cell Means

		Frequency		
		High	Low	
Intensity	High	.48	.20	.34
	Low	.32	-.24	.04
		.40	-.02	

Source of Variation	Sum of Squares	d.f.	Mean Square	F	Significance of F
Main effects	5.244	2	2.622	3.732	.028
Frequency	3.427	1	3.427	4.877	.030
Intensity	1.817	1	1.817	2.586	.112
Interaction Frequency x Intensity	.393	1	.393	.559	.457
Explained	5.637	3	1.879	2.674	.053
Residual	53.401	76	.703		
Total	59.038	79	.747		

[a]Logarithmically transformed variable.

stimuli, arousal, positive affect, or attention. However, intensity does have a significant effect on the social learning of altruism.

3.62 Main Effect for Frequency. Hypotheses 5-6 predict a main effect for frequency on positive affect and social learning. They read:

> H_5-H_6: Positive affect and social learning will be greater for children exposed to high frequency television stimuli than children exposed to low frequency television stimuli.

Tables 3.17-3.23 contain the statistical results of an analysis of variance for frequency on each dependent social learning variable for each content treatment group. For each social learning variable there are two ANOVA results. The first is for the ratio-scaled variable, the second is for the Likert-scaled variable.

Tables 3.17-3.18 present the cell means and results of the analysis of variance for the physical aggression variable for the physical aggression treatment group. First, there is no main effect for frequency on the ratio-scaled variable, nor are the mean differences in the predicted direction. Second, in Table 3.18, we see that there is no main effect for frequency on the Likert-scaled physical aggression social learning variable and that the mean differences are not in the desired direction.

Tables 3.19-3.20 present the cell means and ANOVA results for the verbal aggression social learning variable

for the verbal aggression treatment group. In Table 3.19 we find a significant main effect for frequency on verbal aggression (F 1,79 = 8.066, $p < .006$). The mean differences indicate greater verbal aggression occurs in the high frequency condition as compared to the low frequency condition as expected. In Table 3.20 a main effect for frequency on verbal aggression is also found for the Likert-scaled variable (F 1,79 = 4.382, $p < .040$). Again, mean differences are in the predicted direction.

The results of the analysis of variance for the altruism social learning variable are found in Tables 3.21-3.23. For the ratio-scaled variable (Table 3.21), we do not find a main effect for frequency (F 1,79 = 1.660, $p < .202$), nor are mean differences in the predicted direction. We do find significant main effects for frequency on the two factors of the Likert-scaled altruism variable (F 1,79 = 5.809, $p < .018$, factor 1, Table 3.22; F 1,79 = 9.462, $p < .002$, factor 2, Table 3.23). However, they are not in the predicted direction.

In summary, the evidence indicates high frequency results in greater reported verbal aggression but not in physical aggression or altruism. In fact, low frequency resulted in higher levels of altruism on two of three measures.

The results of the analysis of variance for frequency on positive affect for each content treatment group are found in Tables 3.27-3.29.

There is no main effect for frequency on positive affect for the physical aggression treatment, although mean differences are in the desired direction (Table 3.27).

In Table 3.28 a main effect for frequency on positive affect for the verbal aggression treatment is found ($\underline{F}$ 1,79 = 8.518, $\underline{p} < .005$). Greater positive affect occurs in the high frequency condition as compared to the low frequency condition for this treatment group.

A significant main effect for frequency on positive affect is not found for the altruism treatment group (Table 3.29). Mean differences, however, are in the desired direction.

In summary, frequency has a significant effect on social learning and positive affect only for the verbal aggression treatment group.

3.63 Combined Effects of Frequency and Intensity. Hypotheses 7-10 predict a main effect for intensity under the high frequency condition. They state:

H_7-H_{10}: Social learning, arousal, positive affect and attention will be greater for children exposed to high intensity, high frequency television stimuli than for children exposed to low intensity, high frequency television stimuli.

Table 3.33 presents the statistical results of t-tests for the two cell comparison of intensity on each dependent social learning variable for each content treatment group. For each social learning variable there are two t-test results. The first is for the ratio-scaled variable, the second is for the Likert-scaled variable.

First, for the ratio-scaled physical aggression social learning variable we do not find significant mean differences between the high intensity, high frequency cell and the low intensity, high frequency cell ($t = .971$, $d.f. = 38$, $p < .373$), nor are mean differences in the predicted direction. Second, there are no significant mean differences for the Likert-scaled physical aggression variable ($t = .205$, $d.f. = 38$, $p < .838$), however, the mean differences are in the desired direction.

The results for the verbal aggression social learning variable are found in Table 3.33. There are no significant differences for the two cells for either the ratio-scaled variable or the Likert-scaled variable, nor are the mean differences in the desired direction for either scale. High intensity, high frequency, does not result in greater verbal aggression as compared to low intensity, high frequency.

Significant mean differences are found for the altruism social learning variable for both the ratio and Likert

Table 3.33

Results[a] of t-Tests (One-Tailed) for Social Learning Variables for Three Treatment Groups by High Frequency and Level of Intensity (N = 40)

Dependent Variable	High Frequency by Level of Intensity: High (N = 20) $\bar{X}$	High Frequency by Level of Intensity: Low (N = 20) $\bar{X}$	t	d.f.	p
Physical aggression[b] (ratio scale)	-.09	.08	.971	38	.373
Physical aggression (Likert scale)	-.03	-.09	.205	38	.838
Verbal aggression[c] (ratio scale)	-.04	.16	1.371	38	.172
Verbal aggression (Likert scale)	.02	.40	1.245	38	.221
Altruism[d] (ratio scale)	.44	-.43	2.714	38	.008
Altruism, factor 1 (Likert scale)	.18	-.67	3.018	38	.005
Altruism, factor 2 (Likert scale)	.08	-.57	2.624	38	.012

[a] Logarithmically transformed variables for ratio scale.

[b] Dependent variable for physical aggression treatment group.

[c] Dependent variable for verbal aggression treatment group.

[d] Dependent variable for altruism treatment group.

scales. First, for the ratio-scale, $t = 2.714$, $d.f. = 38$, $p < .008$. The mean differences are in the predicted direction. Second, for the Likert-scale, factor 1, $t = 3.018$, $d.f. = 38$, $p < .005$, and for factor 2, $t = 2.624$, $d.f. = 38$, $p < .012$. The mean differences are in the desired direction for both factors of the Likert-scaled altruism variable.

In summary, high intensity, high frequency results in greater altruism than low intensity, high frequency as expected, but not in greater physical aggression or verbal aggression.

Table 3.34 contains the cell means and results of t-tests for arousal for the physical aggression, verbal aggression, and altruism treatment groups.

We do not find significant mean differences for arousal for the physical aggression treatment group ($t = .784$, $d.f. = 38$, $p < .382$); however, the differences are in the expected direction.

In the verbal aggression treatment group there is no difference between the high intensity, high frequency condition and the low intensity, high frequency condition ($t = .000$, $d.f. = 38$, $p < .998$).

We do not find an effect for intensity on arousal for the altruism treatment group, although mean differences are in the desired direction.

Table 3.34

Results[a] of t-Tests (One-Tailed) for Arousal for Three Treatment Groups by High Frequency and Level of Intensity (N = 40)

Dependent Variable	High Frequency by Level of Intensity: High ($N = 20$) $\bar{X}$	High Frequency by Level of Intensity: Low ($N = 20$) $\bar{X}$	t	d.f.	p
Arousal (physical aggression treatment group)	.21	.02	.784	38	.382
Arousal (verbal aggression treatment group)	.04	.04	.000	38	.998
Arousal (altrusim treatment group)	.18	-.24	1.556	38	.126

[a]Logarithmically transformed variables.

High intensity, high frequency does not result in greater arousal as compared to low intensity, high frequency for any of the treatment groups.

Table 3.35 contains the cell means and t-test results for positive affect for each of the content treatment groups. The cell means for arousal are not significantly different for the physical aggression treatment, the verbal aggression treatment, or the altruism treatment. The mean differences for none of the three content treatment groups are in the desired direction.

High intensity, high frequency does not result in greater positive affect as compared to low intensity, high frequency.

The cell means and results of the t-tests for attention for the physical aggression, verbal aggression, and altruism treatment groups are found in Table 3.36.

First, for the physical aggression treatment group, we find the mean differences between the two cells approaching significance at $p < .060$ ($t = 1.941$, $d.f. = 38$). Mean differences suggest greater attention in the high intensity, high frequency condition as compared to the low intensity, high frequency condition.

Second, for the verbal aggression treatment group, we find mean differences approaching significance at $p < .084$ ($t = 1.776$, $d.f. = 38$), however, they are not in expected direction.

Table 3.35

Results[a] of t-Tests (One-Tailed) for Positive Affect for Three Treatment Groups by High Frequency and Level of Intensity (N = 40)

Dependent Variable	High Frequency by Level of Intensity: High ($\bar{N}$ = 20) $\bar{X}$	High Frequency by Level of Intensity: Low ($\bar{N}$ = 20) $\bar{X}$	t	d.f.	p
Positive affect (physical aggression treatment group)	-.17	.21	1.454	38	.154
Positive affect (verbal aggression treatment group)	-.19	.30	1.748	38	.088
Positive affect (altruism treatment group)	.23	.56	.977	38	.325

[a]Logarithmically transformed variables.

Table 3.36

Results[a] of t-Tests (One-Tailed) for Attention for Three Treatment Groups by High Frequency and Level of Intensity (N = 40)

Dependent Variable	High Frequency by Level of Intensity: High (N = 20) $\bar{X}$	High Frequency by Level of Intensity: Low (N = 20) $\bar{X}$	t	d.f.	p
Attention (physical aggression treatment group)	.29	-.21	1.941	38	.060
Attention (verbal aggression treatment group)	-.17	.18	1.776	38	.084
Attention (verbal aggression treatment group)	.48	.32	.577	38	.615

[a]Logarithmically transformed variables.

Third, in the altruism treatment group, there are no significant mean differences between the two conditions (t = .577, $d.f.$ = 38, p < .615), however, high intensity, high frequency does result in greater attention as compared to low intensity, high frequency.

In summary, the evidence does not support the hypothesis that high intensity, high frequency television stimuli will produce greater social learning, arousal, positive affect, and attention. However, high intensity, high frequency stimuli do significantly result in greater altruism.

3.64 Summary of the Effects of Independent Variables. The following is a review of the findings for each hypothesis. The first set of hypotheses predicts a main effect for intensity on each dependent variable. Each hypothesis and summary findings follow:

H_1: Social learning will be greater for children exposed to high intensity television stimuli than to low intensity television stimuli.

1. There is no main effect for intensity on the physical aggression social learning variable, and only for the Likert-scaled variable are mean differences in the desired direction.

2. There is no main effect for intensity on the verbal aggression social learning variable, nor are mean differences in the desired direction.

3. There is a main effect for intensity on the altruism social learning variables, and mean differences are in the desired direction.

H_2: Arousal will be greater for children exposed to high intensity television stimuli than for children exposed to low intensity television stimuli.

1. There is no main effect for intensity on arousal in the physical aggression treatment, nor are mean differences in the desired direction.

