L A K E H E A D  U N I V E R S I T Y

# THE EFFECTS OF INTELLIGENCE ON RESPONSES OF YOUNG CHILDREN AFTER VIEWING TELEVISED AGGRESSIVE AND NON-AGGRESSIVE CARTOON MODELS

by

MICHAEL FREDERICK WAYE

A THESIS
SUBMITTED TO THE FACULTY OF ARTS
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY
THUNDER BAY, ONTARIO, CANADA
JUNE 1975

ACKNOWLEDGEMENTS

"No man is an island", and it should be stated from the onset that without the contributions of a large number of people, this study would have been much less enjoyable. I would like to acknowledge the support of Dr. W. T. Melnyk, professor of Psychology and Dean of Arts, who provided very necessary administrative assistance, academic guidance, and personal encouragement and Dr. J. F. Evans, professor of Psychology, who, while acting Chairman of the Psychology Department, helped in securing very important resources. In addition, the humour, comments, and constructive criticism of Dr. Alan Krichev, Chief Psychologist, Lakehead Board of Education, were very enlightening at various stages of completion. The comprehensive critique given by Dr. M Dilley, Department of Psychology, Lakehead University, was very much appreciated.

A very special thank you is extended to Dr. Dorothea M. Ross, professor Psychology, School of Medicine, University of California at San Francisco, who became an "advisor in absentia", for her very helpful suggestions and encouragement during various phases of the study. In addition, I am grateful to Dr. Joan E. Grusec, professor of Psychology, University of Toronto, for consenting to be the external examiner for the thesis.

Making the cartoon tapes was a rather arduous task which was made easier by the theatrics, both video and audio, of Messrs. Peter Faulkner and Keith Anderson of Captain Mystical's Botzo Band, and by

Dr. Manuel Suarez, Chairman of the Department of Music, Lakehead University, who suggested and taped the background music.

The chore of subject acquisition was made more palatable with the help of Dr. E. Bauman, consultant Psychologist; and Mr. T. J. Rodtke, assistant superintendent from the Lakehead Separate School Board; and Mr. Clarke McDonald of the Lakehead Board of Education.

Fellow classmates Messrs. Brian Peters and Arieh Bonder assisted with the intelligence screening and data collection was completed by Messrs. Doug Jackson, Blair Oborne, and Bill Ukrainec.

Mention should also be made of the principals, teachers, students, and parents who participated so enthusiastically.

Last, but not least, acknowledgement is made of the contributions of the corporations who donated the toys used in the study: Simpson-Sears Ltd., Toronto; Zellers Ltd., Montreal; S. S. Kresge, Toronto; and F. W. Woolworth Ltd., Toronto.

## ABSTRACT

Based on the research in social learning theory and aggression, the objectives of the following study are threefold: (1) to assess the effect of intelligence on the modelling process, (2) to extend current findings on modelling of aggression from simple repetitive laboratory models to complex cartoon models as found on commercial television, and (3) to assess modelling of aggressive and non-aggressive behaviour from characters in a cartoon setting to dissimilar environments.

Seventy-two boys (mean age 82 months) of high (mean I.Q. 132) and low average (mean I.Q. 93) intelligence were assigned randomly to either aggressive cartoon, co-operative/ non-aggressive cartoon, or no-cartoon conditions. Identical measures of aggressive and non-aggressive play were taken before and after the Ss viewed the cartoons which were designed to approximate television cartoon programmes having music, voices, interacting characters, and a storyline. Tangible rewards were given to the cartoon characters for their behaviour.

Modelling of novel aggressive behaviour was demonstrated; however, only one of nine aggressive behaviours were imitated. There was no modelling effect for non-aggressive behaviour categories.

Results were interpreted cautiously because of the low number of behaviours imitated and chance factors could have resulted in significance that could have been misinterpreted. Variables relating to the findings and the need for additional studies involving intelligence variables were discussed.

# TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS....ii

ABSTRACT....iv

LIST OF TABLES....vii

LIST OF FIGURES....viii

INTRODUCTION....1

Modelling of Aggressive Behaviour....3

Live Models....5

Filmed and Televised Models....6

Filmed and Televised Cartoon Models....10

Televised Aggressive Models and Intelligence....14

Television and the Proliferation of Aggressive Models....16

Relationship of the Present Study to Prior Research....19

METHOD....22

Subjects....22

Apparatus....22

Materials....23

Video-Tapes....25

Procedure....27

Data Analysis....29

RESULTS....31

Hypotheses....31

Observer Reliability Coefficients....31

Performance Data....32

Page

Modelling of Aggressive Behaviour.....32
Total Aggression Score.....32
Specific Aggressive Responses.....32
Modelling of Non-Aggressive Behaviour.....37
Total Non-Aggression Score.....37
Specific Non-Aggressive Responses.....41
Acquisition Data.....41
DISCUSSION.....43
Modelling Testing Situation Identity.....44
Repetitive Modelling.....46
Modelling Situation Complexity.....48
Further Research.....50
REFERENCES.....52
APPENDICES.....61

# LIST OF TABLES


| Table | | Page |
|---|---|---|
| 1 | Behaviour Rating Categories | 24 |
| 2 | Observer Correlations | 33 |
| 3 | Analysis of Variance for the Grab Behaviour Category | 35 |
| 4 | Table of Means for Grab Behaviour | 36 |
| 5 | Analysis of Variance for the Push Behaviour Category | 39 |

# LIST OF FIGURES


| Figure | | Page |
|---|---|---|
| 1 | Experimental Design | 34 |
| 2 | Interaction of the cartoon condition and the observation session for the grab behaviour category | 38 |
| 3 | Interaction of the high and low-average intelligence groups over the pre- and post-observation sessions for pushing behaviour | 40 |
| 4 | Mean and percentage recall measures for the acquisition of abstract and concrete material from the Aggressive and Non-Aggressive "cartoons" by High and Low-average intelligence groups | 42 |

# INTRODUCTION

The latest volume of the New Cambridge History (1960) has been appropriately entitled The Era of Violence. Violence and aggression have direct or indirect ramifications for every individual and recent events in Northern Ireland serve to illustrate how partisan extremists, utilizing aggressive coping behaviours, draw citizens and children into the fray as participant-observers. In North American culture as well, aggression is a fact of life. Over the past three decades, scientific scrutiny of aggression has elicited a number of questions: What is aggressive behaviour? How do children acquire aggressive behaviours? In this McLuhanistic age of electronic media, how do televised aggressive cartoon models proliferate aggression in children? And finally, what role does intelligence play in learning aggressive modes of behaviour?

What is aggression or aggressive behaviour? Barnett (1969, cited by Knutson, 1973) has indicated that the term aggression is meaningless and that functional behavioural descriptions and operational definitions should be used. Several theories of aggression have been proposed by many authors: Bandura (1973a); Bandura and Walters (1963); Berkowitz (1962); Buss (1961); Delgado (1969); Dollard, Doob, Miller, Mowrer, and Sears (1939); Kaufman (1965, 1970); and Patterson and Cobb (1973). The main problem with the understanding of research on aggression is that a multiplicity of approaches, models, and experimental procedures have

produced diverse findings (Knutson, 1973).

In general, definitions of aggression have referred to social behaviour judged as injurious or providing noxious stimuli to another organism or surrogate. Reference is also made to intention and expectation regarding the outcome of aggressive acts. Unless inferences about intention and expectation are made, no act may be termed aggressive (Daniels, Gilula, & Ochberg, 1970; Kaufman, 1965).

The question of aggressive behaviour without intent or expectation of result becomes crucial when examining acquisition of play or other relatively harmless behaviours with aggressive form or content by children. Does the child intend to hurt or injure another child or a toy surrogate or is he imitating a relatively innocuous, yet rewarded, behaviour observed in other situations? Walters and Brown (1963) have pointed out that harmless responses with aggressive components may be acquired from models and generalized to other situations where the behaviour might be considered aggressive.

Aggressive behaviour may be interpreted as a specific response. This definition is based on the physical characteristics of the response such as biting, kicking, striking. For the purposes of this paper, aggressive will be defined by the response form. Acquisition of this type of aggressive behaviour has already been demonstrated in the literature (Bandura & Walters, 1963; Patterson & Cobb, 1973) and readily lends itself to empirical study. In addition, the terms aggression and aggressive behaviour will be used synonymously.

## Modelling of Aggressive Behaviour

Definitions of modelling have been put forth by a number of theorists: Bandura (1962, 1971d), Bandura and Walters (1963), Dollard and Miller (1941), Flanders (1968), and Hermans and Dewinther (1970). For the present study, Bandura's (1962) definition is probably most appliaable: "Imitation is the tendency for a person to match the behavior and/or attitudes as exhibited by actual or symbolized models [p. 215]". The term modelling has been used by Bandura to indicate such terms as imitation, observational learning, and identification (Bandura, 1971d).

Research on the modelling of aggression has been reviewed by Bandura (1973a, 1973b), Goranson (1969, 1970), Liebert (1972) and Siegel (1970). In brief, aggressive modelling studies would expose individual subjects to a modelling situation then test for acquisition of the modelled behaviour. Subjects tended to be upper middle class children and were generally assumed to be of at least average intelligence. The cartoons, films, or modelled behaviour, both verbal and physical, were contrived--novel behaviours which were repeated in a set sequence for a number of trials or films edited for the same purpose which is not necessarily equivalent to a television progarmme (Hartley, 1964; Klapper, 1968). Liefer, Gordon, and Graves (1974) have also pointed out that "one of the main criticisms against studies on aggression is the use of films and video tapes not comparable to television content [p. 223]".

The testing environments were either similar or identical to

the situations where the modelled behaviour occurred. Testing situations often included guns, knives, and so on, which are used to facilitate and/or accompany aggressive behaviour (Berkowitz & Lepage, 1967) and in a number of studies, aggression scores were thereby inflated. An uninvolved experimenter remained with the child throughout the session and trained observers rated behaviour through a one-way mirror. Some studies have used prompts and powerful reinforcers to assess the acquisition of modelled behaviour. Additionally, a number of studies have used frustration procedures based on notions of Frustration and Aggression.

Frustration procedures employed in modelling studies were predicated on the frustration-aggression hypothesis put forth by Dollard et al. (see Bandura, 1973a; Dollard, Doob, Miller, Mowrer, & Sears, 1939; Lawson, 1965; and Miller, 1941 among others). Bandura (1973a) has commented on the Frustration-Aggression controversy as such:

> The widespread acceptance of the F-A notion is perhaps attributable more to its simplicity than its demonstrated predictive power. In point of fact, the formula that frustration breeds aggression does not hold well under empirical scrutiny in laboratory studies in which conditions regarded as frustrative are systematically varied [Bandura, 1973a, p. 33].

Research on modelling of aggression has shown, as Bandura pointed out, that frustration procedures do not consistently produce aggressive behaviour. Kuhn, Madsen, and Becker (1967) have found that frustration suppresses aggression, whereas others (Mussen & Rutherford, 1961; Piamonte & Hoge, 1973; and Savitsky, Rogers, Izard, & Liebert, 1970) have reported that frustration failed to influence aggressive responding.

Nelson, Gelfand, and Hartmann (1969), by the manipulation of a competitive game situation, induced frustration which increased aggressive responding. Increased aggressive responding following frustration has also been reported by other investigators (Hanratty, Liebert, Morris, & Fernandez, 1969; and Hanratty, O'Neal, & Sulzer, 1972).

Live Models. The modelling of adult aggressive behaviour has been demonstrated by several studies. Attempting to determine the effect of nurturant and non-nurturant models, Bandura and Huston (1961) reported that aggressive responses were readily imitated whether the model was nurturant or not. Bandura, Ross, and Ross (1963a), investigating the empirical validity of three different theories of imitation, also found that children imitated the controller of resources who behaved aggressively.

These studies tended to discredit earlier Freudian conceptions of imitation and instinctual aggression which were prevalent in the literature (see Freud, 1949; Gillespie, 1971; Megargee & Hokanson, 1970; Roasen, 1968; and Wolman, 1968 among others).

Prior to their 1963 investigation, the same authors, Bandura, Ross, and Ross (1961) delineated the relationship between delayed imitation by nursery school children and the presence of an adult model who either behaved aggressively towards a toy "Bobo" doll or played non-aggressively with "Tinker Toys". Results demonstrated that the subjects who observed the aggressive model produced significantly more novel physical and verbal aggression toward the "Bobo" clown

than either the non-aggressive or no-model control groups. Imitation of aggression has also found to be dependent on the sex of the model--boys demonstrating more aggressive behaviour than girls after viewing a male model.

Filmed and Televised Models. In a further inquiry into nurturance and modelling in pre-schoolers, Madsen (1968) used filmed aggressive adult models and, as in Bandura, Ross, and Ross' (1961) results mentioned above, boys exhibited high aggressive imitation whereas girls exhibited more non-imitative aggression.

Bandura, Ross, and Ross (1963b) examined film-mediated adult models employing the same procedure as in their 1961 study. Adult live, adult filmed, and "cartoon" filmed models were used with novel repetitive verbal and motor behaviour of all three models being identical. The children viewing the filmed models and the live adult models were reported to have produced twice as much aggressive behaviour as controls. It should be noted, however, that the subjects' aggressive responses were reproduced in the absence of the models, in a different environment, but with toys identical to those in the modelling situation. In addition, results concurred with earlier findings regarding sex of observer and model. Sex appropriateness of the model's behaviour was also found to be affecting partial imitative aggression. Bandura and his students have since integrated these and other results from modelling studies into a theory of social learning.

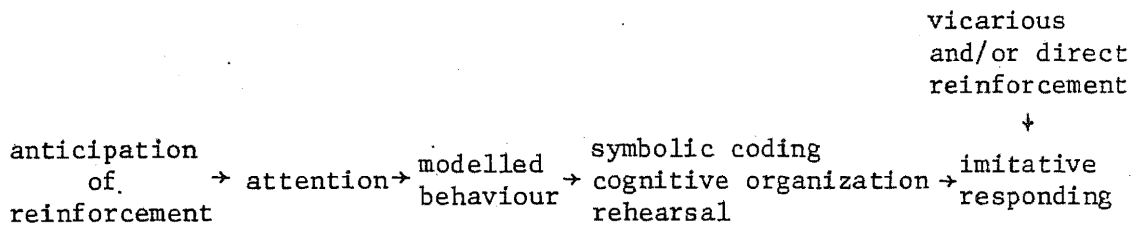
Bandura (1969a, 1969b, 1971c, 1971d, 1973a, and 1973b) has

argued convincingly for social learning theory approaches to account for various behaviours (Bryan & Schwartz, 1971; Flanders, 1968). Bandura (1969) has embodied Mowrer's (1960) sensory feedback theory of modelling and Guthrie's stimulus-contiguity theory (Guthrie, 1952, 1953) as integral parts of social learning theory. Under the social learning theory framework he suggests that reinforcement can be experienced two ways: vicariously through observation of models present in the environment where vicarious is defined as "a change in behavior of observers as a function of witnessing the reinforcement contingencies accompanying the performance of others [Glaser, 1971, p. 11]" or by immediate external reinforcement.

> Reinforcement variables not only regulate the overt expression of matching behavior, but they can also affect observational learning by exerting selective control over the types of modeling cues to which a person is most likely to attend. Moreover, they can facilitate selective retention by activating deliberate coding and rehearsal of modeled responses that have high utilitarian value [Bandura, 1972, p. 48].

Bandura (1969a, 1969b, 1972) has proposed that modelling has four interdependent subprocesses, each with disparate controlling variables which mediate behaviour: attention, retention, reproduction, and motivation. These subsystems provide a means whereby modelled activities may be reproduced at a later time, in a different situation, with dissimilar cues and no direct, immediate reinforcement. Accordingly, vicarious or self-reinforcement for imitative behaviour which interacts with externally applied contingencies, is provided by the observer/imitator to maintain behaviour including imitation of diverse models

who have never had a reinforcement relationship with the observer. Imitative behaviour is reinforced as the result of a long chain of events (Bandura, 1971a; see diagram following).




Even if a child watches a model and learns his/her behaviour, under what conditions will he/she perform that behaviour in the future? The dichotomy between acquisition and performance of modelled behaviours is a key issue in modelling theory (Bandura, 1969; Goranson, 1970; Liebert, 1972; and Wodtke & Brown, 1967 among others). One condition which has been shown to affect the performance of previously acquired behaviour through modelling is the consequent events of the model's behaviour. Bandura, Ross, and Ross (1963c) showed nursery school children a contrived laboratory film of a model's aggressive behaviour which was either rewarded, punished, or which received no consequences. Children exposed to the models who were rewarded or received no consequences performed more imitative aggression than those presented with the model who was punished. No frustration procedure was used and imitative responses were recorded in a testing situation different than in the films. However, toys identical to the ones from the film were in the testing room.

The reverse of these results were then demonstrated by the

presentation of positive incentives following imitation of the punished behaviours (Bandura, 1965). The viewing of aggressive models had either an inhibitory or disinhibitory effect depending on the consequences of the models' responses. Inhibitory effects refer to the withholding of modelled behaviour by response suppression, whereas the disinhibitory effect refers to the evocation of modelled responses which may have previously been in the child's repertoire (Bandura & Walters, 1963). Interestingly enough, television, and specifically children's cartoon programmes such as Bugs Bunny and The Road Runner provide a daily plethora of rewarded aggressive models and models who receive no consequences for aggression.

Rosekrans and Hartup (1967) have confirmed and extended the findings of Bandura (1965) and Bandura, Ross, and Ross (1963c) to models who were inconsistently (rewarded and punished for the same behaviour) reinforced. Subjects exposed to an inconsistently reinforced model produced more aggression than those in a model punished group, but less than subjects exposed to a rewarded model. A number of children's television and cartoon characters (e.g., Sesame Street characters; Ratliff & Ratliff, 1972) may be categorized as inconsistently rewarded aggressive models.

Hicks (1968) reported that the presence of a sanctioning adult increased the probability of imitative responding. Children viewed a filmed adult model who aggressed against a "Bobo" doll and an accompanying adult made either positive or negative comments about the

model's behaviour. Subjects were tested in the presence or absence of a sanctioning adult; those in the presence of the sanctioning adult showed considerably more imitative aggression. Although Grusec (1973) has reported inconsistent results due to age levels in a similar investigation, Martin, Gelfand, and Hartmann (1971) and Siegel and Kohn (1959) have reported results similar to Hicks'. This is a significant factor since many children watching television at home, especially viewing cartoons which are very aggressive, have sanctioning (approving) adults watching with them.

Filmed and Televised Cartoon Models. According to Bandura, affective conditioning of cognitions and emotional states becomes salient when examining aggression on television where models may be observed being reinforced for aggressive behaviour. This is especially true of children's cartoon programmes. Aggression and violence is therefore presented as an acceptable and rewarded standard of behaviour by the cartoon model and consequently, these behaviours will have a high probability of being imitated in the future (Bandura, 1969a).

One of the earliest investigations on the influence of cartoon material on children was done by Siegel (1956). Children were shown an aggressive or non-aggressive commercial (made by commercial broadcasters) cartoon, then were placed in a free-play situation in pairs. Aggression scores did not differ between the two groups, but did correlate significantly with teachers' ratings of aggressive behaviour in the nursery school. Siegel also found boys were more aggressive than girls

(later reported by Bandura, Ross, & Ross, 1963b and Hicks, 1965).

Mussen and Rutherford (1961) used contrived (film edited to present a continuous behavioural sequence) and non-commercial (films made for educational purposes) aggressive and non-aggressive cartoons. The test for aggressive drive involved asking the child whether he would like to play with or pop a balloon. The dependent measure was a verbal reply which was somewhat restrictive in that it did not assess overt physical aggressive responding. But, Mussen and Rutherford did find that children who viewed the aggressive cartoon were more willing to express verbal aggression than those children in the non-aggressive or no-cartoon control groups.

Lovaas (1961), in an earlier study on cartoon aggression with nursery school children used a number of procedures derived from operant learning theory. In this instance, baseline measures (a pre-test) of aggressive behaviour were taken before showing commercial, but contrived, aggressive and non-aggressive cartoons. The measurement of aggressive responses was facilitated by an operant bar press apparatus with a lever designed to have two dolls strike one another. No frustration procedure was used with any of the children.

An initial failure to obtain results prompted the addition of a second bar press apparatus for measuring non-aggressive behaviour, a cage with obstacles through which a lever-activated ball passed and a significant interaction between the kind of toys played with and the kind of film preceding it was found. Additionally, children who viewed

the aggressive cartoon chose the aggressive doll toy and demonstrated increased aggressive responding in the post-test as compared to the pre-test. This is an operant conditioning approach to the modelling of aggressive behviiour.

An operant conditioning approach to modelling behaviour was originally proposed by Dollard and Miller (1941), and has since been developed by Baer and his colleagues (Baer, Peterson, & Sherman, 1967; Baer & Sherman, 1964) and summarized by Gewirtz (1969). Imitation or modelling occurs when the observer is positively reinforced for imitation and ignored or punished for other types of responses; therefore, modelling is the result of direct instrumental training (Gewirtz, 1969). Modelling then becomes integrated into the behavioural typography through the process of generalized imitation. However, a modelled response which appears without a prior reinforcement history cannot be accounted for by operant theory. The phenomenon of generalized imitation, limited by the process of direct reinforcement, cannot adequately explain why a child imitates novel aggressive behaviours from television (Bandura, 1973a, 1973b). Imitative behaviour is not reinforced by cartoon models and observers may not practice modelled behaviours, nonetheless, children have been shown to imitate behaviours observed on television (Bandura, 1973a).

Aggressive modelling by cartoon characters was investigated in the previously mentioned study by Bandura, Ross, and Ross (1963b). To reiterate, the authors employed an adult dressed up as a cartoon character in an approptiate "cartoon" setting with voices and music. The "cartoon"

character model performed a number of novel repetitive aggressive actions. Results from a testing environment similar to the cartoon indicated that the subjects viewing the "cartoon" model reproduced significantly more imitative aggressive behaviour than the no-film control children.

Utilizing "Saturday morning children's programme offerings [p. 445]", Steuer, Applefield, and Smith (1971) exposed two groups of five matched pairs of pre-schoolers to aggressive and non-aggressive programmes, mainly cartoons. Baseline measures of interpersonal aggressive behaviours (hitting, pushing, kicking, and so on) were made in a nursery school environment over a 2-week period. Two weeks of post-baseline measures indicated post-treatment increased in aggressive behaviour for three out of five cases. In addition, the subject pairs were matched on hours of television viewing, not baseline aggression.

Ellis and Sekyra (1972), in lieu of a laboratory setting, employed a nursery school environment for their investigation. Using a pre- and post-treatment observation procedure, the authors showed children an aggressive commercial cartoon, a neutral commercial cartoon, or no cartoon Animated characters who play a rough game of football including hitting, tackling, fighting, kicking, shouting, and shooting were designated as the aggressive cartoon models. The neutral cartoon had no aggressive behaviour, the animated characters being engaged in singing and dancing as in a musical variety show. Children who saw aggressive characters increased aggressive responding in a nursery school observation session. The effect was not found with the neutral

or no-cartoon control groups.

## Televised Aggressive Models and Intelligence

Modelling of aggressive behaviour from live adult, filmed and televised models has been demonstrated in a number of investigations; however, all prior studies have one common denominator. None of the authors measured intelligence and therefore, subjects were assumed to be of average intellectual ability. At present, the relationship between imitative and televised aggressive behaviour is dependent upon data derived solely from middle class children of assumed normal intellect. The effect of television viewing on children of varying levels of intelligence was first raised by Himmelweit, Oppenheim, and Vince (1958). And, according to Bryan and Schwartz (1971), the influence of intelligence levels on the imitation of aggressive models has been ignored by most investigators.

Fechter (1971) has investigated the modelling behaviour of institutionalized retardates (mean I.Q. = 36) after viewing televised films. Retardates were pre-rated as aggressive or "friendly" (non-aggressive) and were shown films of a normal 12-year old female model who either punched and slapped an inflatable "Donald Duck" doll, or played and spoke non-aggressively to it. Non-aggressive subjects produced more aggressive behaviour after viewing the aggressive film, while aggressive subjects produced less aggressive behaviour. Overall, non-aggressive responses decreased after the aggressive film and increased

after the non-aggressive film. Fechter concluded that although specific responses of televised film may not be modelled by retardates, there may be a transfer of mood to the viewers which may be differentially related to differences in personality. Based on the above, it would appear that low intelligence is related to non-imitation.

Another study by Talkington and Altman (1973) utilized institutionalized retardates divided into two levels of intelligence. After exposure to contrived repetitive aggressive and non-aggressive models, the higher I.Q. retarded group exhibited significantly more aggressive responses than the lower intelligence subjects in a testing situation identical to the modelling environment. However, non-aggressive behaviours were not modelled. These results might be predicted from knowledge of institutional settings and the prevalence of modelled aggressive behaviour. As the filmed models received no consequences for their aggressive behaviour, these results are consistent with social learning theory. Talkington and Altman (1973) hypothesized that "imitation as a generalized self-reinforcing behavior occurs only in the high I.Q. ranges with a retarded population [p. 423]".

Stein and Friedrich (1972) have reported on a study investigating the modelling of aggressive and pro-social behaviours in a nursery school environment. After viewing commercial aggressive (Batman) and pro-social (Misterogers Neighbourhood) television fare the nursery school children were rated on aggressive, pro-social, and self-controlling behaviours. The imitation of self-controlling behaviours

was found to be related to intelligence in that high intelligence subjects produced more self-controlling behaviours than children with low intelligence.