2. There is no main effect for intensity on arousal in the verbal aggression treatment, nor are mean differences in the desired direction.

3. There is no main effect for intensity on arousal in the altruism treatment, nor are mean differences in the desired direction.

H_3: Positive affect will be greater for children exposed to high intensity television stimuli than for children exposed to low intensity television stimuli.

1. There is no main effect for intensity on positive affect in the physical aggression treatment, nor are mean differences in the desired direction.

2. There is no main effect for intensity on positive affect in the verbal aggression treatment, nor are mean differences in the desired direction.

3. There is no main effect for intensity on positive affect in the altruism treatment, nor are mean differences in the desired direction.

H_4: Attention will be greater for children exposed to high intensity television stimuli than for children exposed to low intensity television stimuli.

1. A main effect for intensity on attention approaches significance in the physical aggression treatment. Mean differences are in the desired direction.

2. There is no main effect for intensity on attention in the verbal aggression treatment, nor are mean differences in the desired direction.

3. There is no main effect for intensity on attention in the altruism treatment, although mean differences are in the desired direction.

The next set of hypotheses predicts a main effect for frequency on the social learning variables and positive affect. These hypotheses and summary findings follow:

H_5: Social learning will be greater for children exposed to high frequency television stimuli than for children exposed to low frequency television stimuli.

1. There is no main effect for frequency on the physical aggression social learning variable, nor are mean differences in the desired direction.

2. There is a main effect for frequency on the verbal aggression social learning variable for both scales, and mean differences are in the desired direction.

3. There is no main effect for frequency on the ratio-scaled altruism social learning variable, nor are the mean differences in the desired direction. Main effects for frequency on the altruism social learning variable are found for the Likert-scaled variables, although mean differences are not in the desired direction.

H_6: Positive affect will be greater for children exposed to high frequency television stimuli than for children exposed to low frequency television stimuli.

1. There is no main effect for frequency on positive affect in the physical aggression treatment, although mean differences are in the desired direction.

2. There is a main effect for frequency on positive affect in the verbal aggression treatment and mean differences are in the desired direction.

3. There is no main effect for frequency in the altruism treatment, although mean differences are in the desired direction.

The third set of hypotheses predict a main effect for intensity under the high frequency condition. Each hypothesis and summary findings follow:

H_7: Social learning will be greater for children exposed to high intensity, high frequency television stimuli than for children exposed to low intensity, high frequency television stimuli.

1. Mean differences are not significant for the physical aggression social learning variable, and only for the Likert-scaled variable are they in the desired direction.

2. Mean differences are not significant for the verbal aggression social learning variable, nor are they in the desired direction.

3. Mean differences are significantly different for all factors of the altruism social learning variables, and they are in the desired direction.

H_8: Arousal will be greater for children exposed to high intensity, high frequency television stimuli than for children exposed to low intensity, high frequency television stimuli.

1. Mean differences are not significant for arousal in the physical aggression treatment, although they are in the desired direction.

2. Mean differences are not significant for arousal in the verbal aggression treatment, nor are they in the desired direction.

3. Mean differences are not significant for arousal in the altruism treatment, although they are in the desired direction.

H_9: Positive effect will be greater for children exposed to high intensity, high frequency television stimuli than for children exposed to low intensity, high frequency television stimuli.

1. Mean differences are not significant for positive affect in the physical aggression treatment, nor are they in the desired direction.

2. Mean differences are not significant for positive affect in the verbal aggression treatment, nor are they in the desired direction.

3. Mean differences are not significant for positive affect in the altruism treatment, nor are they in the desired direction.

H_{10}: Attention will be greater for children exposed to high intensity, high frequency television stimuli than for children exposed to low intensity, high frequency television stimuli.

1. Mean differences approach significance for attention in the physical aggression treatment and are in the desired direction.

2. Mean differences approach significance for attention in the verbal aggression treatment, although they are not in the desired direction.

3. Mean differences are not significant for attention in the altruism treatment, although they are in the desired direction.

3.7 Summary

The following is a brief summary of the significant results of this chapter.

1. High intercorrelations and factor loadings suggest that the items used are systematic and concise indicators for the dependent variables.

2. The constructed indices are very reliable.

3. Questionnaire items serving as manipulation checks for stimulus content reflect the success of the content manipulation.

4. The frequency and intensity manipulations are not perceived as expected.

5. The problem of heteroscadacity in the error variance of the data has been corrected by logarithmic transformation of the data. This transformation is appropriate for psychophysical, ratio-scaled data.

6. Since there are some relationships among the dependent variables, the analysis reported in this chapter cannot be said to have an experiment-wise error of .05. However, for the analyses reported here, the univariate ANOVAs appear to be reasonable.

7. The level of intensity is found to have a significant positive effect on the social learning variable of altruism, and approaches significance for attention for the physical aggression treatment group.

8. The level of frequency is found to have a significant positive effect on the social learning variable of verbal aggression and on positive affect for the verbal aggression treatment group.

9. High intensity, high frequency stimuli significantly result in greater altruism as compared to low intensity, high frequency stimuli.

CHAPTER 3

FOOTNOTES

[1]"Significantly" is used here in a statistical sense at $p < .05$.

[2]By implication, the significant interaction suggests that whatever differences are observed between high and low levels of intensity under one level of frequency (for example, low frequency) are not the same as found under the other level of frequency (high). For all three factors of the altruism variable, under high frequency, altruism decreases as intensity decreases; under low frequency altruism decreases as intensity increases.

[3]For arousal in the physical aggression group the significant interaction effect suggests that under high frequency arousal increases as intensity increases and under low frequency arousal decreases as intensity increases.

CHAPTER 4

CONCLUSION

The discussion here will be in four sections. The first section will attempt to evaluate the internal validity of the study where we will look at the methods of testing the theoretical perspective presented and the evidence supporting it. The second section will address the issue of external validity. The concern here will focus on the generalizability of the results. The third section will examine the theoretical validity of the study. This will entail the examination of the meaningfulness of studying media effects and social learning in the theoretical framework proposed in Chapter 1. The fourth section will explore possible areas of future research.

4.1 Internal Validity

In this section the methodological and analytical procedures used in this study will be examined in retrospect as to their logical and empirical appropriateness. We will first reconsider the design of the study.

4.11 The Design. When reviewing the design of this study or any study, one should attempt to address the issue of whether or not the design logically tests the theory,

regardless of the results. After examining the results of this study, questions can be raised as to both the appropriateness and success of the design. Nevertheless, when one is concerned with the logic of the design, one seeks to examine the functional relationship between the theory and the actual design used in the study.

To investigate the hypotheses proposed in Chapter 1, the design needed to meet restrictive assumptions. The manipulations required showing television content in which at least two levels[1] of frequency and intensity are presented so that it could be seen if a subject would report greater social learning, arousal, positive affect, and attention when he/she views high frequency and high intensity content, and if there is a causal relationship between frequency and intensity and the dependent variables.

The evidence reported in Chapter 3 suggests that the manipulations of frequency and intensity were not successful. Several possible reasons may account for the failure of the manipulations. One explanation may be that the stimulus tapes were not long enough in time to properly introduce the manipulations. This might be particularly evident in the low conditions, where the stimulus content lasted only several seconds. It is also possible that the subjects did not differentiate among the segments and saw the stimulus content as one continuous action rather than several independent scenes. However, the manipulations

may prove to be more successful if the same stimulus object is repeated. In the traditional repetition studies (cf. Berlyne, 1950, 1951; Zajonc, 1968) one stimulus is shown repeatedly, giving the observer the opportunity to become familiar with it. This study deviates from that procedure, and although one behavior is repeated a number of times, the behavior is exhibited in different settings. This introduces new detail and variation among segments. It is also possible that showing television segments out of context brought confusion or did not allow for the content information to be properly processed by the children.

Another possible consideration for the failure of the manipulations of the independent variables might suggest that the actual items used to measure the manipulations were inadequate; that is, that there was not a functional relationships between the operationalization and conceptualization of the variables. The item used as the manipulation check for intensity asked *"how hard* or *how strongly* were people in the film hitting, yelling, or helping another person?" It is possible that the terms "how hard" and "how strongly" did not assess the components of intensity and were not understood by the subjects. The item used as the manipulation check for frequency ("how many *times* was someone hitting, yelling, or helping another person. . . ?") was designed to assess how many separate instances of each

behavior were perceived by the subjects. If the subjects saw the content of the stimulus tape as one continuous action rather than several scenes this item might have been misinterpreted.

The failure of the intensity manipulation might also suggest that an adult's perception of intensity differs from a child's. Here, it might be considered that an adult's experiences and knowledge of motives and consequences of behavior interact with his/her perception of the intensity of an act. One technique which might solve this problem is to present experimental stimuli which have been judged for intensity by school-age children.

One issue that also needs consideration is the role of the specific content of each stimulus tape. Although the proposed theory is said to be a general one, that is, not content-bound, it is possible that some unique qualities of the specific content interfered with or distracted the subject's attention. This issue will be further elaborated on in section 4.2 of this chapter.

Another important possibility for the failure of the manipulations might be the context or setting of the experiment. That is, viewing television in a school setting, arranging special testing rooms, having videotape equipment and experimenters present, might have disturbed

or distracted the subjects. Even though great effort was taken by the researcher to find and create a physical environment that least resembled a laboratory setting, the above-mentioned conditions could not be avoided.

The manipulations, as tested in a laboratory controlled setting, were not as successful as they might have been if tested under normal viewing conditions. Normal television viewing has a cumulative impact. We can imagine that intensity levels could be more critical in a home setting. The measurement of a cumulative impact of television viewing might necessitate an over time study. It is conceivable that in order for behavioral effects to occur, an 8-20 minute tape is not sufficient, but rather that repeated exposures is necessary to demonstrate effects. Therefore, testing this theory under normal viewing conditions might substantiate the theoretical premises.

Another consideration of the validity of the design relates to the use of school-age children to generate the social learning items. Since hypothetical situations were to be used to measure future physical aggressive behavior, verbal aggressive behavior, and altruistic behavior, it was crucial that these items be relevant to the subjects and represent realistic situations. It was evident that

it would be inappropriate for the researcher to generate these items. The plan and procedures used to construct these items insured their content validity and proved to be a very successful method in obtaining reliable measures of the dependent variable (see Table 3.12).

We will now move from the issue of the validity of the design to a discussion of the validity of analysis.

4.12 Validity of Analysis. Several analytical and statistical issues of importance to this study have been discussed in previous chapters of this dissertation. However, two issues still in need of further elaboration are the use of magnitude measurement and the procedures for index construction.