Aggressive behaviour may be regarded through social learning theory as a consequence of modelling processes including vicarious and/or direct reinforcement. Commercial television provides a source of violence and aggressive models that are available for observation by children of all ages (Cline, Croft, & Courrier, 1973). Bandura and Walters (1963) have maintained that the imitation of film-mediated aggression in young children illustrates the social learning process. Probably the most pervasive and prevalent form of film-mediated aggressive models is the television cartoon (Gerbner, 1972).

Television and the Proliferation of Aggressive Models

Laboratory investigations have demonstrated, by an accumulation of consistent evidence, that there is a definite relationship between the viewing of televised aggressive models and subsequent imitative aggression.

> At least under some circumstances, exposure to televised aggression can lead children to accept what they have seen as a partial guide for their own actions. As a result, the present entertainment offerings of the television medium may be contributing in some measure, to the aggressive behavior of many normal children. Such an effect has now been shown in a wide variety of situations [Liebert, 1972, pp. 29-30].

Baker and Ball (1969) have presented a number of articles arguing that the proliferation of aggressive models on television has

a deleterious effect on children, especially over an extended period of time. Liebert (1972) and Stevenson (1972) have also pointed out that many children are exposed to heavy concentrations of televised violence over long periods of time.

Eron (1963), in a large field study investigating the relationship between television viewing habits and aggressive behaviour in children, found significant relationships between overt aggressive behaviour and violence ratings of favourite programmes in third grade boys. In a 10-year follow-up of the original sample, Eron, Huesmann, Lefkowitz, and Walden (1972) found that aggressive programmes preferred by boys in grade three were even more strongly related to aggression 10 years later.

Cartoons have been shown to be some of the most aggressive programmes in television. In an assessment of the amount of aggression in cartoons, Zusne (1968) found that "dramatic" rather than "slapstick" types of cartoons were the most violent. Another author recently noted that even Sesame Street characters tended to be destructive aggressive models as well as models for other types of undesirable behaviours such as stealing (Ratliff & Ratliff, 1972).

In 1972, a series of studies commissioned in the United States by the U.S. Surgeon-General was published in Television and Growing Up: The Impact of Televised Violence This report came under immediate and heavy criticism by Liebert and Neile (1972) because of ambiguities in the interpretations of data dealing with the relationship between

viewing television and aggressive behaviour in various subject samples. For example, the Surgeon-General's Scientific Advisory Committee on Television and Social Behavior attempted to place the causes of aggression in correlational studies on a third, yet unknown, variable. This position was strongly rejected by Liebert and Neile. However, in the conclusions and summary the committee raised an interesting question with respect to television and social learning in children. This question concerned predispositional characteristics of those children who display an increase in aggressive behaviour after viewing televised aggression.

Intelligence may be considered as a predispositional characteristic or facilitating condition (Bandura, 1973a) if modelling is to occur. Piaget has referred to imitation as being "controlled by intelligence as a whole [Piaget, 1951, p. 78]". Constructiveness of play has been found to be related to intelligence by Noble (1970) who reported significant differences between the constructive play measures of above average children as opposed to other (lower) intelligence levels. A similar result has been reported by Kniveton and Pike (1972). Social learning, however, is not the only process where intelligence variables have been hypothesized to have an effect.

Intelligence has been shown to be related to concept attainment by Osler and her colleagues. Osler and Fivel (1961) reported significant differences in error scores between average and superior intelligence groups on a concept attainment task--superior intelligence

being better. An extension of the Osler and Fivel study confirmed the hypothesis that superior intelligence children utilize a hypothesis testing approach whereas normal I.Q. subjects employed associative learning (Osler & Trautman, 1961). Superior intelligence children, given general instructions, performed better on problem-solving tasks than average ability subjects (Osler & Weiss, 1962). These authors hypothesized that the difference was due to better ability in problem finding by superior intelligence subjects. The above studies on concept attainment demonstrate that intelligence is an important variable.

Gardner and Barnard (1969) suggest that intelligence level is a determinant of person perception. As television programmes could be described as a complex flow of concepts and imagery involving characters or persons (Friedrich & Stein, 1975), it is logical to assume that intelligence will play a large part in the acquisition of behaviour from that medium.

## Relationship of the Present Study to Prior Research

The objectives of the present study were threefold: (1) to assess the effect of intelligence on the modelling process, (2) to extend the current findings on the modelling of aggression from contrived repetitive laboratory models to complex cartoon models as found on television, and (3) to assess modelling of aggressive and non-aggressive behaviour from characters in a cartoon setting to

dissimilar environments. In relation to previous research, the following procedures were emphasized:

(1) Intelligence was measured and subjects grouped into high and low average levels (Stein & Friedrich, 1972; Talkington & Altman, 1973).

(2) The testing setting was completely dissimilar to the "cartoon" modelling situation, e.g., blocks used by cartoon characters were of a different type than those used in the testing situation (Ellis & Sekyra, 1972; Friedrich & Stein, 1975; Lövaas, 1961; Siegel, 1956; Stein & Friedrich, 1972; and Steuer, Applefield, & Smith, 1971).
Most studies have employed similar environments where cue stimuli present in the modelling situation have elicited behaviour in the testing environment, thus providing a link between modelling and the testing situations (Bandura, 1965; Bandura, Ross, & Ross, 1961, 1963a, 1963b; Hicks, 1965, 1968; Kuhn, Madsen, & Becker, 1967; Savitsky et al., 1971; and Talkington & Altman, 1973).

(3) The stimulus video-tapes approximated children's television cartoons in that they had a story line, setting, dressed up characters, background music, and a voice track (Bandura, Ross, & Ross, 1963a; Ellis & Sekyra, 1972; Mussen & Rutherford, 1961; Lövaas, 1961; Siegel, 1956; Stein & Friedrich, 1972; and Steuer, Applefield, & Smith, 1971) and could not be considered contrived or repetitive.

(4) The tapes were rated as aggressive or non-aggressive by a group of judges in addition to the Experimenter.

(5) The voice track was similar for both tapes comprising a series of emotive grunts with little discernible speech. This was to direct the Ss' attention to the action sequences instead of to the verbal interaction, in addition to accentuating the behaviours.

(6) Electronic background music using a Moog synthesizer was identical for both tapes.

(7) Modelled behaviours were not repeated in a specific sequence. The behaviours were varied and as close to a cartoon programme format as possible (Ellis & Sekyra, 1972; Siegel, 1956; Stein & Friedrich, 1972; and Steuer, Applefield, & Smith, 1971).
Most researchers used laboratory approximations which were suited to the investigator's needs but not equivalent to commercial television in that behaviours are repeated in sequence (Bandura, 1965; Bandura, Ross, & Ross, 1961, 1963a, 1963b; Fechter, 1971;

Hicks, 1965, 1968; Kuhn, Madsen, & Becker, 1967; Lövaas, 1961; Mussen & Rutherford, 1961; Savitsky et al., 1971; and Talkington & Altman, 1973).

(8) The non-aggressive tape involved co-operative behaviours, not merely non-aggressive behaviours (Friedrich & Stein, 1975; Stein & Friedrich, 1972).

(9) No knives or guns were used as toys in the testing room or the tapes. A number of studies have used these items to model and measure aggressive responding (Bandura, 1965; Bandura, Ross, & Ross, 1961, 1963a, 1963b; Hicks, 1965, 1968; Kuhn, Madsen, & Becker, 1967; Savitsky,et al., 1971).

(10) No frustration procedure was used because of the previously reported inconsistent results (Hanratty et al., 1969; Hanratty, O'Neal, & Sulzer, 1972; Kuhn, Madsen, & Becker, 1967; Mussen & Rutherford, 1961; Nelson, Gelfand, & Hartmann, 1969; Piamonte & Hoge, 1973; Savitsky et al., 1971).

Given the preceding conditions, the following hypotheses were investigated:

(1) High intelligence Ss will model and acquire more behaviours than low average intelligence Ss.

(2) Aggressive behaviours will be learned and modelled by high intelligence Ss.

(3) Aggressive behaviours will neither be learned nor modelled by low average intelligence Ss.

(4) Non-aggressive behaviours will be learned and modelled by high intelligence Ss.

(5) Non-aggressive behaviours will neither be learned nor modelled by low average intelligence Ss.

# METHOD

## Subjects

Seventy-two boys from low to middle class neighbourhoods attending kindergarten, grade one, grade two, and junior opportunity classes in Thunder Bay Separate and Public Schools took part in the study. Ss ranged in age from 5 years 6 months to 7 years 11 months with a mean of 6 years 10 months. Ss were selected from the respondants to a parental permission form sent to over 400 parents (see Appendix A), then rated by their teachers as to high, average, or low school achievement (Smith, 1961). The study was conducted in 1973.

WISC block design and vocabulary subtests which give a Full Scale Estimate (Silverstein, 1970) were administered to approximately 200 children who were then divided on intelligence level. Six groups of 12 Ss each were selected from this group. WISC Full Scale Estimates ranging from 115 to 135 with a mean of 123 defined the high intelligence (HI) group (n = 36). The low average intelligence (LAI) group's estimated WISC Full Scale I.Q.s ranged from 75 to 100 with a mean of 93 (n = 36).

## Apparatus

A Sony 3600 Video Recorder, a 13 in. black and white monitor, and camera were used to record and subsequently to show the two video-taped "cartoon" programmes. Synchronization of the audio and video-tape tracks was accomplished by the use of two Sony Cassette Tape Recorders (CTR) and a Sony Mic-Mixer. During the study, a CTR was used

to play a tape of audio-generated time intervals through a dual earplug attachment so that the Ss would not be aware of the Observers' (Os') recording activity and become inquisitive. A stopwatch was used by the Experimenter (E) for time measurement.

Materials

Toys donated by local stores were utilized in the pre- and post-cartoon observations, including two 48 in. and two 36 in. "Bobo" inflatable dolls with ears, four 12 in. inflatable dolls, as well as building blocks, balls of various sizes in a pail, a large plastic baseball bat, and golf club, two toy houses, five trucks and cars, and a plastic toy clock that ticked. All toys were selected on the basis that the play response to them was obvious or known and did not require instructions. A choice of a "Matchbox" car was given to the Ss at the conclusion of the acquisition test.

Special scoring sheets were drawn up using the cartoon action sequence as behavioural categories (see Appendix B). For the purposes of the present study, chop, club, elbow, grab, hit, kick, punch, push, and throw were defined as aggressive behaviours and play with blocks, block-tower, dolls, trucks and other toys, and withdrawal were defined as non-aggressive behaviours. Verbal behaviour was not designated as aggressive or non-aggressive as the modelled verbalizations were constant across both cartoons (see Table 1).

WISC Short Form score sheets comprised of the Vocabulary and Block Design subtests were also made up for the pre-study intelligence

TABLE 1

BEHAVIOUR RATING CATEGORIES

| | |
|---|---|
| BLOCKS | Any play with blocks |
| BLOCKS-TOWER | Specific play with blocks building a tower |
| CHOP | A striking of all dolls "karate" style with hands |
| CLUB | Any striking of the dolls about the head region with a bat, club, or other object |
| DOLLS | Play with dolls other than indicated previously (non-aggressive) |
| ELBOW | Any striking of the dolls with the elbow in a "karate" type motion |
| GRAB | Any snatching at or sudden seizing of the doll's head region |
| HIT | Any striking of the dolls below the head region with a bat, club, or other object |
| KICK | Any use of the foot to strike dolls only |
| PUNCH | Any striking motion towards dolls with fist |
| PUSH | Any motion using one or both hands to move or propel dolls |
| THROW | Hurling or flinging of any objects at the dolls |
| TRUCKS AND OTHER TOYS | Play with trucks, balls, and bats, etc. appropriate behaviours |
| VERBAL BEHAVIOUR | Any grunt (uh-ahh-uh-oh) type of response which may occur in conjunction with any of the other responses |
| WITHDRAWAL (FROM PLAY) | Sitting or standing in corner or alone away from toys - crying, etc. |

screening (see Appendix C).

Video-Tapes

Two 5-min, video-tapes were made in separate phases. The video tracks were recorded first with the Video Tape Recorder (VTR) and camera. Using a CTR, separately recorded audio tracks, background music, and voice, were then synchronized and over-dubbed onto the video-tape. The two characters and the action sequences were provided by a local theatre group based on the requirements of the E. Non-aggressive or pro-social content was portrayed by the two characters who entered then met in front of a curtain decorated with large flowers, shook hands, and found some blocks in a picnic basket. proceeded to construct an elaborate structure with the blocks after which they complimented each other with gestures and shared a banana. The two characters subsequently left together through a rear curtain.

The aggressive content cartoon was identical to the non-aggressive up to the finding of the blocks. An argument then ensued and the characters proceeded to push each other's block building attempts on the floor. Judo chops and blocks to the head, elbows in the stomach were followed by hitting each other with boards on the behinds. Further action sequences involved a punching, judo-chopping duel during which a banana found in the picnic basket, was grabbed from character 1 and finally eaten by character 2. Character 1 subsequently became angry and left character 2 to ear the remainder of the banana alone. Character 2 eventually left by himself.

Both characters were dressed up as "jungle" or "ape" men and the title of both productions was "Jungle Fun". The tapes were constructed to resemble, as much as possible, current children's television fare (e.g., captions, story line, characters, setting, etc.). Electronic music supplied the background while the voice track was a series of emotive grunts (e.g., uh-hum huh). Both tapes started with the "Jungle Fun" caption and ended with "The End". The set was decorated with two large psychedelic flowers which were suspended in front of a curtain, and a flower-printed tablecloth was draped over a low table. There was no repetitive behaviour sequences as used in earlier laboratory studies.

The video-tapes were rated by 40 adult judges drawn from various segments of the community and who had a good acquaintance with children's television programmes. The content of the aggressive and non-aggressive tapes were rated on a five-point Likert-type scale using the following criteria: entertaining - non-entertaining, aggressive - non-aggressive, co-operative - non-co-operative, similarity - dissimilarity to children's television programmes. The order of presentation was counter-balanced, one-half seeing the aggressive content tape first, the other half seeing the non-aggressive tape first (see Appendix D).

Results of the ratings are summarized in Appendix D. Both aggressive and non-aggressive tapes were judged neutral as to entertaining content. The aggressive tape was found to contain high

aggressive content and the non-aggressive tapes high non-aggressive content. Co-operative content was judged to be highest in the non-aggressive tape and lowest in the aggressive tape. The raters estimated the aggressive tape to be more similar to children's television fare than the non-aggressive tape. These results concur with a number of studies that have found children's television programmes to be very aggressive (Osborn & Hale, 1969; Ratliff & Ratliff, 1972; Zusne, 1968).

Procedure

Two male Observers (Os) took part in the data collection. One O left the experiment halfway through the study and had to be replaced by a third person. One O was involved in the entire study; the other two each participated in about half the observations. All Os, 1, 2, and 3 were trained but naive as to cartoon content, treatment conditions, and questions. S's behaviour was observed and recorded during the pre- and post-cartoon observations. All Ss were observed individually.

Observations were made either in the child's school (n = 60) or at Lakehead University (n = 12), since some schools did not have adequate space available. However, in all cases, the procedure was identical. The Os were with the child in the observation room for the entire 10 min observation. They were seated 6 ft apart about 15 ft from the front of the observation room (a clsssroom).

Each O had an earplug connected to the CTR by the dual plug attachment. A pre-recorded tape of audio-generated beeps every 2.5 sec indicated 240 behavioural observations. When the Os heard a

signal they would observe and place behaviours into the categories contained on the special scoring sheets. Observations continued every 2.5 sec for a total of 10 min or 240 time intervals. Pre- and post- cartoon observations were both 10 min in length.

Ss were assigned to one of the three treatment groups: aggressive, non-aggressive, or no-cartoon control conditions. Age levels were equally distributed throughout the groups in order that one age level would not over-balance one or more groups and give significant results due to age (Coates & Hartup, 1969).

For the initial phase of the study, individual Ss were brought to the observation room by the E. Before entering the observation room, the E told the S that he had something that was fun. Ss were then shown the toys and told, "You see all these toys, well you can play with them, do anything you want with them, and have some fun, OK?" The Ss were also told that "The two guys (Os) will be working back there while you are here, but do not worry about them". Mentioning that he would return in a few minutes, E left the room for the 10-min pre-cartoon observation session. Following this session, the S was taken to a separate room and shown a 5-min aggressive or non-aggressive content "cartoon". The no-cartoon control Ss were engaged in conversation for the same time interval. Experimental Ss were taken to a room where the concealed VTR and monitor were located. The room was geographically isolated from the observation room but was in the same building. To enhance attention to the monitor, the room had been

darkened.

Upon entering the room the Ss was asked "What is that?" while the E pointed to the monitor which was within the S's full view. The E then said "Yes/No, it's a T.V." followed by "Let's see if we can tune in a programme". At the same time the VTR was activated by the E. If the S did not watch the monitor he was told "Watch so that you will not miss anything". After viewing the "cartoon" or talking with the E, Ss were taken back to the observation room where each was observed for 10 min under conditions identical to the pre-cartoon observation session.

Ss from the aggressive and non-aggressive cartoon groups were then given an acquisition test to assess the learning of modelled behaviours. After completion of the experimental procedure Ss were told the following: "If you can tell me what you saw on the television, I will give you one of these cars" (showing the cars to the subject). After the child started to reply he was asked "Can you tell my anything else?" If the child came to the end of what he was saying but was not answering correctly, he was asked "What happened on the television?" If the child began to repeat himself he was told "You already told me about that, did anything else happen?"

The sheets were scored in two categories: abstract (e.g., fighting, building) and concrete (e.g., two men, blocks).

Data Analysis

Performance Data: Eighteen analyses of variance were carried

out on the performance data. A 2 x 3 x 2 analysis was used for all calculations with two levels of Intelligence (high and Low), three levels of Cartoon (aggressive, non-aggressive, and control), and two Observational levels (pre- and post-cartoon). The dependent variables for the analyses were total aggression (chop + club + elbow + grab + hit + kick + punch + push + throw); total non-aggression (blocks + block-tower + dolls + trucks and other toys + withdrawal); total block (blocks + block-tower); chop; club; elbow; grab; hit; kick; punch; push; throw; blocks; block-tower; dolls; trucks and other toys; and withdrawal. A posteriori Least Significant Difference (LSD) tests (Kirk, 1968) were then performed on the significant interactions.

Acquisition Data: Acquisition data was analysed by *t* tests between the aggressive and non-aggressive groups. The dependent measures were abstract (e.g., hitting with hand, judo chop) and concrete (e.g., two men, blocks, banana) recall.

# RESULTS

## Hypotheses

Hypotheses were tested and the results were as follows:

1. HI Ss will model and learn more behaviours than the LAI Ss. This was not confirmed as only one of eleven behaviours was modelled by the HI and none by the LAI group. In addition, recall measures were not significantly different between the two groups.
2. Aggressive behaviours will be learned and modelled by HI Ss. This hypothesis was partly confirmed: HI Ss recalled 39% and modelled one of nine aggressive behaviours.
3. Aggressive behaviours will neither be learned nor modelled by LAI Ss. The hypothesis partly confirmed, LAI Ss recalled 29% of the aggressive behaviours, although they did not model any.
4. Non-aggressive behaviours will be learned and modelled by HI Ss. The hypothesis partly confirmed, HI Ss recalled 48% but modelled none of the non-aggressive behaviours.
5. Non-aggressive behaviours will neither be learned nor modelled by LAI Ss. The hypothesis partly confirmed, LAI Ss recalled 39% and modelled none of the non-aggressive behaviours.

## Observer Reliability Coefficients

To calculate the Observer reliability coefficients for Os 1, 2, and 3 the data were divided into two sets, the first for Os 1 and 2 and

the second for Os 1 and 3. For Os 1 and 2 all behaviour categories correlated $r > .90$ except for "elbow" ($r = .69$) and "punch" ($r = .73$); for "throw" and "verbal behaviour" there were no scores to analyse. The second analysis for Os 1 and 3 yielded correlations of $r > .85$ except for "dolls" ($r = .48$). For "club", "elbow", "throw", and "verbal behaviour" there were no computable responses (see Table 2). Given the high reliability of O 1's data with the data for both Os 2 and 3 and the fact that exceptions were found in the data of Os 1 and 2 but not both, O 1's data were used throughout; data for Os 2 and 3 were discarded.

## Performance Data

### Modelling of Aggressive Behaviour

Total Aggression Score. A two (Intelligence) by three (Cartoon) by two (Pre-Post) analysis of variance (see Figure 1) for a total aggression score (chop + club + elbow + grab + hit + kick + punch + push + throw) yielded no significant effects (see Appendix E)

Specific Aggressive Responses. The nine aggressive behaviour scoring categories (chop, club, elbow, grab, hit, kick, punch, push, and throw) were analysed separately using the same two (Intelligence) by three (Cartoon) by two (Pre-Post) analysis of variance.

The "grab" behaviour analysis yielded a significant main effect for levels of intelligence ($df = 1/66$, $F = 5.18$, $p < .05$; see Table 3). HI subjects tended to produce more "grab" responses than the LAI group (see Table 4). In addition, there was a significant interaction of

TABLE 2

OBSERVER CORRELATIONS

| Behaviour Category | Observer A X B | Observer A X C |
|---|---|---|
| Blocks | .98 | .99 |
| Block Tower | .99 | .98 |
| Chop | .97 | .97 |
| Club | .93 | ** |
| Dolls | .98 | .48 |
| Elbow | .69 | ** |
| Grab | .86 | .91 |
| Hit | .98 | .99 |
| Kick | .98 | .96 |
| Punch | .73 | .98 |
| Push | .95 | .93 |
| Throw | ** | ** |
| Trucks etc. | .98 | .94 |
| Verbal Behaviour | ** | ** |
| Withdrawal | .99 | .99 |

** too few scores to be correlated

FIGURE 1

Experimental Design

| INTELLIG. | CARTOON | PRE-CARTOON OBSERVATION | | | | | | | | | | | | | | | POST-CARTOON OBSERVATION | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | BLOCKS | BLOCK TOWER | BLOCK | CHOP | CLUB | DOLLS | ELBOW | GRAB | HIT | KICK | PUNCH | PUSH | THROW | TRUCKS | VERBAL | WITHDRAW | BLOCKS | BLOCK TOWER | BLOCK | CHOP | CLUB | DOLLS | ELBOW | GRAB | HIT | KICK | PUNCH | PUSH | THROW | TRUCKS | VERBAL | WITHDRAW |
| HIGH | Aggress. Cartoon | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Non-Aggress. Cartoon | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Non-Cartoon | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LOW | Aggress. Cartoon | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Non-Aggress. Cartoon | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Non-Cartoon | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

TABLE 3

Analysis of Variance for the Grab Behaviour Category

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Subjects | 71 | 318.94 | | |
| Intelligence | 1 | 22.56 | 22.56 | 5.18* |
| Cartoon | 2 | 5.54 | 2.77 | 0.64 |
| Int X Cart | 2 | 3.29 | 1.65 | 0.38 |
| Error Between | 66 | 287.54 | 4.36 | |
| Pre-Post | 1 | 0.01 | 0.01 | 0.00 |
| Pre-Post X Int | 1 | 2.51 | 2.51 | 1.06 |
| Pre-Post X Cart | 2 | 23.93 | 11.97 | 5.05** |
| Pre-Post X Int X Cart | 2 | 10.51 | 5.26 | 2.22 |
| Error Within | 66 | 156.54 | 2.37 | |

*p < .05

**p < .01

TABLE 4

Table of Means for Grab Behaviour

| | | Film Condition | Observation Session | |
|---|---|---|---|---|
| | | | Pre-Observation | Post-Observation |
| INTELLIGENCE LEVEL | HIGH | Aggressive | 0.33 | 2.00 |
| | | Non-Aggressive | 1.42 | 0.17 |
| | | Control | 2.00 | 0.83 |
| | LOW AVERAGE | Aggressive | 0.33 | 1.00 |
| | | Non-Aggressive | 0.08 | 0.17 |
| | | Control | 0.17 | 0.25 |

Pre-Post by Cartoon (df = 2/66, F = 5.05, p <.01; see Table 3). Aggressive by Control and the Aggressive by Non-Aggressive interactions were significant (df = 66, LSD = .819, p <.05; one tailed test). After viewing a "cartoon" containing two novel "grabbing" type behaviours, children in the aggressive condition increased "grabbing" responses while the non-aggressive and no-cartoon control both decreased significantly (see Figure 2).

The Intelligence by Pre-Post interaction for "push" was also significant (df = 1/66, F = 4.02, p <.05; see Table 5). In the pre-cartoon observation, the HI group pushed more than the LAI group (df = 66, LSD = .891, p <.05; one tailed test); however, in the post-cartoon observation, the HI group pushed less while the LAI group increased slightly (see Figure 3). Although they did not control for intelligence, Hapkiewicz and Roden (1971) and Hapkiewicz and Stone (1974) reported that approximately 85% of the interpersonal aggressive responses in their samples were designated as "pushing" behaviour. Pushing could be described as stimulus specific, that is, behaviour which is elicited by the Bobo clowns or children in a competitive situation.

All other analyses failed to yield significant effects at the .05 level.