In the use of magnitude measurement, research has shown that there is greater statistical power and precision when a ratio scaling technique is used (Torgerson, 1956). The standard objection raised against the use of magnitude measurement is in terms of reliability. Creating reliable scales in this study was difficult, and thus necessitated the considerable time allocated to designing training examples (see Figure 2, Chapter 2) and the actual training of subjects. The use of a second scale (four point, Likert-type scale for social learning items) was incorporated to determine if the subjects were consistent in their responses. Consistency would be demonstrated if, for example, items that were assigned high numerical scores

were also assigned the "almost always" category on the four point scale. When the intercorrelations for the two scales of the social learning items and indexed variables (see Appendix I) are reviewed, it is apparent that significantly high correlations were achieved. The statistical results from the t tests and analyses of variance also indicate similar patterns of outcomes for each pair of scales. The scales were comparably used and demonstrate that there was internal consistency in subject responses. The measure of internal consistency is a good indication that subjects were able to make ratio judgments, and that ratio-scaling techniques are as appropriate with school-age subjects as Likert-type ones. However, this is only the first phase of testing the reliability of ratio scales. Future studies will have to be designed so that reliability estimates can be provided. One method that would accomplish this would be the use of repeated items, where the same item is asked more than once with the same scale. Future testing will use this method. If reliability is demonstrated, ratio scaling should be the preferred scaling method since it is susceptible to the fundamental operations of algebra and powerful mathematical calculations.

Moving from magnitude measurement, we find another issue pertinent to the discussion of the validity of analysis. This issue pertains to the construction of indices.

The methods used to construct the indices followed standard procedures. In reviewing the reliabilities of the indices reported, sufficiently high reliability was achieved.

4.2 External Validity

External validity refers to the generalizability of one's theory and empirical results. It was expected that the theoretical premises and the results would be generalizable to a wide range of media content. If we can assume that there are properties of a stimulus that will attract a child's attention, contribute to exploration and enhance learning, then a parsimonious model incorporating this information should be applicable to all media stimuli. The set of variables proposed in the study are general variables which can indicate the effects of media across content areas.

The basis of the theory assumes that stimulus properties are universal and ubiquitous within media content, and hence, it is hypothesized that invariant laws of media stimuli exist, and that they consist of relations between and among stimulus properties. Therefore, we could imagine any media message, regardless of its content, operating with these invariant laws of media stimuli. The results of the study presented provide little empirical evidence to support these contentions.

While the theory discussed here may be said to have universality, the question remains as to the generalizability of the actual results. It would be unfair to dismiss the validity of the theoretical framework at this stage of investigation since many of the empirical findings may have been affected by inadequate manipulation of the independent variables. However, the lack of similarity in trends across the three content areas cannot be ignored. Further investigation must seek to determine if and why the specific message content interacts with the stimulus properties. It is possible that there is a set or sets of variables which intervene with the proposed model. It can be imagined that there are different developmental stages of learning associated with the social behaviors. Hence, this might necessitate examining the proposed theory in conjunction with more traditional social learning variables, such as sex and age of subjects and reward and punishment contingencies.

This type of examination coupled with the development of methods that would allow us to compare intensity levels of one content area to intensity levels of another is needed to determine if the postulated invariant laws of media stimuli can withstand empirical scrutiny. This will be discussed in greater detail in the following section.

4.3 Theoretical Validity

In this section, a selective examination of the theoretical assumptions of the study will be made for the purpose of evaluating the theoretical approach presented here. The results of the study do not provide strong empirical evidence to substantiate the theoretical framework proposed in Chapter 1. However, even though it is evident that some methodological issues can account for the inability to confirm the hypotheses, a critical review of the theoretical assumptions might provide additional insight.

The perspective presented directs its attention to the qualities of a stimulus that have the potential to attract a child's attention. This approach appears to be very useful to the examination of television stimuli, if we assume that social behaviors or actions, as portrayed on television, are sources of stimulation for a child. The conceptualization of the role of stimulus properties in attention and learning processes suggested here rests on the centrality of three ideas. First, that stimuli can embody physical characteristics which are so visually distinct that attention and learning will be assured, thus eliminating the need to examine background factors of subjects. Second, that there is a fundamental relation between the stimulus properties and attention and learning, thus precluding the need to examine the specific nature of

content. Finally, that the impact of a stimulus varies with repeated exposure, thus dictating the examination of intensity in relation to frequency of exposure.

The test of these premises did not provide sufficient supporting evidence to validate the theoretical perspective as presented, hence requiring a re-examination of each assumption. Examining the first assumption, we may need to reevaluate the role of subject background factors. It may be considered that individual or group differences such as age, sex, and developmental factors interact or intervene with the attention to and learning of a behavior. These types of variables may need to be included into the theoretical system so that they can be measured and/or controlled.

The possible impact of these background factors may also account for the lack of empirical support for the second assumption, which implies that a fundamental relationship exists between the stimulus properties and the dependent variables, and will function similarly for any and all content. However, if these background factors do in fact interact with the proposed system, it can be imagined that different types of content can be associated with different stages of development or with the demographic characteristics of the viewers. This issue might account for the lack of trends found across the three content areas. If background factors do have a central role in a theory of

stimulus effects, the scope of the theory will be reduced, since predictions will not be able to be made across areas. Thus, the development of more specific assumptions will be required.

Examining the third assumption, which posits a relationship between intensity and frequency, there is some empirical evidence to indicate that frequency of exposure has an effect on the dependent variables. However, the evidence on how the effects of intensity vary with frequency of exposure is still unclear. There has been substantial previous research which suggests that the effects of low intensity stimuli will diminish more rapidly with repeated or continued exposure as compared to high intensity stimuli. This was not found. Several factors may account for this. First, the inadequacies of the manipulations, specifically, the possible lack of variability in the two levels of intensity, may be confounding the results. Second, it is possible that twelve exposures are insufficient for determining satiation to a stimulus, or that exposure to twelve different episodes cannot have a cumulative impact. This would then suggest the need to measure the effects of intensity at different levels of exposure, e.g., three, eight, twelve, and twenty exposures of the same stimulus. However, the determination of exposure levels will have to be made from future

pretest findings. Nonetheless, the empirical evidence indicates that the role of stimulus properties should continue to be studied in relation to frequency of exposure, although adjustments in design may be necessary.

4.4 Future Research

In this section specific reference will be made to both future theoretical, methodological, and statistical work which can be extended from the study presented.

4.41 Theoretical Application. It appears that many areas of investigation need to be further pursued to validate the theoretical framework proposed in this dissertation. Examination of the theoretical explanations suggested in the previous section will be the first task for future work. Here, emphasis will be placed on examining subject background factors. A design will be used which allows for the comparison and analysis of sex, age, and socioeconomic differences, for example. Incorporating such variables into the design should provide information as to when as well as why and how a child becomes more capable of differentiating and extracting information from the environment. The examination of background variables will also provide the necessary information to determine the relationship between these variables and the social behaviors.

The next task will direct its focus to studying the dependent variables at more than two levels of intensity and over several levels of frequency of exposure. Analyzing the effects of intensity at several levels of frequency should provide insight as to the pattern of their relationship. It will also help us to determine the optimal number of exposures for attention and learning to occur and the level at which satiation occurs, if it does.

Upon completing these studies, validation of the altered model will be sought by testing it across several types of media content. This will be done to determine the scope and generalizability of the theory. Relevant questions to be addressed are: Do intensity and frequency now affect the dependent variables similarly across content areas (prosocial and antisocial content)? Do intensity and frequency have consistent effects on the dependent variables within content areas? That is, are there similar trends for each prosocial behavior (e.g., altruism and delay of gratification) and antisocial behavior (e.g., physical aggression and theft)? Do intensity and frequency have similar effects on the dependent variables across program types such as comedies, cartoons, and action dramas? Studies designed to address these questions should provide relevant findings on the role of stimulus properties in attention and learning and determine if the theory is generalizable across content.

4.42 Future Methodological and Statistical Research. Given the results of the study and the apparent inadequacies in the manipulations, several methodological adjustments need to be incorporated in future research. The primary task will be redeveloping the manipulations of the independent variables. Changes in the methods of creating, presenting, and testing the manipulations should insure greater impact.

First, included in these changes, would be the use of school-age children to evaluate the levels of intensity for each social behavior. Here, the procedures used in training the adult intensity coders could be modified to adapt to the language and mathematical skills of the school-age coders. For instance, the yardstick example could be set at ten instead of one hundred, since it has been determined in this study that it is easier for the child to make ratio comparisons using this integer. In addition, more visual examples can be used to exemplify the components of intensity. Different television segments can be selected which would illustrate risk and suddenness of movement, for example. Using school-age children to create the stimulus tapes should assist in obtaining more precise, valid, and reliable measures of the dependent variables.

Second, school-age subjects would be tested individually as opposed to the small group testing procedure used in this study. Since statistical analyses are performed

on the individual case, group testing may introduce variables that cannot be statistically controlled. Thus individual testing should render more reliable results.

A third change in the manipulation procedures would occur if it is determined that the segments on the stimulus tapes are not perceived as separate instances of the social behavior. This change would require mechanically separating the segments by either audio or visual devices. In addition, careful effort would be made to have each segment represent a different television program.

Fourth, new or additional items will be generated to check the effectiveness of the manipulations. For the check on the manipulation of intensity, a new set of items will be asked. Each item will tap a separate component of the intensity variable. There will be items to assess stimulus complexity, stimulus movement, stimulus change, and character involvement. These items will then be indexed to obtain a measure of the impact of the manipulation. Multiple items will be used and then indexed for the frequency manipulation check. These procedures will provide more reliable checks on the manipulations.

In addition to the development of new methods for manipulating the independent variable, future research will focus its attention on testing the reliability of ratio-scaling techniques. New questionnaire instruments

will contain multiples of items using the same ratio scale. Reliability estimates will then be generated.

Future research might also direct itself to the development of the methodological techniques which would allow for the comparison of intensity levels from one content area to another. This would have the advantage of permitting us to parse out and measure the effects of content. To compare intensity levels across content areas would require creating a "yardstick" example of intensity which would represent some level or the average level of intensity of an act on television. It would not be content bound, thus allowing it to be used as the standard for all comparisons. It has not been determined at this time what content this type of yardstick would contain. A similar technique has been used reliably with adult samples in multidimensional scaling research (see Woelfel and Fink, 1980). In this research a yardstick unrelated to the content under investigation has been used to make paired comparisons. For instance, subjects have been told that the distance between red and blue is ten, and then asked to use this to judge the distance between political concepts. Adult samples have been capable of using this type of example for comparisons; however, this method has not been tested with school-age subjects. Considerable research and testing will have to be pursued before it can

be determined if a non-content bound yardstick for intensity can be created, and if school-age children have the cognitive abilities to use it as a standard to judge an array of televised social behaviors.

Future research will also subject data sets to a pooled cross-sectional time-series analysis. In performing this type of analysis, the examination of the dynamic structure of the data will be possible. That is, the analysis would provide information about the predictive power of variables at previous frequency levels on the levels of those variables at subsequent frequency levels. This is accomplished by including a lagged endogenous variable in the time series equation. Thus, a truly dynamic model would be tested (see Hibbs, 1974, for explanation of statistical procedures). This is a crucial analysis to perform if we wish to understand and explain the pattern of the relationship between stimulus properties and repeated exposure.

CHAPTER 4

FOOTNOTE

[1]Two levels of frequency and intensity were used in this study because the number of subjects would not have been sufficient for more than two levels of the variables and the addition of more subjects would have furthered the complexity of data gathering and analysis.