Modelling of Non-Aggressive Behaviour

Total Non-Aggression Score. A two (Intelligence) by three (Cartoon) by two (Pre-Post) analysis of variance factorial design used to analyse the total non-aggression score (blocks + block-tower +

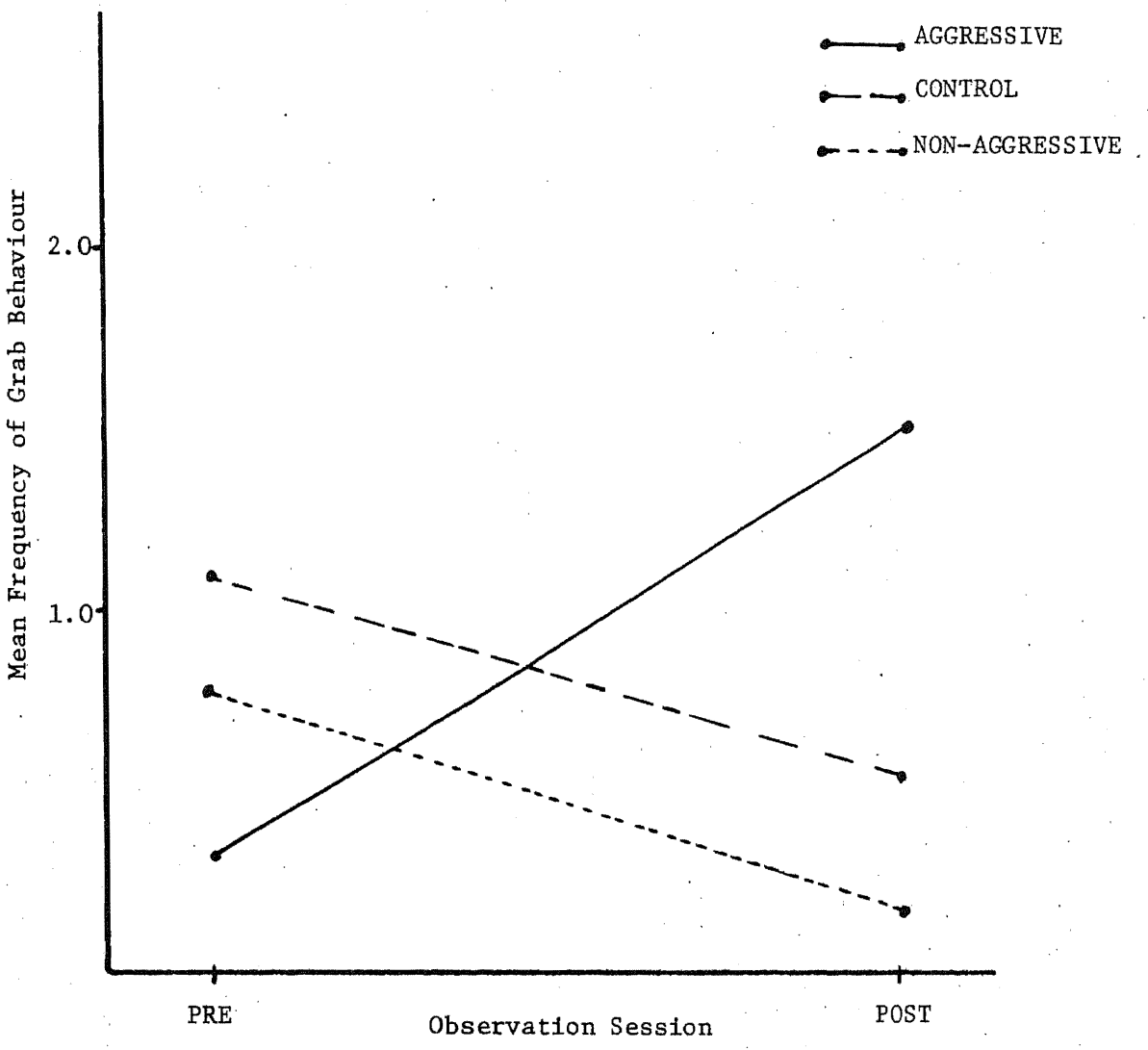



Fig. 2. Interaction of the cartoon condition and the observation session for the grab behaviour category.

TABLE 5

Analysis of Variance for the Push Behaviour Category

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Subjects | 71 | 410.33 | | |
| Intelligence | 1 | 11.67 | 11.67 | 2.07 |
| Cartoon | 2 | 20.52 | 10.30 | 1.83 |
| Int X Cart | 2 | 5.93 | 2.97 | 0.53 |
| Error Between | 66 | 372.12 | 5.64 | |
| Pre-Post | 1 | 6.67 | 6.67 | 1.28 |
| Pre-Post X Int | 1 | 21.01 | 21.01 | 4.02* |
| Pre-Post X Cart | 2 | 4.60 | 2.30 | 0.44 |
| Pre-Post X Int X Cart | 2 | 10.60 | 5.30 | 1.02 |
| Error Within | 66 | 344.62 | 5.22 | |

*$p < .05$

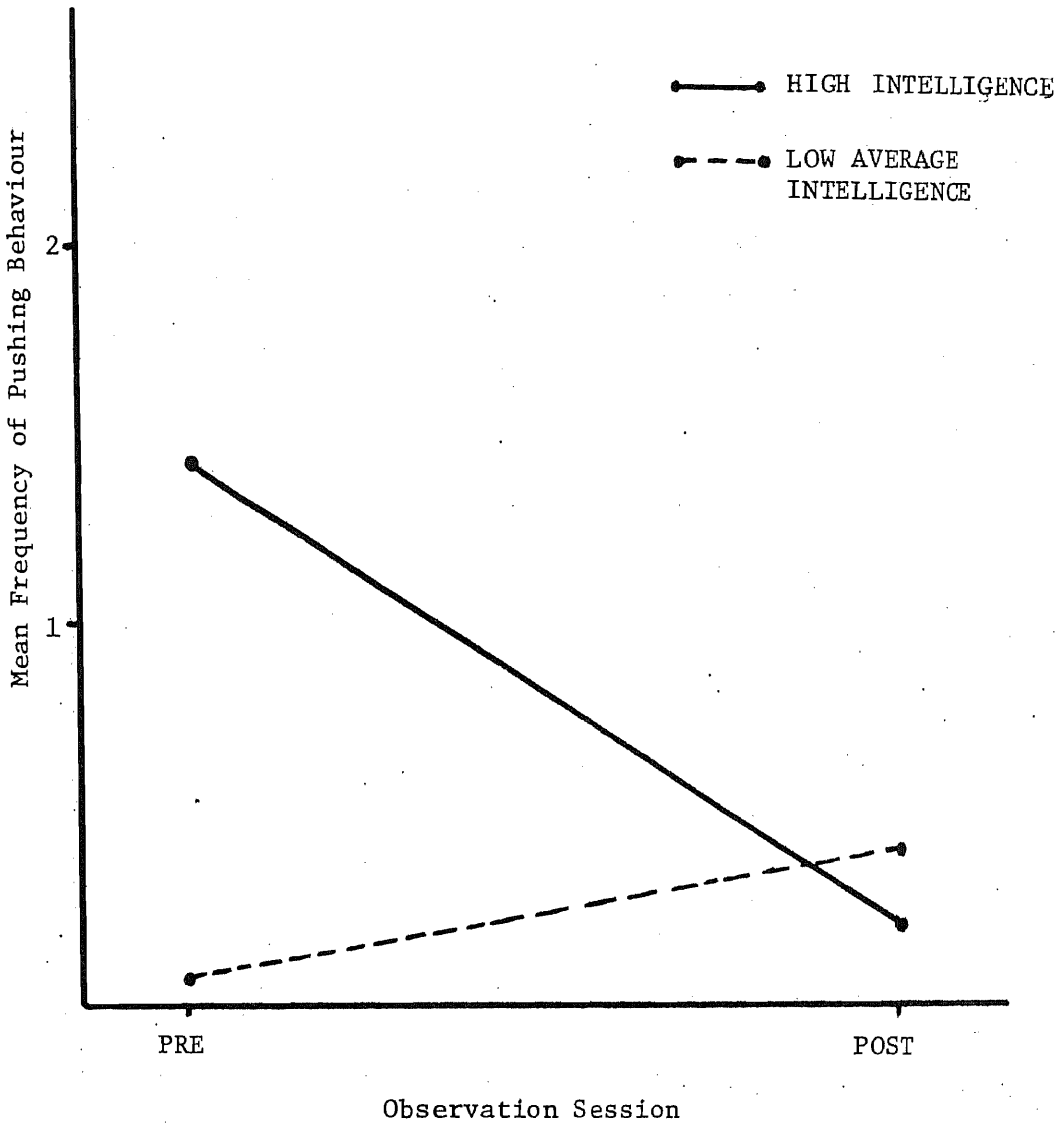



Fig. 3. Interaction of the high and low average intelligence groups over the pre- and post-observation sessions for pushing behaviour.

dolls + trucks and other toys + withdrawal) see Figure 1) yielded non-significant results across all three variables (see Appendix F).

As the non-aggressive "cartoon" contained only two of the non-aggressive behaviours--blocks and block-tower--a further analysis of variance using the same two (Intelligence) by three (Cartoon) by two (Pre-Post) factorial design was computed on the total block score (blocks + block-tower). All main and interaction effects were non-significant (see Appendix G).

Specific Non-Aggressive Responses. Employing the identical two (Intelligence) by three (Cartoon) by two (Pre-Post) factorial design, the five non-aggressive categories (blocks, block-tower, dolls, trucks and other toys, and withdrawal) were analysed separately, and all results were found to be non-significant.

## Acquisition Data

The scores from the aggressive and non-aggressive cartoon groups were analysed using *t* tests. There was no significant difference between the HI and LAI groups on the two measures. Figure 4 shows the group mean and percentage recall measures for the concrete and abstract categories. Neither group attained more than 40% recall on either category. This result is similar to a study by Michael and Maccoby (1953) who found that high school seniors and juniors who passively watched a film recalled 50% of the items, whereas experimental groups in a verbal practice condition recalled 62%. As age factors would influence this result, primary grade children could be expected to fare worse under similar conditions.

| | Recall | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Abstract | | | | | | Concrete | | | | | |
| | Aggressive | | | Non-Aggressive | | | Aggressive | | | Non-Aggressive | | |
| | $\bar{X}$ Recall | Cartoon Total | % Recall | $\bar{X}$ Recall | Cartoon Total | % Recall | $\bar{X}$ Recall | Cartoon Total | % Recall | $\bar{X}$ Recall | Cartoon Total | % Recall |
| High Intelligence | 5.9 | 15.0 | 39.0 | 4.8 | 10.0 | 48.0 | 3.8 | 10.0 | 38.0 | 3.9 | 10.0 | 39.0 |
| Low Average Intelligence | 4.3 | 15.0 | 29.0 | 3.9 | 10.0 | 39.0 | 3.3 | 10.0 | 33.0 | 2.9 | 10.0 | 29.0 |

Fig. 4. Mean and percentage recall measures for the acquisition of abstract and concrete material from the Aggressive and Non-Aggressive "Cartoons" by High and Low intelligence groups.

# DISCUSSION

Results provide little support for previous studies on modelling of aggressive behaviour (see Bandura, 1969, 1973a, 1973b; Bandura & Walters, 1963; Goranson, 1969, 1970; Liebert, 1972; Liefer, Gordon, & Graves, 1974; and Wodtke & Brown, 1967, for reviews). After viewing the cartoon, subjects in the aggressive condition tended to model aggressive "grabbing" responses which would be considered stimulus specific, than subjects in the non-aggressive and control groups.

In the present investigation, there was a significant intelligence effect for the "push" response category. Children with high intelligence produced more pushing behaviour in the pre-test than the low average intelligence groups whereas post-test measures were similar. This behaviour could be labelled generalized aggression (Aronfreed, 1969; Kuhn, 1973). Generalized aggression refers to responses involving previously learned behaviours such as kicking, punching, clubbing, and so forth which are elicited by the modelling stimuli or, in this case, stimulus specific to the Bobo clown.

In the aggressive modelling condition only one behaviour out of a possible nine was modelled. Non-aggressive behaviours were not imitated: non-significant results were found for all non-aggressive response categories.

Intelligence levels did not affect the imitation of both non-aggressive and aggressive behaviours. In addition, cartoon content

acquisition measures for both intelligence groups did not differ significantly and were much lower than the total content of the tapes. It should be emphasized that generalization of these findings is limited to male populations as female subjects were not used in the present study.

These results could be considered unexpected given the large amount of evidence demonstrating increased aggressiveness following exposure to televised aggressive models. However, two other studies have found similar results. Cameron, Abraham, and Chernicoff (1971) used two different experimental designs, yet failed to demonstrate "the well documented effect that viewing aggressive cartoons will result in increased aggressive play [p. 5]". And Josephson et al. (1975) found no increased aggressive responding using a symbolic interpersonal test of aggression to assess the effect of frustration on viewing televised Western violence, Football action and Track Meet activity programmes.

Modelling Testing Situation Identity

It could be hypothesized that children require a high degree of modelling situation-environmental similarity for modelling to occur. Most investigators have employed a modelling-testing situation identity: (Bandura, 1965; Bandura, Ross, & Ross, 1963a, 1963b, 1963c; Coates & Hartup, 1969; Hanratty, Liebert, Morris, & Fernandez, 1967; Hanratty, O'Neal, & Sulzer, 1972; Hicks, 1965, 1968; Kniveton & Stevenson, 1970; Kuhn, Madsen, & Becker, 1967; Madsen, 1968; and Walters & Willows, 1968).