APPENDIX A

DISCUSSION OF CONTENT ANALYSIS

APPENDIX A

DISCUSSION OF CONTENT ANALYSIS

Content analyses of one episode of all prime-time and Saturday morning fictional television series were conducted for the 1975-1976 and the 1976-1977 television seasons. The purpose of these analyses was to determine what and how antisocial and prosocial behaviors were portrayed on television.

Content Variables: Antisocial Acts

Antisocial behavior is defined as behavior which is physically or psychologically injurious to another person, often intended to be so, but sometimes not so intended, often but not necessarily succeeding. A subset of behaviors, both physical and verbal, were chosen because those behaviors are generally viewed as negative or undesirable interpersonal acts within a particular social system by members of that society.

Four specific categories of acts were operationally defined within this rubric. They were acts of: (1) *physical aggression*, (2) *verbal aggression*, (3) *deceit*, and (4) *theft*. Since only acts of physical aggression and verbal aggression were used in the reported experiments only these shall be defined now.

Physical aggression refers to any overt behavior intended to frighten, injure, or damage oneself, another individual, an animal, or property. The subcategories of physical aggression included, abridgement of privacy, bombing, burning, defacing of property, hitting empty-handed, hitting with an object, physically threatening someone, shooting, stabbing, constraint of others, and extended fighting. Only acts of hitting empty-handed and extended fighting were used for the stimulus.

Hitting empty-handed is an act of physical aggression by an agent who attacks a human or nonhuman target, with any body part, but without weapons or any other objects. Included are biting, kicking, shoving, pushing, grabbing, jerking, hitting, pinching, strangling, scratching, etc.

Extended fighting consists of inseparable or indistinguishable acts of assault with or without an object or firearm. It is a long series of such acts in which the agent becomes the target and vice versa in rapid movement.

Verbal aggression involves sending noxious symbolic messages. The messages may take the form of *rejection* when it contains criticism, insults, cursing, or a negative affection reaction, e.g., negative evaluations of a person or objects the person relates to, such as, "Your work is terrible." *Verbal threats* are warnings of intentions to cause noxious, undesirable outcomes for a person, e.g.,

"If you don't give me your money, I'll kill you." *Hostile* acts are all nonthreatening or nonrejecting acts of verbal aggression conveyed by yelling, screaming, or shouting, e.g., a wife shouting angrily to her husband, "Wash the dishes now!"

Content Variables: Prosocial Acts

Prosocial behavior are those behaviors deemed appropriate, redeeming, and legal by society. Essentially, they are affiliative interpersonal acts. The eight types of prosocial behaviors analyzed were: (1) altruism, (2) showing affection, (3) explaining feelings of self, (4) explaining feelings of others, (5) reparation for bad behavior, (6) delaying gratification/task persistence, (7) controlling others' antisocial behaviors, and (8) self-control. Altruism was chosen as the prosocial behavior for the experiments reported in this dissertation.

Altruism consists of sharing, helping, and cooperating among humans or animals when engaged in nonillicit acts. *Sharing* is the spontaneous gift or loan of one's own possession or anything one has to legitimately offer to another person. For example, a child shares half her lunch with a friend who lost his. *Helping* is giving aid to another so that the other can move toward his/her goal. It includes physical assistance, instructions, helping with a task, giving advice, requesting physical

assistance, giving requested or needed information. For example, two people are sailing and one falls overboard; the other person rescues him from the water. *Cooperating* is the working together by two or more individuals to achieve interdependent goals. For example, two people putting up a camp tent.

Only altruistic behaviors aimed toward prosocial goals were coded as altruism. Thus, if someone aided or helped in an illegal act it was not coded as altruism.

Coder Training for Categorizing Behaviors

From five to eight undergraduates at Michigan State University were used as coders of the pro/antisocial content behaviors. All coders had to understand and agree upon the conceptualizations of the behaviors. They also had to use the same criteria for determining the presence of the behaviors and they had to differentiate clearly one behavior from another. The process that took place was one of negotiation of meaning and consensual establishment of a coding symbol system. The coders had to be able to conceive of the behaviors in the abstract and yet recognize them in concrete examples. To facilitate these goals, an intensive training program was developed and carried out.

The training program involved working with the nine coders for about 50 hours. One week prior to the beginning

of training, all coders were given training manuals. The coders were asked to study and familiarize themselves with the variables and the special and conditional definitions for the behaviors. Training manuals are available from the project directors.

The first step in actual training was to introduce each behavior, e.g., altruism, to the group of coders. The group and the researchers discussed the conceptualization of the variable. Discussion continued until it was clear to the researchers that all coders understood and agreed upon the operational meanings of the variables. At times, modifications in the conceptualizations were made during the discussions.

Next, discussion on the special conditions for each variable took place. The coders had to understand the different circumstances in which the variable might be present. For example, discussion took place as to why helping a friend rob a bank would not be coded as altruism. It was explained that since this behavior was an illicit act, it would not be in accord with the conceptualization. This process of discussion and negotiation of the conceptualizations and conditions of the behavior took several hours for each category of behavior coded. Practice coding then began with tapes of shows. Each time the behavior under discussion was thought to be elicited, the coders independently coded it. Discussion then took place to

determine if there were any discrepancies among the coders. When all coders understood and agreed on the meaning and the criteria of the behavior, within acceptable reliability standards, a new variable was introduced and the same process was repeated.

Once all the pro/antisocial content behaviors were studied and discussed, there was practice coding for the full set of acts. The coders independently coded the first ten minutes of a show and then compared their observations. Problems or disagreements identified now were dealt with by discussion until there was consensual agreement. Three days were devoted to practice coding of TV show segments. A training tape, illustrating each of the coded behaviors was produced and used in subsequent training sessions.

Reliability

When actual coding of the shows began, all coders were as similar to each other as possible. Ten shows were pair coded. Reliabilities were obtained several times during coding. Reliabilities were estimated for what a given act was, i.e., does an observed act fit into any of the pro- or antisocial content categories, and which one does it fit? When reliabilities reached an acceptable level (.7-.8), individual coding of shows began (see Greenberg, Edison, Korzenny, Collado, Atkin, in Greenberg, 1980: 99-128, for results of content analyses).

APPENDIX B

YARDSTICKS FOR PHYSICAL AND VERBAL AGGRESSION

APPENDIX B

YARDSTICKS FOR PHYSICAL AND VERBAL AGGRESSION

Yardstick for Physical Aggression

The yardstick for physical aggression showed a fight scene in a bar. Two men are having a brief fist fight. This segment was typical of televised physical aggression and served as the average level intensity.

Yardstick for Verbal Aggression

The yardstick for verbal aggression depicted a male character verbally harrassing his wife for calling their physician. He yells at his wife, "What the hell are you doing?" This segment served as the average level of intensity.

APPENDIX C

INSTRUMENT FOR RESPONSE CATEGORIES

APPENDIX C

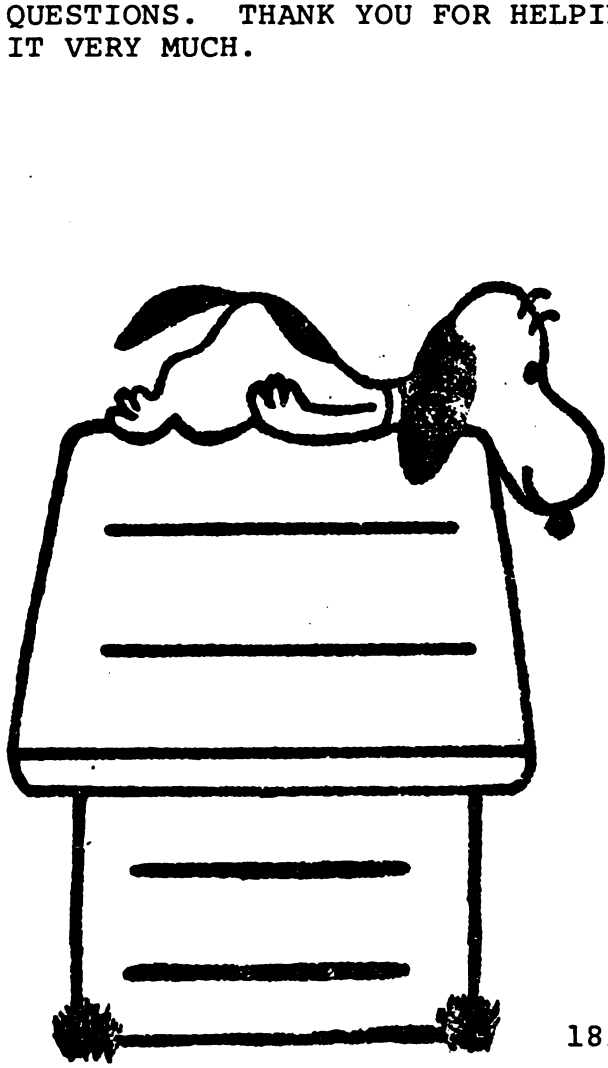
INSTRUMENT FOR RESPONSE CATEGORIES

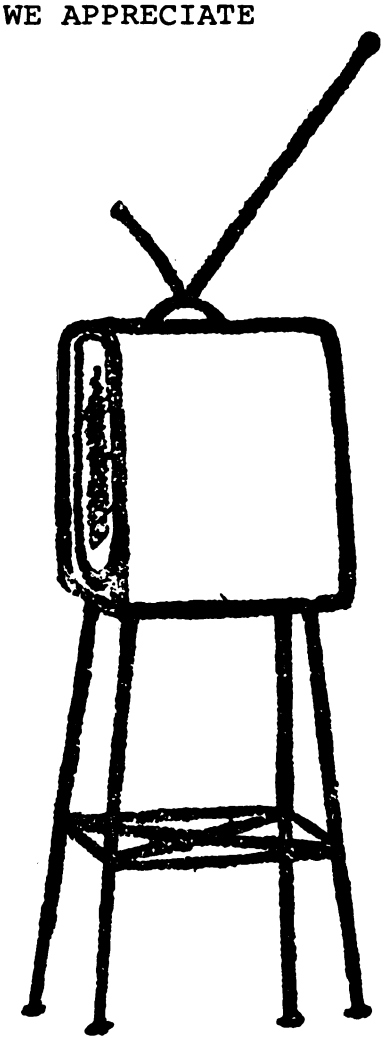
SCHOOL SURVEY

TODAY WE WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT THINGS THAT MIGHT HAPPEN TO YOU.

THIS IS NOT A TEST, SO THERE ARE NO RIGHT OR WRONG ANSWERS. YOUR ANSWERS WILL NOT BE SHOWN TO YOUR TEACHER OR YOUR PARENTS--ONLY THE RESEARCHERS WILL SEE THE SURVEYS. PLEASE BE HONEST WHEN YOU ANSWER THE QUESTIONS, SINCE WE WANT TO KNOW WHAT YOU REALLY THINK.

PLEASE WORK QUICKLY, BUT BE SURE TO ANSWER ALL THE QUESTIONS. THANK YOU FOR HELPING US. WE APPRECIATE IT VERY MUCH.





Here are some things that might happen to you sometime. Tell us what you would do if these things happened:

What would you do if someone took something of yours?

What would you do if a kid at school threatens to beat you up?