Given identical settings and stimuli, high I.Q. retardates in the Talkington and Altman (1973) study were able to generalize from the modelling situation to the testing environment (Bandura, 1965; and Goranson, 1969). Furthermore, a study by Myerson (1966, cited by Goranson, 1970) found that imitative aggression was greatest as the similarity of the testing and the modelling settings increased. If the association value of a new stimulus environment with the modelling setting is high (e.g., identical), then the previous behaviour-environment associations are equated with the new situation where imitation may occur.

The question of modelling situation-environment identity is important when examining the modelling of behaviour from television to the child's environment. Many cartoons and children's programmes, although aggressive in behavioural content, are still disparate enough from the child's environment to have a questionable behavioural transmission effect.

There is another extremely important factor in reference to the relationship between the testing environment and the modelling situation. By design, the "cartoons" were composed of social dyads. Both aggressive and co-operative behaviours occurred within this interpersonal framework. However, the testing situation was non-social as well as being environmentally dissimilar. There was no other person of a similar age or size with whom the child could share the knowledge or experience of new behaviour. The observers who were present, were not

involved with the child; the only possible interaction was with the Bobo dolls. This may explain why some studies utilizing testing environments such as interpersonal nursery school situations (Ellis & Sekyra, 1972) and interpersonal testing situations (Hapkiewicz & Roden, 1971; and Hapkiewicz & Stone, 1974) have found significant modelling effects. The results of the present investigation tend to support these findings. Only one of eleven behaviour categories was imitated. The addition of a playmate may have provided an environment more conducive to imitation.

Repetitive Modelling

Based on prior research, it could also be hypothesized that modelled behaviour presented in a repetitive sequence is acquired more readily than behaviour demonstrated in a non-repetitive modelling situation. In addition, a repetitive sequence with a small number of behaviours is more likely to be learned than a non-repetitive series with a large behavioural variation. Most studies on aggressive behaviour have used modelled behaviours that are repetitive and small in number (Bandura, Ross, & Ross, 1961, 1963a, 1963b; Coates & Hartup, 1969; Hanratty et al., 1969; Hanratty, O'Neal, & Sulzer, 1972; Hicks, 1965, 1968; Kniveton & Stevenson, 1970; Kuhn, Madsen, & Becker, 1967; Lövaas, 1961; Madsen, 1965; Mussen & Rutherford, 1961; Savitsky et al., 1971; and Walters & Willows, 1968). Without exception, these studies have demonstrated that after exposure to repetitive aggressive models, aggressive responding increased in comparison to control groups.

Repetition of modelled behaviour could be condidered an external

rehearsal procedure that facilitates learning. A study by Bandura, Grusec, and Menlove (1966) serves to illustrate the importance of rehearsal factors on learning of complex behaviours. Subjects were required to watch attentively, verbally rehearse the modelled behaviour or count, blocking rehearsal while observing. A test of observational learning indicated that the rehearsal group was able to reproduce significantly more modelled behaviour than either of the other two groups. Repetition or rehearsal procedures would appear to have an important bearing on the amount of modelled behaviour learned.

The present study had no specific sequence of behaviour and little repetition. In order to approximate a cartoon, action sequences were based on the experimental requirements of the E and the theatrical license of the actors. Using actual television cartoons or non-repetitive approximations, Ellis and Sekyra (1973) and Steuer, Applefield, and Smith (1971) increased aggressive responding whereas Siegel (1956) and Stein and Friedrich (1972) did not, and Friedrich and Stein (1975) have increased pro-social behaviours using role playing situations. However, repeated exposures were employed by Friedrich and Stein (1975), Stein and Friedrich (1972), and Steuer, Applefield, and Smith (1971). Interpersonal testing situations were used in all five studies whereas the present investigation tested subjects individually. Interpersonal testing situations, being more realistic, may evoke aggressive behaviour that is not related to the modelling situation. However, such behaviour will be included as evidence of increased aggressive responding.

In the present study, it could be hypothesized that the lack of repetition did not allow adequate rehearsal for learning to occur. This is substantiated by the low performance and recall scores and is consistent with other studies on incidental learning from films who found third graders recalling between 20% (Hale, Miller, & Stevenson, 1968) and 40% (Collins, 1970). Using repeated exposures with verbal labelling and role playing, Friedrich and Stein (1975) obtained 50% recall of pro-social content from kindergarten children. The number of behaviours recalled and modelled would appear to be related to rehearsal variables such as verbal labelling, repeated exposure and role playing. No rehearsal mechanisms were employed in the present study possibly accounting for the low recall and performance scores.

Modelling Situation Complexity

In most studies, not only were the modelled behaviour sequences repeated, but the number of behaviours was limited and were, consequently, distinct from one another. The complexity of the total modelling stimulus could be considered low in comparison to current children's television programmes which include complex plots, story line, background music, voice tracks, and so on (Friedrich & Stein, 1973). Aggressive responding has been found to increase when subjects are shown low complexity televised cartoons or approximates (Bandura, Ross, & Ross, 1963a; Lövaas, 1961; and Mussen & Rutherford, 1961). When shown high complexity cartoons subjects have increased aggressive responding (Ellis & Sekyra, 1972; Steuer, Applefield, & Smith, 1971) or have shown

no increases (Siegel, 1956; and Stein & Friedrich, 1972).

In the present investigation, stimulus complexity was considered and rated as high by outside sources. An attempt was made to closely approximate a children's (cartoon) programme. Behaviours were not repeated in sequence as previously discussed. And, the tape had a story line and cartoon setting, two characters as well as background music and voices. Subjects were required to pay attention to all of these components, selectively attending to the relevant modelled behaviour.

High stimulus complexity produces a fast changing flow of concepts, images, and sensations which may be difficult for the subject to learn. Investigating the learning of complex concepts, Osler and Trautman (1961) confirmed the hypothesis that superior intelligence subjects test hypotheses while average I.Q. subjects use associative learning. Both learning processes would be approximately equivalent under the simple repetitive sequence modelling procedure used in modelling studies. It could be hypothesized that when the modelled behaviour is complex, subjects are unable to learn. However, Osler and Trautman's results showed that as the number of irrelevant stimuli or complexity in the presentation increased, different scores of the two intelligence groups dropped. The superior children were found to have difficulty as the complexity increased whereas the average I. Q. group found both difficult. This perhaps explains why only a small number of behaviours were imitated and recalled with no effects of intelligence.

The modelling situations may have been too complex to enable acquisition.

Further Research

Further research should look into a number of variables involved in the modelling of both aggressive and co-operative behaviours from television by young children. A replication of the present study using modified procedures and a larger sample size is needed to test intelligence influences on modelling from television and/or other media presentations. The operation of intelligence factors should be investigated in relation to complex and simple television modelling situations, repetitive and non-repetitive models, and modelling-testing situation similarity. In addition, more studies which use a young confederate playmate or a co-subject testing environment, in a co-operative modelling situation, would yield interesting results. More investigation is also necessary to isolate the mediational processes used by children when acquiring and modelling televised behaviour and their relationship to intelligence variables. Studies should also aim at more naturalistic settings and models which approximate the child's environment (e.g., hockey games).

Programmes such as Sesame Street should be investigated for their humorous approaches to aggressive behaviour and destruction. The effect of interspersing aggressive models with commercial messages might provide information on the associative value of modelled behaviour and consumer products. Furthermore, the entire aspect of children's advertising, including public service messages should be evaluated to determine what factors in audio-visual presentations are contributing

to behavioural acquisition by the child (i.e., television puppet shows which "are designed to alert children, in an amusing way, to hazardous products and dangerous situations" on behalf of the Department of Consumer and Corporate Affairs, 1974) and children's television programmes designed to teach French to English-speaking children.

REFERENCES

Aronfreed, J. The problem of imitation. In L. P. Lipstitt and H. W. Reese (Eds.), Advances in child development and behavior. Vol. 4. New York: Academic Press, 1969. Pp. 209-306.

Baer, D. M, Peterson, R. F., & Sherman, J. A. The development of imitation by reinforcing behavioral similarity to a model. Journal of the Experimental Analysis of Behavior, 1967, 10(5), 405-416.

Baer, D. M. & Sherman, J. A. Reinforcement control of generalized imitation in young children. Journal of Experimental Child Psychology, 1964, 1, 37-49.

Baker, R. K. & Ball, S. J. Mass media and violence. Washington, D.C.: U. S. Government Printing Office, 1969.

Bandura, A. Social learning through imitation. In M. R. Jones (Ed.), Nebraska symposium on motivation: 1962. Lincoln: University of Nebraska Press, 1962. Pp 211-269.

Bandura, A. Vicarious processes: A case of no-trial learning. In L. B. Berkowitz (Ed.), Advances in experimental social psychology. Vol 2. New York: Academic Press, 1965. Pp 1-55. (a)

Bandura, A. Influence of model's reinforcement contingencies on the acquisition of imitative responses. Journal of Personality and Social Psychology, 1965, 1, 589-595. (b)

Bandura, A. Principles of behavior modification. New York: Holt, Rinehart, & Winston, 1969. (a)

Bandura, A. Social-learning theory of identificatory process. In D. A. Goslin (Ed.), Handbook of socialization theory and research. Chicago: Rand McNally, 1969. Pp. 213-262. (b)

Bandura, A. Vicarious and self-reinforcement processes. In.R. Glaser (Ed.), The nature of reinforcement. New York: Academic Press, 1971. Pp. 228-278. (b)

Bandura, A. Social learning theory. New York: General Learning Press, 1971. (c)

Bandura, A. Psychological modelling. Chicago: Aldine-Atherton, 1971. (d)

Bandura, A. Modelling theory: Some traditions, trends and disputes. In R. D. Parke (Ed.), Recent trends in social learning theory. New York: Academic Press, 1972. Pp. 35-61.

Bandura, A. Aggression: A social learning analysis. Englewood Cliffs. N.J.: Prentice-Hall, 1973. (a)

Bandura, A. Social learning theory of aggression. In J. F. Knutson (Ed.), Control of aggression. Chicago: Aldine, 1973. Pp. 35-61. (b)

Bandura, A., Grusec, J. E., & Menlove, F. L. Observational learning as a function of symbolization and incentive set. Child Development, 1966, 37, 499-506.

Bandura, A. & Huston, A. Identification as a process of incidental learning. Journal of Abnormal and Social Psychology, 1961, 63, 311-318.

Bandura, A., Ross, D., & Ross, S. A. Transmission of aggression through imitation of aggressive models. Journal of Abnormal and Social Psychology, 1961, 63, 575-582.

Bandura, A., Ross, D. M., & Ross, S. A. A comparative test of the status envy, social power and secondary reinforcement theories of identificatory learning. Journal of Abnormal and Social Psychology, 1963, 67, 527-534. (a)

Bandura, A., Ross, D. M., & Ross, S. A. Imitation of film mediated aggressive models. Journal of Abnormal and Social Psychology, 1963, 66, 3-11. (b)

Bandura, A., Ross, D. M., & Ross, S. A. Vicarious reinforcement and imitative learning. Journal of Abnormal and Social Psychology, 1963, 67, 601-607. (c)

Bandura, A. & Walters, R. H. Social learning and personality development. New York: Holt, Rinehart & Winston, 1963.

Berkowitz, L. Aggression: A social psychological analysis. New York: McGraw-Hill, 1962.

Berkowitz, L. & LePage, A. Weapons as aggression-eliciting stimuli. Journal of Personality and Social Psychology, 1967, 7, 202-207.

Bryan, J. H. & Schwartz, T. Effects of film material upon children's behavior. Psychological Bulletin, 1971, 75, 50-59.

Buss, A. H. The psychology of aggression. New York: John Wiley, 1961.

Cameron, S. M., Abraham, L. K., & Chernicoff, J. B. The effect of exposure to an aggressive cartoon on children's play. Paper presented to the Annual Meeting Eastern Psychological Association, New York, N. Y., 1971.

Cline, B. B., Croft, R. G., & Courrier, S. Desensitization of children to television violence. Journal of Personality and Social Psychology, 1973, 27, 360-365.

Coates, B. & Hartup, W. Age and verbalization in observational learning. Developmental Psychology, 1969, 1, 556-562.

Coliins, W. A. Learning of media content: A developmental study. Child Development, 1970, 41, 1138-1142.

Consumer and Corporate Affairs, Government of Canada. Bink and Doink are back. Consumer contact, Summer 1974, Ottawa, Ontario.

Daniels, D. N., Gilula, M. F., & Ochberg, F. M. Violence and the struggle for existence. Boston: Little, Brown & Co., 1970.

Delgado, J. M. R. Offensive-defensive behavior in free monkeys and chimpanzees induced by radio stimulation of the brain. In E. B. Sigg and S. Garattini (Eds.), Aggressive behavior. Amsterdam: Excepta Medica Foundation, 1969. Pp. 161-190.

Dollard, J., Doob, L. W., Miller, N. E., Mowrer, O. H., & Sears, S. S. Frustration and aggression. New Haven: Yale University Press, 1939.

Dollard, J. & Miller, N. E. Social learning and imitation. New Haven: Yale University Press, 1941.

Ellis, G. T. & Sekyra, F. The effect of aggressive cartoons on the behavior of first grade children. Journal of Psychology, 1972, 81, 37-43.

Eron, L. D. Relationship of T.V. viewing habits and aggressive behavior in children. Journal of Abnormal and Social Psychology, 1963, 67, 193-196.

Eron, L. D., Huesmann, L. R., Lefkowitz, M. M., & Walder, L. O. Does television violence cause aggression? American Psychologist, 1972, 27, 253-263.

Fechter, J. V. Modeling and environmental generalization of mentally retarded subjects of televised aggressive or friendly behavior. American Journal on Mental Deficiency, 1971, 76, 266-267.

Flanders, J. A review of research on imitative behavior. Psychological Bulletin, 1968, 69, 316-337.

Friedrich, L. K. & Stein, A. H. Aggressive and prosocial television programs and the natural behavior of pre-school children. Chicago: Monographs of the Society for Research in Child Development, 1973, 38.

Friedrich, L. K. & Stein, A. H. Prosocial television and young children: The effects of verbal labeling of role playing on learning and behavior. Developmental Psychology, 1975, 46, 27-38.

Freud, A. Notes on aggression. Bulletin of the Meninger Clinic, 1949, 13, 147-148.

Gardner, T. D. & Barnard, J. W. Intelligence and the factorial structure of person perception. American Journal on Mental Deficiency, 1969, 74, 212-217.

Gerbner, G. Violence in television drama: Trends and symbolic functions. In G. A. Comstock and E. A. Rubinstein (Eds.), Television and social behavior. Vol. I Media content and control. Washington, D. C.: U. S. Government Printing Office, 1972.

Gewirtz, J. L. Mechanisms of social learning: Some roles of stimulation and behaviour in early human development. In D. A. Goslin (Ed.), Handbook of socialization theory and research. Chicago: Rand McNally, 1969.

Gillespie, W. H. Aggression and instinct theory. International Journal of Psycho-analysis, 1971, 52, 155-160.

Glaser, R. Introduction. In R. Glaser (Ed.), The nature of reinforcement. New York: Academic Press, 1971. Pp. 1-15.

Goranson, R. E. A review of recent literature on psychological efeccts of media portrayals of violence. In R. K. Baker and S. J. Ball (Eds.), Mass media and violence. Washington, D. C.: U. S. Government Printing Office, 1969. Pp. 395-413.

Goranson, R. E. Media violence and aggressive behavior: A review of experimental research. In L. Berkowitz (Ed.), Advances in experimental social psychology. Vol. 5. New York: Academic Press, 1970. Pp. 1-31.

Grusec, J. Effects of co-observer evaluations on imitation: A developmental study. Developmental Psychology, 1973, 8, 141.

Guthrie, E. R. The psychology of learning. Gloucester, Mass.: Smith, 1952.

Guthrie, E. R. Association by contiguity. In S. Koch (Ed.), Psychology: A study of a science. Vol. 2. New York: McGraw-Hill, 1959. Pp. 158-195.

Hale, G. A., Miller, L. K. & Stevenson, H. W. Incidental learning of film content: A developmental study. Child Development, 1968, 39, 69-77.

Hanratty, M., Liebert, R., Morris, L., & Fernandez, L. Imitation of film-mediated aggression against live and inanimate victims. Proceedings of the American Psychological Association, 1969, 4, 457-458.

Hanratty, M. A., O'Neal, E., & Sulzer, J. L. Effect of frustration upon imitation of aggression. Journal of Personality and Social Psychology, 1972, 21, 30-34.

Hapkiewicz, W. G. & Roden, A. H. The effect of aggressive cartoons on children's interpersonal play. Child Development, 1971, 42, 1538-1585.

Hapkiewicz, W. G. & Stone, R. D. The effect of realistic versus imaginary aggressive models in children's interpersonal play. Child Study Journal, 1974, 4, 47-58.

Hartley, R. E. The impact of viewing aggression: Studies and problems of extrapolation. New York: Office of Social Research CBS Inc., 1964.

Hermanns, J. M. A. & DeWinther P. E. A. Observational learning and imitation: A developmental study. Gawein, 1970, 95-108.

Hicks, D. J. Imitation and retention of film-mediated aggressive peer and adult models. Journal of Personality and Social Psychology, 1965, 2, 97-100.

Hicks, D. J. Effects of co-observer's sanctions and adult presence on imitative aggression. Child Development, 1968, 39, 303-309.

Himmelweit, H. T., Oppenheim, A. N., & Vince, P. Television and the child. London: The Nuffield Foundation and Oxford University Press, 1958.

Josephson, W. L., Fullerton, J. T., Hunsberger, B. E., & Altmyer, R. A. Frustration, television and children's aggressiveness: Toward a non-laboratory approach. Paper presented at the Annual Meeting of the Canadian Psychological Association, Quebec City, 1975.

Kaufman, H. Definitions and methodology in the study of aggression. Psychological Bulletin, 1965, 64, 351-364.

Kaufman, H. Aggression and altruism. New York: Holt, Rinehart & Winston, 1970.

Kirk, R. E. Experimental design: Procedures for the behavioural sciences. Belmont, Ca.: Brooks/Cole, 1968.

Klapper, J. T. The impact of viewing "aggressive" studies and problems of extrapolation. In O. N. Larsen (Ed.), Violence and the mass media. New York: Harper and Row, 1968. Pp. 131-139.

Kniveton, B. H. The effect of rehearsal delay on long-term imitation of filmed aggression. British Journal of Psychology, 1973, 64, 259-265.

Kniveton, B. H. & Pike, C. L. R. Social class, intelligence, and the development of children's play interests. Journal of Child Psychology and Psychiatry, 1972, 13, 167-181.

Kniveton, B. H. & Stevenson, G. M. The effect of pre-experience on imitation of an aggressive film model. British Journal of Social and Clinical Psychology, 1970, 9, 31-36.

Knutson, J. F. Aggression as a manipulatable behavior. In J. F. Knutson (Ed.), The control of aggression. Chicago: Aldine, 1973. Pp. 253-295.

Kuhn, D. Imitation theory and research from a cognitive perspective. Human Development, 1973, 16, 157-180.

Kuhn, D. Z., Madsen, C. H., & Becker, W. C. Effects of exposure to an aggressive model and frustration on children's aggressive behavior. Child Development, 1967, 38, 739-745.

Lawson, R. Frustration. New York: MacMillan, 1965.

Liebert, R. M. Television and social learning: Some relationships between viewing violence and behaving aggressively (Overview). In J. P. Murray, E. A. Rubinstein, and G. A. Comstock (Eds.), Televsion and social behavior. Vol. II. Television and social learning. Washington, D. C.: U. S. Government Printing Office, 1972. Pp. 1-42.

Osborn, D. K. & Hale, W. Television violence. Childhood Education, 1969, 45, 505-507.

Osler, S. F. & Fivel, M. W. Concept attainment: I Effect of age and intelligence in concept attainment by induction. Journal of Experimental Psychology, 1961, 62, 1-8.

Osler, S. F. & Trautman, G. E. Concept attainment: II Effect of stimulus complexity upon concept attainment at two levels of intelligence. Journal of Experimental Psychology, 1960, 62, 9-13.

Osler, S. F. & Weiss, S. R. Studies in concept attainment: III Effect of instructions at two levels of intelligence. Journal of Experimental Psychology, 1962, 63, 528-533.

Patterson, G. R. & Cobb, J. A. Stimulus control for classes of noxious behaviors. In J. F. Knutson (Ed.), The control of aggression. Chicago: Aldine-Atherton, 1973. Pp. 145-200.

Piaget, J. Play, dreams and imitation in childhood. New York: W. W. Norton, 1951.

Piamonte, J. S. & Hoge, R. D. An investigation of the frustration-aggression relation in children. Canadian Journal of Behavioural Science, 1973, 5, 362-370.

Ratliff, A. R. & Ratliff, R. G. Sesame Street: Magic or malevolence? Young Children, XXVII, 1972, 199-204.

Roazen, P. Freud: Political and social throught. New York: Alfred A. Knopf, 1968.

Rosekrans, M. R. & Hartup, W. W. Imitative influences of consistent and inconsistent response consequences to a model on aggressive behavior in children. Journal of Personality and Social Psychology, 1967, 7(4 pt. 1), 429-434.

Savitsky, J. C., Rogers, R. W., Izard, C. E., & Liebert, R. M. Role of frustration and anger in the imitation of filmed aggression against a human victim. Psychological Reports, 1971, 29, 807-810.

Siegel, A. E. Film-mediated fantasy aggression and strength of aggressive drive. Child Development, 1956, 27, 365-378.

Siegel, A. E. Violence in the mass media. In D. W. Daniels, M. F. Gilula, and F. M. Ochberg (Eds.), Violence and the struggle for existence. Boston: Little, Brown, 1970. Pp. 193-239.

Siegel, A. E. & Kohn, L. G. Permissiveness, permission and aggression: The effect of adult presence or absence on aggression in children's play. Child Development, 1959, 30, 131-141.

Silverstein, A. B. Reappraisal of the validity of a short form of Wechsler's scales. Psychological Reports, 1970, 26, 559-561.

Smith, B. S. The relative merits of certain verbal and non-verbal tests at the second grade level. Journal of Clinical Psychology, 1961, 17, 53-54.

Stein, A. H. & Friedrich, L. K. Television content and young children's behavior. In J. P. Murray, E. A. Rubinstein, and G. A. Comstock (Eds.), Television and social behavior. Vol. II. Television and social learning. Washington, D. C.: U. S. Government Printing Office, 1972. Pp. 202-317.

Steuer, F. B., Applefield, J. M., & Smith, R. Televised aggression and the interpersonal aggression of pre-school children. Journal of Experimental Child Psychology, 1971, 11, 422-427.

Stevenson, H. W. Television and the behavior of pre-school children. In J. P. Murray, E. A. Rubinstein, and G. A. Comstock (Eds.), Television and social behavior. Vol. II. Television and social learning. Washington, D. C.: U. S. Government Printing Office, 1972. Pp. 346-371.

Talkington, L. W. & Altman, R. Effects of film-mediated aggressive and affectual models on behavior. American Journal of Mental Deficiency, 1973, 77, 420-425.

The Surgeon-General's Scientific Advisory Committee on Television and Social Behavior. Television and growing up: The impact of televised violence. Washington, D. C.: U. S. Government Printing Office, 1972.

Walters, R. H. & Brown, M. Studies of reinforcement of aggression. III. Transfer of responses to an interpersonal situation. Child Development, 1963, 34, 563-571.

Walters, R. H. & Willows, D. C. Imitative behaviour of disturbed and non-disturbed children following exposure to aggressive and non-aggressive models. Child Development, 1968, 39, 79-80.

Wodtke, K. H. & Brown, B. R. Social learning and imitation. Review of Educational Research, 1967, 37, 514-538.

Wolman, B. B. The unconscious mind. Englewood Cliffs: Prentice-Hall, 1968.

Zusne, L. Measuring violence in children's cartoons. Perceptual and Motor Skills, 1968, 27, 901-902.

# LIST OF APPENDICES


| Appendix | | Page |
|---|---|---|
| A | Parental Permission Forms | 62 |
| B | Scoring Sheets | 64 |
| C | WISC Short Form Sheets | 66 |
| D | Video-Tape Rating Scales | 68 |
| E | Analysis of Variance for the Total Aggression Score | 70 |
| F | Analysis of Variance for Total Non-Aggression Score | 71 |
| G | Analysis of Variance for Total Block Score | 72 |

# APPENDIX A

## PARENTAL PERMISSION FORMS

Dear Parent:

There is a television set in almost every home in Canada. Millions of children watch at least two hours of television per day. What are these children, which may include your own, learning from television?

In conjunction with Lakehead University, a study is being conducted to look at the effects of viewing television. Specifically, what do children learn from watching television cartoons?

The study will involve bringing your child from the class to another room for approximately ½ hour, then returning.

Michael F. Waye
M.A. Candidate
344-4730

---

TO BE COMPLETED BY PARENT OR GUARDIAN AND RETURNED

I hereby give permission for my child _____ (Name) who attends _____ (School) to participate in the study on television to be conducted by Lakehead University.

Signed _____ (Parent or Guardian)

_____ (Phone Number)

Hours per week your child spends watching television _____

His favourite television programmes _____

_____

☐ I would like further information about the study

☐ Not interested at all and do not wish my child to participate

An early return of this form will be greatly appreciated.