What would you do if someone called you a turkey?

You are playing ball during recess and one of your teammates is about to get hit with the ball, what would you do?

If you were swimming in a lake, and someone dropped their ring in it, what would you do?

A brother/sister or friend is frightened by a thunderstorm, what would you do?

One of your classmates says you copied his homework, but this isn't true, what would you do?

One of your classmates constantly talks during class, what would you do?

You're going to recess and someone runs into you in the hall, what would you do?

If someone got hurt during recess, what would you do?

A kid takes your marbles without asking you, what would you do?

A kid in your class is not good at spelling, what would you do?

One of your schoolmates is sad, what would you do?

If someone hit your sister/brother/or friend, what would you do?

Your classmate has no marbles, but you do, what would you do?

A kid in your class didn't bring lunch money to school, what would you do?

What would you do if a kid teased you?

Someone calls you names, what would you do?

Someone copies your homework, what would you do?

Someone won a boulder off you but you know they cheated, what would you do?

During recess you are playing ball and a kid keeps missing the ball, what would you do?

What if a friend is feeling bad because they keep making stupid mistakes trying to play a new game, what would you do?

Suppose you accidentally step on a little kid's toy and break it, but the kid doesn't know who did it, what would you do?

You work really hard to finish your homework for school. Some kid takes your papers and rips them up, what would you do?

Your friends are going to the movies but your mother orders you to stay home and clean your room, what would you do?

A classmate doesn't have a pencil and wants one of yours, what would you do?

A friend got a new toy and doesn't know how to put it together, what would you do?

A classmate is playing a game with you in gymnastics and gets hurt, what would you do?

You have marbles, but a kid in your class doesn't have any and wants to use some of yours, what would you do?

A friend broke your toy, what would you do?

What if someone cuts in front of you while you are waiting in line at the water fountain at school, what would you do?

Suppose you are playing a ball game and one kid throws the ball at your head while you aren't looking, and it hits you, what would you do?

What grade are you in?	4th	5th
Are you a boy or girl?	boy	girl
Do you have any brothers or sisters?	yes	no

APPENDIX D

POST-EXPERIMENTAL QUESTIONNAIRE

"SCHOOL SURVEY"

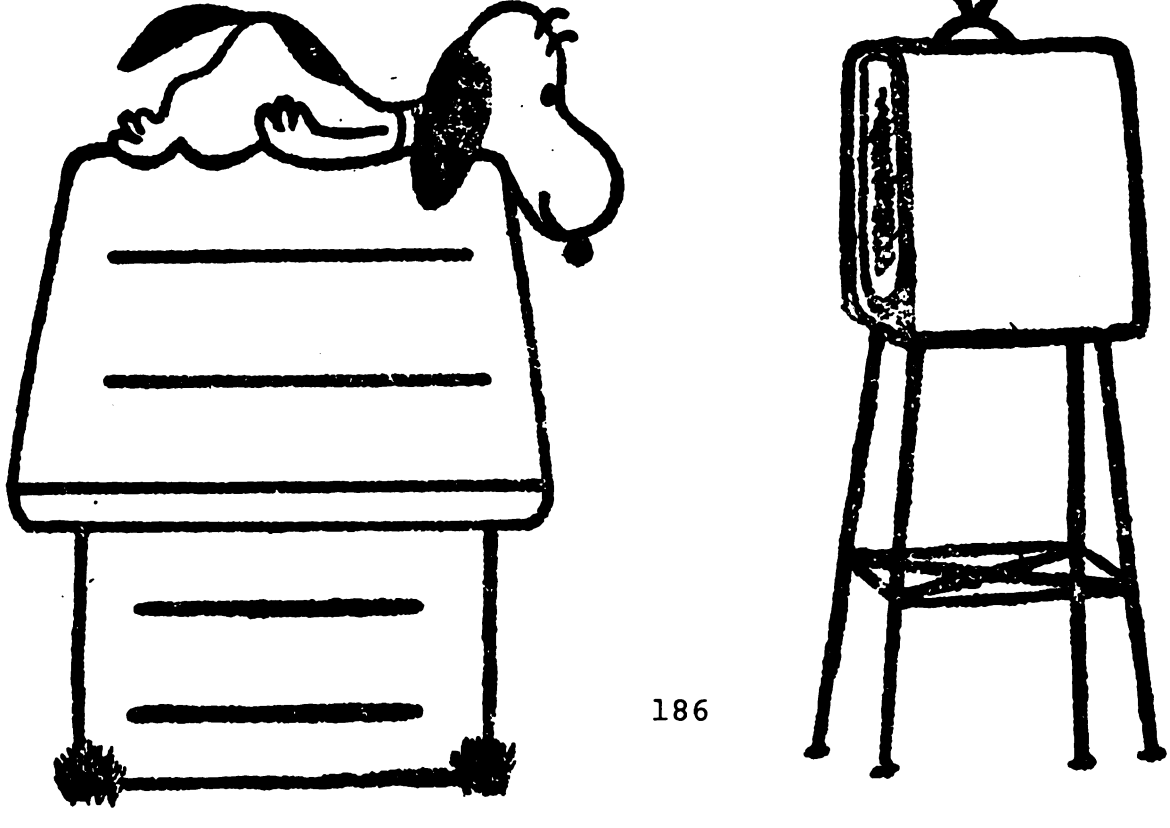
APPENDIX D

POST-EXPERIMENTAL QUESTIONNAIRE
"SCHOOL SURVEY"

TODAY WE WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT THINGS THAT MIGHT HAPPEN TO YOU AND HOW OTHER THINGS MAKE YOU FEEL.

THIS IS NOT A TEST, SO THERE ARE NO RIGHT OR WRONG ANSWERS. YOUR ANSWERS WILL NOT BE SHOWN TO YOUR TEACHER OR YOUR PARENTS -- ONLY THE RESEARCHERS AT THE UNIVERSITY WILL SEE THE SURVEYS. PLEASE BE HONEST WHEN YOU ANSWER THE QEESTIONS, SINCE WE WANT TO KNOW WHAT YOU REALLY THINK.

PLEASE WORK QUICKLY, BUT BE SURE TO ANSWER ALL THE QUESTIONS. THANK YOU FOR HELPING US. WE APPRECIATE IT VERY MUCH.



We would like to ask you some questions about things that might happen to you. The way we are going to answer these questions is very easy. Let's do an example.

EXAMPLE

When someone cries you laugh at them. How often would you do this?

REMEMBER ⟶ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ⟶ [ ]

INSTRUCTIONS

If you would PROBABLY do this, WRITE 10.

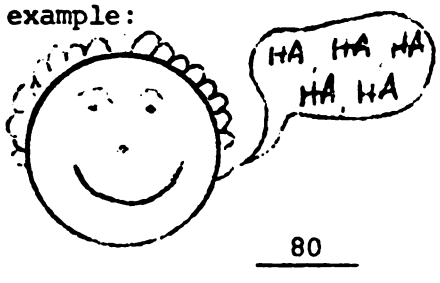
The MORE OFTEN or the MORE LIKELY you are to do this, WRITE A NUMBER BIGGER THAN 10.

The LESS OFTEN or LESS LIKELY you are to do this, WRITE A NUMBER SMALLER THAN 10.

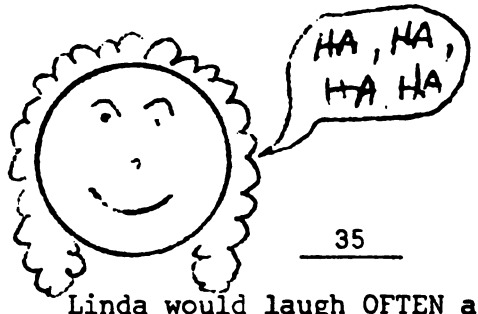
If you NEVER do this, WRITE 0.

*YOU CAN WRITE ANY NUMBER YOU WISH.

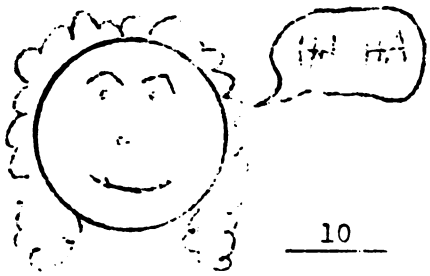
For example:



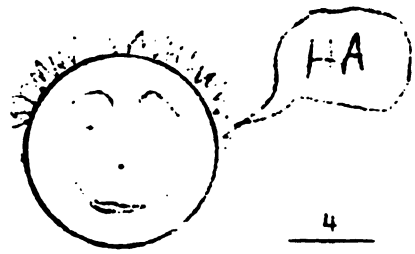
Mike would laugh VERY OFTEN at someone crying.



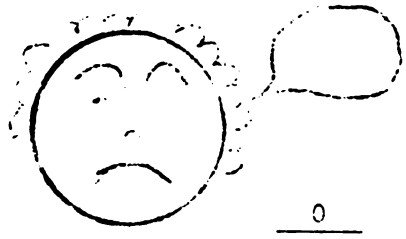
Linda would laugh OFTEN at someone crying.



Marcia would PROBABLY laugh at someone crying.



Charley is LESS LIKELY to laugh at someone crying.



Bob would NEVER laugh at somecne crying.

REMEMBER!! The BIGGER the number, the MORE OFTEN or MORE LIKELY you would do this.

The SMALLER the number, the LESS OFTEN or the **LESS LIKELY** you are to do this.

Okay, now please answer the following questions just like we answered the examples.

1. A friend of yours is frightened by a thunderstorm so you try to comfort the friend by telling them why they shouldn't be scared.

   How often would you do this?

   REMEMBER ⟶ 0 = I would never do this

   10 = I would probably do this

   YOUR ANSWER ⟶ [ ]

2. A kid at school threatens to beat you up, so you fight with the kid.

   How often would you do this?

   REMEMBER ⟶ 0 = I would never do this

   10 = I would probably do this

   YOUR ANSWER ⟶ [ ]

REMEMBER!! The MORE OFTEN or the MORE LIKELY you are to do this, WRITE A NUMBER BIGGER THAN 10.

The LESS OFTEN or LESS LIKELY you are to do this, WRITE A NUMBER SMALLER THAN 10.

If you would PROBABLY do this, WRITE 10.

If you would NEVER do this, WRITE 0.

*YOU CAN WRITE ANY NUMBER YOU WISH.

REMEMBER ⟶ The BIGGER the number the MORE OFTEN you do this.

The SMALLER the number the LESS OFTEN you do this.

3. Someone calls you a turkey, so you call the kid a name back. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

4. A kid steals your marbles, so you beat the kid up. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

5. You are playing ball during recess and one of your teammates is about to get hit with the ball so you tell them to watch out. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

6. One of your classmates says you copied their homework, but it isn't true, so you call the kid a liar. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

7. You are swimming in a lake, and someone drops their ring in the water, so you dive in and try to get it. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

8. Someone hits your friend, so you hit the kid back. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

9. One of your classmates constantly talks during class so you tell the person to shut up. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

REMEMBER!! The BIGGER the number, the MORE OFTEN or MORE LIKELY you are to do this.

The SMALLER the number, the LESS OFTEN or LESS LIKELY you are to do this.

10. A kid teases you so you tease the kid back. How often would you do this?

REMEMBER ——→ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ——→ [ ]

11. Someone won a boulder off you, but you know they cheated, so you grab it away from them. How often would you do this?

REMEMBER → 0 = I would never do this

10 = I would probably do this

YOUR ANSWER → [ ]

12. One of your classmates is sad, so you try to cheer them up. How often would you do this?

REMEMBER → 0 = I would never do this

10 = I would probably do this

YOUR ANSWER → [ ]

13. You work real hard to finish your homework. Some kid takes your papers and rips them up, so you hit the kid. How often would you do this?

REMEMBER → 0 = I would never do this

10 = I would probably do this

YOUR ANSWER → [ ]

14. A friend is feeling bad because they keep making stupid mistakes trying to play a new game, so you teach them how to play the game right. How often would you do this?

REMEMBER → 0 = I would never do this

10 = I would probably do this

YOUR ANSWER → [ ]

15. You are going to recess and someone runs into you in the hall, so you yell that they better watch it. How often would you do this?

REMEMBER ⟶ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ⟶ [ ]

16. You are waiting in line at the water fountain at school and someone cuts in front of you, so you push the kid out. How often would you do this?

REMEMBER ⟶ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ⟶ [ ]

17. A classmate doesn't have a pencil and wants one of yours, so you give the kid one. How often would you do this?

REMEMBER ⟶ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ⟶ [ ]

18. Suppose you are playing a ball game and a kid throws the ball at your head while you aren't looking and it hits you. You scream at the kid not to do it again. How often would you do this?

REMEMBER ⟶ 0 = I would never do this

10 = I would probably do this

YOUR ANSWER ⟶ [ ]

We would like to ask you some questions about the part of the film you watched that came after the cartoon. We want you to tell us how you felt while watching that part of the film. You are going to answer with NUMBERS. Let's do some examples first.

Let's call how happy you are eating a piece of cake 10. Not happy at all we'll call 0. Now how happy are you eating an ice cream sundae?

HOW TO ANSWER

If eating an ice cream sundae makes you MORE HAPPY THAN eating a piece of cake, write a number BIGGER THAN 10.

If eating an ice cream sundae makes you LESS HAPPY THAN eating a piece of cake write a number SMALLER THAN 10.

If eating an ice cream sundae makes you AS HAPPY AS eating a piece of cake WRITE 10.

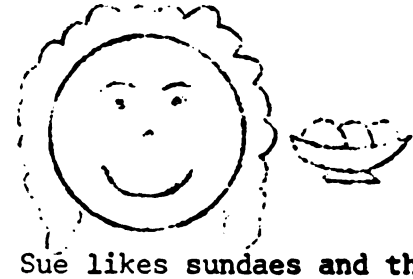
If eating an ice cream sundae DOES NOT MAKE YOU HAPPY AT ALL WRITE 10.

*YOU CAN WRITE ANY NUMBER YOU WISH.

For example:

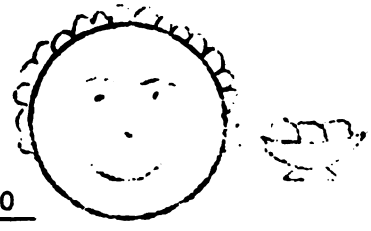
200

Steven loves sundaes and they make him MUCH MORE HAPPY THAN CAKE.



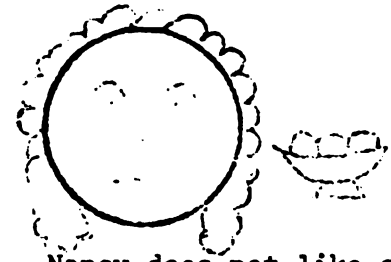
75

Sue likes sundaes and they make her MORE HAPPY THAN CAKE.



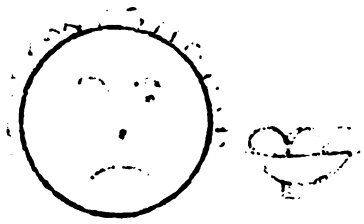
10

Sundaes make Ken AS HAPPY AS CAKE.



5

Nancy does not like sundaes that much. They make her LESS HAPPY THAN CAKE.



0

Charlie does not like ice cream sundaes AT ALL. They don't make him happy.

NOW GIVE US YOUR ANSWER

How happy are you eating an ice cream sundae?

REMEMBER → 0 = not happy at all

10 = as happy as eating a piece of cake

NOW ANSWER → [ ] = how happy you are eating an ice cream sundae

Does eating ice cream sundaes make you MORE HAPPY THAN CAKE, LESS HAPPY THAN CAKE, AS HAPPY AS CAKE, or NOT HAPPY AT ALL? What does your answer say?

Okay, let's do another example:

How happy does eating spinach make you?

REMEMBER → 0 = not happy at all

10 = as happy as eating cake

NOW ANSWER → [ ] = how happy eating spinach makes you

A number BIGGER THAN 10 means spinach makes you MORE HAPPY THAN CAKE.

A number SMALLER THAN 10 means spinach makes you LESS HAPPY THAN CAKE.

TEN(10) means that spinach makes you AS HAPPY AS CAKE.

ZERO (0) means that spinach DOES NOT MAKE YOU HAPPY AT ALL.

Let's do one more:

Let's call how happy you are riding a bicycle 10. Not happy at all we'll call 0. Now how happy would you be if you could go to Disneyworld?

REMEMBER ⟶ 0 = not happy at all

10 = as happy as riding a bicycle

NOW ANSWER ⟶ [ ] = how happy you would be going to Disneyworld

Now we would like to know what you thought about the part of the film that followed the cartoon. Please answer the following questions just like you answered the examples we did.

1. Sometimes people feel angry. Imagine someone borrowing something of yours without asking. Call how angry you are 10. Not being angry at all we'll call 0. Now think about the film. How angry did the film make you feel?

REMEMBER ⟶ 0 = not angry at all

10 = as angry as when someone borrows something of yours without asking

NOW ANSWER ⟶ [ ] = how angry the film made you feel

2. Sometimes people feel sad. Imagine reading a book that almost makes you cry. Call how sad you are 10. Not sad at all we'll call 0. Now think about the film. How sad did the film make you feel?

REMEMBER ⟶ 0 = not sad at all

10 = as sad as reading a book that almost makes you cry

NOW ANSWER ⟶ [ ] = how sad the film made you feel

REMEMBER!! If the film made you feel LESS SAD THAN you do reading a book that almost makes you cry, write a number SMALLER THAN 10.

If the film made you feel MORE SAD THAN you do reading a book that almost makes you cry, write a number BIGGER THAN 10.

If the film made you feel AS SAD AS reading a book that almost makes you cry, WRITE 0.

If the film DIDN'T MAKE YOU FEEL SAD AT ALL WRITE 0.

*YOU CAN WRITE ANY NUMBER YOU WISH.

3. Sometimes people feel happy. Imagine riding a bicycle. This probably makes you happy. Call how happy you are 10. Not happy at all we'll call 0. Now think about the film. How happy did the film make you feel?

REMEMBER → 0 = not happy at all

10 = as happy as riding a bicycle

NOW ANSWER → [ ] = how happy the film made you feel

4. Sometimes people feel scared. Imagine being in a house during a thunder and lightening storm. This probably makes you scared. Call how scared you are 10. Not scared at all we'll call 0. Now think about the film. How scared did the film make you feel?

REMEMBER → 0 = not scared at all

10 = as scared as being in a house during a thunder and lightening storm

NOW ANSWER → [ ] = how scared the film made you feel

5. Sometimes people feel pleased. Imagine going to a nice restaurant for dinner. This probably pleases you. Call how pleased you are 10. Not pleased at all we'll call 0. Now think about the film. How pleased did the film make you feel?

REMEMBER → 0 = not pleased at all

10 = as pleased as going to a nice restaurant for dinner

NOW ANSWER → [ ] how pleased the film made you feel

6. Sometimes people feel excited. Imagine going swimming. This probably makes you excited. Call how excited you are 10. Not excited at all we'll call 0. Now think about the film. How excited did the film make you feel?

REMEMBER ⟶ 0 = not excited at all

10 = as excited as going swimming

NOW ANSWER ⟶ [ ] = how excited the film made you feel

We also want to know how much you liked watching the film. Please answer the next questions on how you felt about that part of the film that came after the cartoon.

1. Some things are interesting. Other things are not so interesting. Imagine watching a film about building a doghouse. This probably interests you. Call how interesting this is 10. Not interesting at all we'll call 0. Now think about the film. How interesting is the film you watched?

REMEMBER ⟶ 0 = not interesting at all

10 = as interesting as a film about building a doghouse

NOW ANSWER ⟶ [ ] = how interesting the film you watched is

2. Some things people pay attention to. Other things we don't pay so much attention to. Again, imagine watching a film about building a doghouse. You would probably pay attention to it. Call how much paying attention you would do 10. Not paying attention at all, we'll call 0. Now think about the film. How much paying attention did you do to the film you watched?

REMEMBER ⟶ 0 = not paying attention at all

10 = as much paying attention as to a film about building a doghouse

NOW ANSWER ⟶ [ ] = how much you paid attention to the film you watched

REMEMBER!! If you PAID NO ATTENTION AT ALL TO THE FILM, WRITE 0.

If you PAID AS MUCH ATTENTION TO THE FILM AS you would to a film about building a doghouse, WRITE 10.

(con't.) If you PAID MORE ATTENTION to the film than you would to a film about building a doghouse, WRITE A NUMBER BIGGER THAN 10.

If you PAID LESS ATTENTION to the film than you would to a film about building a doghouse, WRITE A NUMBER SMALLER THAN 10.

*YOU CAN WRITE ANY NUMBER YOU WISH.

3. Some things people are willing to do again. Other things people are not so willing to do again. Imagine being willing to ride a bicycle again. Call how willing you are to do this again 10. Not willing at all we'll call 0. Now think about the film. How willing are you to watch this film or one just like it again?

REMEMBER ——→ 0 = not willing at all to watch again

10 = as willing as riding a bicycle again

NOW ANSWER ——→ [ ] = how willing you are to watch this film again

Now we would like to know about what you saw in the part of the film that came after the cartoon.

1. Let's call how much hitting there is in one fight 10. No hitting at all we'll call 0. Now how much hitting was there in the film you watched? (Hitting means pushing, shoving, fighting, slapping, grabbing, etc.)

REMEMBER ——→ 0 = no hitting at all in the film

10 = as much hitting in the film as in one fight

NOW ANSWER ——→ [ ] = how much hitting there was in the film

2. Let's call how much yelling two angry people might do 10. No yelling at all we'll call 0. Now how much yelling was there in the film you watched? (Yelling means screaming, name calling, shouting.)

REMEMBER ⟶ 0 = no yelling at all in the film

10 = as much yelling in the film as two angry people might do

NOW ANSWER ⟶ [ ] = how much yelling there was in the film

REMEMBER!! If there was MORE YELLING IN THE FILM THAN two angry people might do, write a number BIGGER THAN 10.