Dear Parent:

There is a television set in almost every home in Canada. Millions of children watch at least two hours of television per day. What are these children, which may include your own, learning from television?

In conjunction with Lakehead University, a study is being conducted to look at the effects of viewing television. Specifically, what do children learn from watching television cartoons?

The study will involve bringing your child from the school to Lakehead University for approximately 3/4 hour, then returning. This can be accomplished by two means: (1) your direct participation by driving your own and/or other children, (2) by having a volunteer driver obtained through the Thunder Bay Volunteer Bureau, or another parent volunteer drive your child to and from the University.

Michael F. Waye
M.A. Candidate
344-4730

==========

TO BE COMPLETED BY PARENT OR GUARDIAN AND RETURNED

I hereby give permission for my child _____(Name) who attends _____(School) to participate in the study on television to be conducted at Lakehead University.

Signed _____(Parent or Guardian)

_____(Phone Number)

Hours per week your child spends watching television _____

His favourite television programmes _____

_____

☐ I would be able to drive my son to the University

☐ I would like to participate by driving other children

☐ I would like further information about the study

☐ Not interested at all and do not wish my child to participate

An early return of this form will be greatly appreciated.

APPENDIX B

SCORING SHEETS

# BEHAVIOUR RATING CATEGORIES

| SUBJECT # | | OBSERVATION 2 RATING | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PLAY | TIME INTERVAL | | | | | | | | | |
| BEHAVIOUR | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| BLOCKS | | | | | | | | | | |
| BLOCKS TOWER | | | | | | | | | | |
| CHOP | | | | | | | | | | |
| CLUB | | | | | | | | | | |
| DOLLS | | | | | | | | | | |
| ELBOW | | | | | | | | | | |
| GRAB | | | | | | | | | | |
| HIT | | | | | | | | | | |
| KICK | | | | | | | | | | |
| PUNCH | | | | | | | | | | |
| PUSH | | | | | | | | | | |
| THROW | | | | | | | | | | |
| TRUCKS & OTHER TOYS | | | | | | | | | | |
| VERBAL BEHAVIOUR | | | | | | | | | | |
| WITHDRAWAL | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| SUBJECT | | CONDITION | A | SUBJECT | | CONDITION | NA |
|---|---|---|---|---|---|---|---|
| VERBAL | | CARTOON | | CARTOON | | VERBAL | |
| | | ENTER | | ENTER | | | |
| | | MEET | | MEET | | | |
| | | SHAKE HANDS | | SHAKE HANDS | | | |
| | | DISCOVER BLOCKS | | DISCOVER BLOCKS | | | |
| | | START TO ARGUE | | DISCUSS BUILDING | | | |
| | | PUSH AWAY | | START BUILDING | | | |
| | | JUDO CHOP ON HEAD-FALLS | | CO-OPERATE | | | |
| | | PUSHES BLOCKS OFF | | BUILD TOWER | | | |
| | | HITS BOTTOM WITH BOARD | | BUILD HIGH TOWER | | | |
| | | TRIES TO HIT BOTTOM WITH BOARD | | REWARDS CHARACTER FOR GOOD EFFORT | | | |
| | | HITS ON HEAD | | GET BANANA | | | |
| | | GRABS EARS | | BANANA SHARED | | | |
| | | GRABS BEARD | | LEAVE TOGETHER | | | |
| | | ELBOW IN STOMACH | | | | | |
| | | KICKS | | | | | |
| | | GETS BANANA | | | | | |
| | | GRABS BANANA | | | | | |
| | | THROWS BANANA SKIN | | | | | |
| | | LEAVES | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

# APPENDIX C

## WISC SHORT FORM SHEETS

## WISC RECORD FORM

NAME _____ AGE ____ SEX ____

ADDRESS _____

PARENT'S NAME _____

SCHOOL _____ GRADE _____

REFERRED BY _____

| | Raw Score | Scaled Score |
|---|---|---|
| VERBAL TESTS | | |
| Information | | |
| Comprehension | | |
| Arithmetic | | |
| Similarities | | |
| Vocabulary | | |
| (Digit Span) | | |
| Sum of Verbal Tests | | |
| PERFORMANCE TESTS | | |
| Picture Completion | | |
| Picture Arrangement | | |
| Block Design | | |
| Object Assembly | | |
| Coding | | |
| (Mazes) | | |
| Sum of Performance Tests | | |

| | Year | Month | Day |
|---|---|---|---|
| Date Tested | | | |
| Date of Birth | | | |
| Age | | | |

| | Scaled Score | IQ |
|---|---|---|
| Verbal Scale | *____ | |
| Performance Scale | *____ | |
| Full Scale | | |

*Prorated if necessary

| 8. BLOCK DESIGN | | | |
|---|---|---|---|
| Design | Time | Pass-Fail | Score |
| A. 45" | 1 | | 2 |
| | 2 | | 0 1 |
| B. 45" | 1 | | 2 |
| | 2 | | 0 1 |
| C. 45" | 1 | | 2 |
| | 2 | | 0 1 |
| 1. 75" | | | 0 21-75: 4 / 16-20: 5 / 11-15: 6 / 1-10: 7 |
| 2. 75" | | | 0 21-75: 4 / 16-20: 5 / 11-15: 6 / 1-10: 7 |
| 3. 75" | | | 0 26-75: 4 / 21-25: 5 / 16-20: 6 / 1-15: 7 |
| 4. 75" | | | 0 21-75: 4 / 16-20: 5 / 11-15: 6 / 1-10: 7 |
| 5. 150" | | | 0 66-150: 4 / 48-65: 5 / 36-48: 6 / 1-35: 7 |
| 6. 150" | | | 0 81-150: 4 / 66-80: 5 / 56-65: 6 / 1-55: 7 |
| 7. 150" | | | 0 91-150: 4 / 66-80: 5 / 66-65: 6 / 1-55: 7 |

Examiner

Pr 5

| | Score 2 or 0 | 5. VOCABULARY |
|---|---|---|
| 1. Bicycle | | |
| 2. Knife | | |
| 3. Hat | | |
| 4. Letter | | |
| 5. Umbrella | | |
| | Score 2, 1 or 0 | |
| 6. Cushion | | |
| 7. Nail | | |
| 8. Donkey | | |
| 9. Fur | | |
| 10. Diamond | | |
| 11. Join | | |
| 12. Spade | | |
| 13. Sword | | |
| 14. Nuisance | | |
| 15. Brave | | |
| 16. Nonsense | | |
| 17. Hero | | |
| 18. Gamble | | |
| 19. Nitroglycerine | | |
| 20. Microscope | | |
| 21. Shilling | | |
| 22. Fable | | |
| 23. Belfry | | |
| 24. Espionage | | |
| 25. Stanza | | |
| 26. Seclude | | |
| 27. Spangle | | |
| 28. Hara-Kiri | | |
| 29. Recede | | |
| 30. Affliction | | |
| 31. Ballast | | |
| 32. Catacomb | | |
| 33. Imminent | | |
| 34. Mantis | | |
| 35. Vesper | | |
| 36. Aseptic | | |
| 37. Chattel | | |
| 38. Dilatory | | |
| 39. Flout | | |
| 40. Traduce | | |

# APPENDIX D

## VIDEO-TAPE RATING SCALES

VIDEO-TAPE RATING

Please rate the video-tapes according to the following criteria:

VIDEO-TAPE A:

Entertaining Content

1- Not entertaining
2- Somewhat unentertaining
3- Neutral
4- Entertaining
5- Very entertaining

Co-operative Content

1- Very unco-operative
2- Unco-operative
3- Neutral
4- Co-operative
5- Very co-operative

Aggressive Content

1- Non-aggressive
2- Somewhat non-aggressive
3- Neutral
4- Aggressive
5- Very aggressive

Similarity to Children's TV Fare

1- Dissimilar
2- Somewhat dissimilar
3- Neutral
4- Somewhat similar
5- Similar

VIDEO-TAPE B:

Entertaining Content

1- Not entertaining
2- Somewhat entertaining
3-Neutral
4- Entertaining
5- Very entertaining

Co-operative Content

1- Very unco-operative
2- Unco-operative
3- Neutral
4- Co-operative
5- Very co-operative

Aggressive Content

1- Non-aggressive
2- Somewhat non-aggressive
3- Neutral
4- Aggressive
5- Very aggressive

Similarity to Children's TV Fare

1- Dissimilar
2- Somewhat dissimilar
3- Neutral
4- Somewhat similar
5- Similar

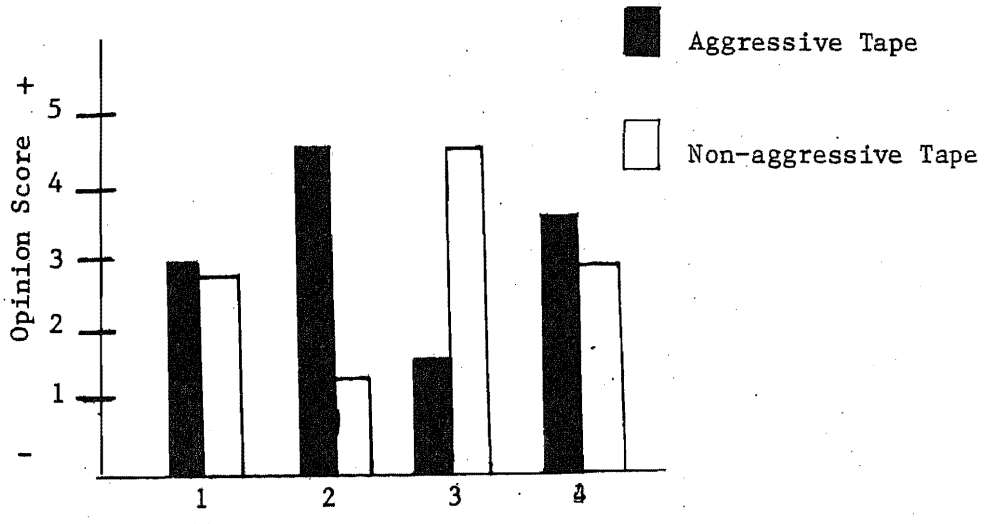



Fig. 1. Ratings of Aggressive and Non-aggressive Video-tapes on the Four Criteria: (1) Entertaining Content; (2) Aggressive Content; (3) Cooperative Content; (4) Similarity to Children's T.V.; N=40.

APPENDIX E

ANALYSIS OF VARIANCE FOR THE TOTAL AGGRESSION SCORE

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Subjects | 71 | 160845.4 | | |
| Intelligence | 1 | 444.5 | 444.5 | 0.189 |
| Cartoon | 2 | 930.5 | 465.2 | 0.197 |
| Int X Cart | 2 | 3993.9 | 1996.9 | 0.840 |
| Error Between | 66 | 155476.6 | 2355.7 | |
| Pre-Post | 1 | 654.5 | 654.5 | 0.417 |
| Pre-Post X Int | 1 | 29.4 | 29.4 | 0.019 |
| Pre-Post X Cart | 2 | 1343.0 | 671.5 | 0.428 |
| Pre-Post X Int X Cart | 2 | 4935.6 | 2467.8 | 1.573 |
| Error Within | 66 | 103516.1 | 1568.4 | |

APPENDIX F

ANALYSIS OF VARIANCE FOR TOTAL NON-AGGRESSION SCORE

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Subjects | 71 | 157766.0 | | |
| Intelligence | 1 | 803.0 | 803.0 | 0.352 |
| Cartoon | 2 | 1520.0 | 760.0 | 0.333 |
| Int X Cart | 2 | 4865.0 | 2432.5 | 1.066 |
| Error Between | 66 | 150578.0 | 2281.5 | |
| Pre-Post | 1 | 1077.0 | 1077.0 | 0.686 |
| Pre-Post X Int | 1 | 3.0 | 3.0 | 0.002 |
| Pre-Post X Cart | 2 | 2027.0 | 1013.5 | 0.646 |
| Pre-Post X Int X Cart | 2 | 3770.0 | 1885.0 | 1.201 |
| Error Within | 66 | 103568.0 | 1569.2 | |

APPENDIX G

ANALYSIS OF VARIANCE FOR TOTAL BLOCK SCORE

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Subjects | 71 | 392445.38 | | |
| Intelligence | 1 | 2070.25 | 2070.25 | 0.36 |
| Cartoon | 2 | 590.00 | 295.00 | 0.05 |
| Int X Cart | 2 | 9074.56 | 4537.28 | 0.79 |
| Error Between | 66 | 380710.56 | 5768.34 | |
| Pre-Post | 1 | 2808.88 | 2808.88 | 0.86 |
| Pre-Post X Int | 1 | 841.13 | 841.13 | 0.26 |
| Pre-Post X Cart | 2 | 8757.38 | 4378.69 | 1.34 |
| Pre-Post X Int X Cart | 2 | 2052.44 | 1026.22 | 0.31 |
| Error Within | 66 | 216534.19 | 3280.82 | |