If there was LESS YELLING IN THE FILM THAN two angry people might do, write a number SMALLER THAN 10.

If there was NO YELLING IN THE FILM, WRITE 0.

If there was AS MUCH YELLING IN THE FILM AS two angry people might do, WRITE 10.

*YOU CAN WRITE ANY NUMBER YOU WISH.

3. Let's call how much someone helps a friend with homework 10. No helping at all we'll call 0. Now how much helping people was there in the film you watched? (Helping means sharing, giving, saving or helping someone.)

REMEMBER ⟶ 0 = no helping at all in the film

10 = as much helping in the film as someone helping a friend with homework

NOW ANSWER ⟶ [ ] = how much helping there was in the film

Now we would like to know how hard or how strongly people did things in the part of the film that came after the cartoon.

1. Let's call how hard someone yells shut up 10. No yelling at all we'll call 0. Now how hard were people yelling in the film you watched?

REMEMBER ----> 0 = no yelling at all in the film

10 = as hard as someone yelling shut up

NOW ANSWER ----> [ ] = how hard people were yelling in the film

2. Let's call how strongly someone helps a hurt friend 10 and no helping at all we'll call 0. Now how strongly were people helping in the film you watched?

REMEMBER ----> 0 = no helping at all in the film

10 = as strongly as helping a hurt friend

NOW ANSWER ----> [ ] = how strongly people were helping in the film

REMEMBER!! If in the film people were HELPING MORE STRONGLY THAN helping a hurt friend, write a number BIGGER THAN 10.

If in the film people were HELPING AS STRONGLY AS helping a hurt friend, WRITE 10.

If in the film people were HELPING LESS STRONGLY THAN helping a hurt friend, write a number SMALLER THAN 10.

If in the film people WERE NOT HELPING AT ALL, WRITE 10.

*YOU CAN WRITE ANY NUMBER YOU WISH.

3. Let's call how hard someone hits a person in the face 10 and no hitting at all we'll call 0. Now how hard were people hitting in the film?

REMEMBER ⟶ 0 = no hitting at all in the film

10 = as hard as hitting someone in the face

NOW ANSWER ⟶ [ ] = how hard were people hitting in the film

Now think back to the part of the film that came after the cartoon. How often did you see the following?

1. How many times did someone help (save, give, share) another person?

REMEMBER ⟶ 0 = no helping at all in the film

NOW ANSWER ⟶ [ ] = the number of times someone helped someone in the film

(If there was NO helping at all in the film WRITE 0. If there was helping in the film, WRITE THE NUMBER OF TIMES.)

2. How many times did someone hit (punch, shove, fight, slap, grab, etc.) another person?

REMEMBER ⟶ 0 = no hitting at all in the film

NOW ANSWER ⟶ [ ] = the number of times someone hit someone in the film

3. How many times did someone yell (scream, call names, shout) at someone in the film?

REMEMBER ⟶ 0 = no yelling at all in the film

NOW ANSWER ⟶ [ ] = the number of times someone yells in the film

4. Which best describes the film you saw. Circle the best answer.

People Helping People

People Hitting People

People Yelling at People

How often would you do the following. Circle your answer.

1. A kid at school threatens to beat you up, so you fight with him/her.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

2. A kid steals your marbles, so you beat the kid up.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

3. Someone hits your friend, so you hit them back.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

4. Someone won a boulder off you, but you know they cheated, so you grab it away from them.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

5. You work real hard to finish your homework. Some kid takes your papers and rips them up, so you hit the kid.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

6. You are waiting in line at the water fountain at school and someone cuts in front of you, so you push him/her out.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

DO NOT WRITE BELOW THIS LINE

N	D	T	C	GP	S	G	E	S

How often would you do the following. Circle your answer.

1. Someone calls you a turkey, so you call him/her a name back.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

2. One of your classmates says you copied their homework, but it isn't true, so you call the kid a liar.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

3. One of your classmates constantly talks during class so you tell the person to shut up.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

4. A kid teases you, so you tease the kid back.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

5. You are going to recess and someone runs into you in the hall, so you yell that they better watch it.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

6. Suppose you are playing a ball game and a kid throws the ball at your head while you aren't looking and it hits you. You scream at the kid not to do it again.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

——————DO NOT WRITE BELOW THIS LINE——————

N	D	T	C	GP	S	G	E	S

How often would you do the following. Circle your answer.

1. A friend of yours is frightened by a thunderstorm, so you comfort him/her by telling them why they shouldn't be scared.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

2. You are playing ball during recess and one of your teammates is about to get hit with the ball so you tell them to watch out.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

3. You are swimming in a lake, and someone drops their ring in the water, so you dive in and try to get it.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

4. One of your classmates is sad, so you try to cheer them up.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

5. A friend is feeling bad because they keep making silly mistakes trying to play a new game, so you teach them how to play the game right

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

6. A classmate doesn't have a pencil and wants one of yours, so you give him/her one.

   ALMOST ALWAYS USUALLY SOMETIMES ALMOST NEVER

——————————DO NOT WRITE BELOW THIS LINE——————————

N	D	T	C	GP	S	G	E	S

Now tell us a little about yourself.

What is your name? _____ _____ _____

What grade are you in? 5th 6th

Are you a boy or girl? Boy Girl

How old are you? _____ years old

How many brothers or sisters do you have?

_____ Brothers

_____ Sisters

_____ None

Teacher's Name _____

_____ DO NOT WRITE BELOW THIS LINE _____

N	D	T	C	GP	S	G	E	S

APPENDIX E

SAMPLE OF INTERVIEW INSTRUMENT

APPENDIX E

SAMPLE OF INTERVIEW INSTRUMENT

Introduction

We are going to ask you some questions about the film you just saw. We want you to tell us how you felt while watching it. You are going to answer with numbers. Let's go over the example to see how it's done.

If I said to you that eating a piece of cake is an amount of happiness equal to 10 and no happiness at all equals zero, how happy would an ice cream sundae make you?

Now

0 = no happiness

10 = happiness of eating a piece of cake

__ = happiness of eating an ice cream sundae

If eating an ice cream sundae makes you happier than eating a piece of cake, you would ANSWER WITH a number *LARGER THAN* 10.

If eating an ice cream sundae makes you less happy than eating a piece of cake, you would ANSWER WITH a number *SMALLER THAN* 10.

You can write any number you want.

For example: If ice cream sundaes make you two times as happy as a piece of cake, you would answer *20*. If they made you ten times as happy, you would answer *100*, or any number you want.

If you don't like ice cream sundaes as much as cake and they make you only half as happy as cake and cake = 10, what would ou say _____?

Okay, let's do another example.

0 = no happiness

10 = happiness of eating a piece of cake

__ = happiness of eating spinach

Now, what does your answer mean? A number higher than *10* means spinach makes you happier than cake. Ten means spinach makes you as happy as cake. A number less than *10* means spinach does *not* make you as happy as cake.

Let's think of the situation we want to know how happy something makes you.

Suppose riding a bicycle gives you an amount of happiness equal to 10, while going to lose your allowance gives you an amount of happiness of zero, or in other words, no happiness at all. Now if someone asked how happy would you feel if you were going to Disney World, thinking that riding a bicycle is happiness equal to 10, going to Disney World is happiness equal to ____.

APPENDIX F

TESTER TRAINING INSTRUCTIONS

APPENDIX F

TESTER TRAINING INSTRUCTIONS

INSTRUCTIONS

I. General

1. Consistency is the key word in conducting this experiment. Do the same things, say the same things, use the same order for each cell you work with.

2. Speak loudly, clearly, and slowly enough for the students to understand. Be friendly.

3. Try to avoid any unnecessary movement or distractions in the room when the tester is speaking:

   a. Have the videotape ready to go before beginning the session.

   b. When the tape is over, put VTR on stop, turn off monitor, and leave the equipment alone. Rewind the tape after the questionnaires are completed.

4. Write down anything unusual that might have happened during the test session. For example:

   a. You forgot to turn off the lights before showing tape.

   b. The machine broke.

   c. The class was disrupted for some reason.

5. Keep the students in the testing room for the entire hour. When the questionnaire is completed, have them color the Snoopy; when they finish that, carry on a conversation about what they will do during the summer, etc. Avoid talking about aspects of the experiment.

6. When dealing with students, don't use negative words.

II. Testing

GETTING THE SUBJECTS:

1. Each cell has been assigned a tester and a helper. At the beginning of the testing period, all testers will go to the top classroom on their list of subjects; the helpers will go to the second room.

2. Once in the classroom, each person in turn will read off the names of the children she needs for her particular cell:

   Example:

   My name is _____. I'd like the following students to bring their crayons and a pencil and come with me to the ____(room)_____. When I call your name, bring your things and come to the front of the room. READ NAMES.

3. Keep track of whether or not all students on your list are in the classroom. If you have everyone you are supposed to have, take the children to the testing room you have been assigned to.

   CELL #4 PERSON (OR PERSON DESIGNATED): You will be the last person to call your students' names. Keep track of where all extras are going on your extra list. (Example, if Cell #1 needs Suzy Jones, write "Cell #1" after Suzy's name on the extra list). Eventually, you will give this list to JAN in the hallway outside the classroom.

   If you don't have all the children you are supposed to have: Check the extra list for that classroom and attempt to replace the missing student with another student of the same sex. Add the name to your list when you get to your testing room.

   If you can't replace an absent student from the extra list: Take your students to the testing room. JAN will be in the hallway outside the classrooms. Tell her what student you are missing (boy/girl). She will attempt to get an extra from the other classroom and send him/her to your testing room. The Cell #4 person should give the updated extra list to Jan so that she can do all this.

BE SURE TO PUT THE NAME OF EXTRA REPLACEMENT STUDENTS ON YOUR LIST. If you don't get any extras, run the experiment with the number of students you have. Relay this information to your "partner" who will be administering the same cell for the 6th grade. If this happens during the 6th grade experiments, relay the information to Nadyne, so she will know how many students she has in a cell.

WHEN TAPE IS OVER, TURN OFF VTR, TURN OFF MONITOR, TURN ON LIGHTS.

Now it's time to fill out our questionnaires. Turn to page 1 again and we'll go over the directions once more.

(READ COPY FROM TOP OF PAGE DOWN TO, BUT NOT INCLUDING FACES.)

Now we're ready to begin. Turn to page 3. Follow along with me as I read each question and put your answer for each question in the box.

(READ THROUGH PAGES 3-7. REMEMBER TO READ LOUDLY, CLEARLY, AND SLOWLY. CHECK TO SEE THAT STUDENTS HAVE ENOUGH TIME TO WRITE THEIR ANSWERS FOR EACH QUESTION.)

GO ON TO READ DIRECTIONS ON PAGE 8. AGAIN, READ ONLY TO THE FACES. THEN SAY:

Now let's turn to page 11 and continue the questionnaire.

GO THROUGH PAGES 11-19.

(BEFORE READING PAGE 20) We're almost finished now. We need to answer just a few more questions.

(READ PAGE 20.)

(BEFORE READING PAGE 21):

Please tell us a bit about yourself. Remember we need this information only for the researchers at Michigan State University. No one else will see this questionnaire. Please fill in the information on the last page.

(ALLOW TIME FOR STUDENTS TO FILL IN PAGE.)

WHEN STUDENTS ARE FINISHED:

We still have some time before you return to your classrooms. If you'd like, you may use your crayons to color-in Snoopy on the front of your questionnaire.

AFTER THE STUDENTS FINISH QUESTIONNAIRE:

1. Have the helper collect the questionnaires when the students are finished coloring.

2. Carry on some kind of conversation with the kids, about what they will do during the summer.

3. At the end of the period, ask the students to bring their crayons and pencils and follow you back to their classrooms.

BRING YOUR COMPLETED MATERIALS TO THE CENTRAL MEETING PLACE: REWIND TAPES AND SET UP THE TESTING ROOM FOR THE NEXT EXPERIMENT.

APPENDIX G

CONSENT LETTER TO PARENTS

MICHIGAN STATE UNIVERSITY

COLLEGE OF COMMUNICATION ARTS
DEPARTMENT OF COMMUNICATION

EAST LANSING · MICHIGAN · 48824

May 1, 1977

Dear Parent:

We are social science researchers in the Department of Communication, Michigan State University. We are conducting a study on the effects of television content on school-age children's learning and attention, and would greatly appreciate your child's participation.

The study will take approximately 30 minutes. Your child will be shown a video-tape of segments of prime-time television programs. These segments will be scenes of either characters helping each other, yelling at each other, or hitting each other. These scenes are typically presented on television. After viewing the tape, your child will be asked to fill out a questionnaire which asks about your child's impressions of the tape. For instance, one question asks, "How interesting was the film?" The information gathered will be used only by the researchers.

We believe it is very important to understand how television affects the lives of our children and what role it plays in learning. Your child's participation in this study will help us have a better understanding of television effects.

Please fill out the enclosed form which asks you to check either the box giving permission for your child to participate or the box declining permission.

We would like to thank you for your cooperation. Any questions you have should be referred to:

Ms. Nadyne G. Edison
Department of Communication
532 South Kedzie Hall
Michigan State University
East Lansing, Michigan 48824

Dr. Bradley S. Greenberg
Department of Communication
517 South Kedzie Hall
Michigan State University
East Lansing, Michigan 48824

Sincerely,

Nadyne G. Edison

Bradley S. Greenberg

APPENDIX H

UNTRANSFORMED AND TRANSFORMED MEANS AND STANDARD DEVIATIONS FOR ALL DEPENDENT ITEMS AND MANIPULATION ITEMS

Table H.1

Untransformed and Transformed Means and Standard Deviations for All Dependent Items for Three Content Treatment Groups[a]

Dependent	Items[b]	Untransformed		Transformed	
		Mean	Standard Deviation	Mean	Standard Deviation
PA2	(N = 240)	251.088	1406.307	.9131	.8474
PA4	(N = 240)	218.458	1271.897	.7993	.8832
PA8	(N = 240)	194.012	1131.935	.9880	.8227
PA11	(N = 240)	271.242	1150.033	.9347	.8410
PA13	(N = 240)	1195.465	3014.503	1.6278	1.1659
PA16	(N = 240)	544.154	2028.916	1.3943	.9510
VA3	(N = 240)	621.388	2207.032	1.5332	.8905
VA6	(N = 240)	586.873	2173.208	1.3684	.9799
VA9	(N = 240)	488.385	1852.431	1.4666	.9181
VA10	(N = 239)	374.309	1645.505	1.3488	.8322
VA15	(N = 240)	258.588	1394.355	1.0403	.8575
VA18	(N = 240)	1001.969	2840.953	1.4619	1.1247
AL1	(N = 240)	156.708	1067.460	1.2476	.6708
AL5	(N = 240)	669.334	2217.368	1.7240	.8843
AL7	(N = 240)	345.231	1625.061	1.2931	.8695
AL12	(N = 240)	681.877	2267.651	1.5996	.9661
AL14	(N = 239)	435.533	1808.683	1.5917	.7774
AL17	(N = 240)	507.135	1903.551	1.5488	.8433
Angry	(N = 240)	143.179	1077.275	.6413	.7791
Scared	(N = 239)	88.008	910.574	.3161	.5859
Sad	(N = 240)	130.067	1110.424	.4379	.6479
Happy	(N = 240)	157.271	1115.285	.8735	.7233
Pleased	(N = 238)	230.836	1433.968	.8628	.7445
Excited	(N = 237)	83.186	664.515	.8645	.7153
Do again	(N = 235)	257.477	1442.625	1.2132	.7204
Pay attn.	(N = 235)	477.098	1938.217	1.2408	.8286
Interest	(N = 236)	157.000	1122.746	.9256	.7165

[a]Untransformed and transformed items averaged over physical aggression, verbal aggression, and altruism subjects.

[b]See Chapter 2, Section 2.32 for description of items.

Table H.2

Untransformed and Transformed Means and Standard Deviations for All Manipulation Items for Three Content Treatment Groups[a]

Manipulation Items	Untransformed		Transformed	
	Mean	Standard Deviation	Mean	Standard Deviation
Howhit (N = 233)	212.373	1323.000	.6956	.8529
Hithard (N = 233)	67.970	662.010	.5918	.7507
Timehit (N = 232)	64.052	322.635	.6593	.8184
Howyell (N = 234)	114.295	923.824	.8556	.7275
Yelhard (N = 233)	78.026	665.061	.9167	.6743
Timeyell (N = 233)	109.073	927.053	.7455	.6902
Howhelp (N = 235)	108.340	921.721	.7259	.7297
Helphard (N = 233)	111.288	927.997	.7173	.6924
Timehelp (N = 232)	95.470	924.238	.5639	.6295

[a]Untransformed and transformed items averaged over physical aggression, verbal aggression, and altruism subjects.

[b]See Chapter 2, Section 2.33 for description of items.

APPENDIX I

INTERCORRELATIONS AMONG DEPENDENT ITEMS AND INDEPENDENT ITEMS

APPENDIX I

INTERCORRELATIONS AMONG DEPENDENT ITEMS AND INDEPENDENT ITEMS

Table I.1

Intercorrelations (and One-Tail Levels of Significance) for Ratio and Likert Scale Physical Aggression Social Learning Items for Physical Aggression Treatment Group (N = 80)[a]

Dependent Items[b]	PA2 (Likert)	PA4 (Likert)	PA8 (Likert)	PA11 (Likert)	PA13 (Likert)	PA16 (Likert)
PA2 (Ratio)	*.6677*	.5132	.4902	.2382	.4627	.2322
	(.001)	(.001)	(.001)	(.017)	(.001)	(.019)
PA4 (Ratio)	.5950	*.6266*	.4196	.2430	.4092	.2509
	(.001)	*(.001)*	(.001)	(.015)	(.001)	(.012)
PA8 (Ratio)	.5573	.4531	*.5942*	.2474	.4481	.2763
	(.001)	(.001)	*(.001)*	(.013)	(.001)	(.007)
PA11 (Ratio)	.2200	.3753	.2966	*.3785*	.4105	.2373
	(.025)	(.001)	(.004)	*(.001)*	(.001)	(.017)
PA13 (Ratio)	.6508	.4554	.5322	.3408	*.6135*	.3084
	(.001)	(.001)	(.001)	(.001)	*(.001)*	(.003)
PA16 (Ratio)	.4377	.5498	.3459	.3735	.4028	*.5678*
	(.001)	(.001)	(.001)	(.001)	(.001)	*(.001)*

[a] Logarithmically transformed variables.

[b] See Chapter 2, Section 2.32 for description of items.

Table I.2

Intercorrelations (and One-Tail Levels of Significance) for Ratio and Likert Scaled Verbal Aggression Social Learning Items for Verbal Aggression Treatment Group (N = 80)[a]

Dependent Items[b]	VA3 (Likert)	VA6 (Likert)	VA9 (Likert)	VA10 (Likert)	VA15 (Likert)	VA18 (Likert)
VA3 (Ratio)	*.5200*	.4127	.1132	.3458	.1907	.2422
	(.001)	(.001)	(.159)	(.001)	(.045)	(.015)
VA6 (Ratio)	.2874	*.4593*	.1524	.0589	.2241	.1655
	(.005)	*(.001)*	(.089)	(.302)	(.023)	(.071)
VA9 (Ratio)	.3473	.3535	*.3626*	.0797	.2869	.2857
	(.001)	(.001)	*(.001)*	(.241)	(.005)	(.005)
VA10 (Ratio)	.4851	.4173	.1583	*.4395*	.3345	.1959
	(.001)	(.001)	(.080)	*(.001)*	(.001)	(.041)
VA15 (Ratio)	.3987	.3014	.3754	.2389	*.5843*	.3642
	(.001)	(.003)	(.001)	(.016)	*(.001)*	(.001)
VA18 (Ratio)	.4418	.3151	.2639	.2004	.4666	*.4675*
	(.001)	(.002)	(.009)	(.037)	(.001)	*(.001)*

[a]Logarithmically transformed variables.

[b]See Chapter 2, Section 2.32 for description of items

Table I.3

Intercorrelations (and One-Tail Levels of Significance) for Ratio and Likert Scaled Altruism Social Learning Items for Altruism Treatment Group (N = 80)[a]

Dependent Items[b]	AL1 (Likert)	AL5 (Likert)	AL7 (Likert)	AL12 (Likert)	AL14 (Likert)	AL17 (Likert)
AL1 (Ratio)	*.4763*	.3031	.2391	.4761	.3583	-.0470
	(.001)	(.003)	(.016)	(.001)	(.001)	(.339)
AL5 (Ratio)	.2231	*.4057*	.2641	.2052	.1838	.0855
	(.023)	*(.001)*	(.009)	(.034)	(.051)	(.225)
AL7 (Ratio)	.0113	.3515	*.4700*	.1373	.0475	.2412
	(.460)	(.001)	*(.001)*	(.112)	(.338)	(.016)
AL12 (Ratio)	.2442	.2959	.2086	*.4144*	.1245	.2323
	(.015)	(.004)	(.032)	*(.001)*	(.136)	(.019)
AL14 (Ratio)	.2278	.3425	.1888	.3221	*.2807*	.3093
	(.021)	(.001)	(.047)	(.002)	*(.006)*	(.003)
AL17 (Ratio)	-.0162	.3086	.2139	.1242	.1767	*.5574*
	(.442)	(.003)	(.028)	(.136)	(.058)	*(.001)*

[a]Logarithmically transformed variables.

[b]See Chapter 2, Section 2.32 for description of items.

Table I.4

Intercorrelations (and One-Tail Levels of Significance) for Ratio Scaled and Likert Scaled Social Learning Dependent Variables for Each Content Treatment Group (N = 80)[a]

Dependent Variables		Likert			
Ratio		Physical Aggression	Verbal Aggression	Altruism (Factor 1)	Altruism (Factor 2)
Physical aggression		*.7771* *(.001)*			
Verbal aggression			*.6444* *(.001)*		
Altruism				*.2434* *(.015)*	
Altruism					*.4696* *(.001)*

[a]Logarithmically transformed variables averaged over subjects within experimental treatment group.

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REFERENCES

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