AN ABSTRACT OF THE THESIS OF

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Title: THE EFFECTS OF VERBAL WARNING ON IMITATED AGGRESSION WITH REFERENCE TO DEVELOPMENTAL LEVEL

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Hypotheses were tested that developmental level and verbal warning have an effect on imitated aggression. This study utilized the classic Bandura Bobo doll experiment expanding it a dimension further by relating Piaget's levels of cognitive development. The subjects, private elementary school children, were shown one of three films (non-aggressive, aggressive, and aggressive with warning) and then placed in an identical setting where the subjects were observed, and their actions recorded. In addition to the division by the stimulus objects, the subjects were classified by cognitive developmental level by pre-test examinations. This research study confirmed the classic Bandura work that children learn to be aggressive by observing an aggressive model. It also was found that the presentation of a warning does inhibit the modeling phenomenon. While not statistically significant, a strong trend was uncovered which suggests a positive relationship between the warning not to model and the higher cognitive levels.

THE EFFECTS OF VERBAL WARNING ON IMITATED AGGRESSION WITH REFERENCE TO DEVELOPMENTAL LEVEL

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Chapter 1

INTRODUCTION

The purpose of this chapter was to develop information concerning the relationship between the modeling of aggressive behaviors and developmental level of children. The significance of the study, the specific statement of the problem, the purpose, and the null hypotheses have also been discussed. The limitations and delimitations imposed on this study by uncontrolled variables and a further definition of terms were also included.

Theoretical Formulation

The questions this study had asked were based on the relationship between two classic works in psychology; the first was the imitation of aggression studies done by Albert Bandura (1961); the second was the developmental theories of Jean Piaget (1967). Both of these cogitative areas of psychology have been extensively researched; however, there was little work where these two aspects of the same question had been considered though both theories dealt with imitation and the cogitative aspects of growth in children.

Jean Piaget's theory conceived of development as changes in structure through the action of invariant functions, one of which was accommodation.

Piaget further defined accommodation as a molding process wherein the child imitated actions as a vital method of learning. It was a function common to humans which allowed a basis for both regimentation and creativity (Phillips, 2969).

> Imitation can thus become constructive, creative. It can fulfill its social function not only by generalizing the individual reactions comprised within the framework of already familiar acts (that is producing coordinated movements) but also by enabling the individual to adapt himself to the ways of behaving that are now new to him. This holds true whether such new ways are the consequence of collective tradition or the result of truly individual initiatives (Guillaume, 1971).

All of these thoughts came from Piaget's observations. He did no statistical research; he studied children in an attempt to comprehend the process of thought and logic. His investigations resulted in Piaget's Developmental Stages. The stages were a radical change in the field. They were as important to psychology as the earlier Freudian stages.

Only three stages were of concern to this project, Pre-operational (ages 4-7), Concrete Operation (ages 7-12), and Formal Operations (ages 12 and up). During these levels a child will have established logic and thought patterns required to fuse ideas, classify and order, reverse concepts and integrate all operations. These three crucial levels were all achieved by the process of accommodation and assimilation discussed earlier. After the information has been recorded in memory, assimilation is the logic function whereby current situations are studied in light of past

information so that an action could have been formulated (Phillips, 1969).

In opposition to Piaget's logical and observational development was the empirical research of Albert Bandura of Stanford (1961, 1963). The famous Bobo doll study was the result of a carefully researched, detailed experiment. The total of these studies presented many carefully researched conclusions. From the earliest work, Bandura concluded that the observation of adult models displaying aggressive acts communicates permissiveness for such behavior. . . . such novel behaviors may later be seen in the actions of children (Bandura, Ross, & Ross, 1961).

This primary work stimulated tremendous amounts of further exploration. Conclusions from this flurry of studies continued to clarify the modeling response. In general, subjects responded with the same level of intensity of aggression as that of the model (Borden, 1975). The age of the model had virtually no effect on the amount of aggression modeled, while it did influence the length of effect. Adult models resulted in longer lasting effects (Hicks, 1965).

Both of these areas of psychology have filled many journals and texts. Each man and his theories have been discussed at greater length in Chapter 2, Review of Related Literature. However, as a brief conclusion it is appropriate to summarize that Jean Piaget was a man with a novel approach to the question of how children learned to think.

Albert Bandura proceded in an empirical manner following behavioristic theories.

DEVELOPMENT OF THE PROBLEM

The problem this paper examined was a three-pointed question. The facets of the question are:

Is there a significant difference between the amount of aggressive acts modeled by the groups exposed to one of the three stimulus films?

Is there a significant difference between the amount of aggressive acts modeled by the members of the three groups determined by developmental level?

Is there a significant interaction between any of the groups?

Statement of Hypotheses (Null Form)

There is no significant difference between the amount of aggressive acts modeled by the groups exposed to one of the three film conditions.

There is no significant difference between the amount of aggressive acts modeled by the members of the three groups determined by developmental level.

There is no significant interaction between any of the groups.

Purpose of the Study

A purpose of this study was to use cogitative developmental theory and examine its relationship to Bandura's

findings on imitated aggression. What effect would a verbal warning have on the amount of aggression modeled and how would this relate to cogitative developmental levels?

After a child was tested to determine developmental level and exposed to a film condition, the subject was objectively observed in a similar setting to record any aggressive actions. The results were then analyzed statistically and the hypotheses either accepted or rejected.

This experiment's purposes were to objectively consider the questions, "Is children's behavior affected by warnings not to model?" and, "Is there any relationship between this effect and their level of cogitative development?"

This study was significant because it represented a marriage between two opposing theories on the spectrum of philosophies in psychology, behaviorism and humanistic cognition. To reach a wholistic answer to these questions, both ideas must be used to reach a workable theory since each had its merits.

The behavioristic viewpoint considered the twentieth century phenomenon of television and presented undisputable proof that aggressive acts are modeled by children. The humanistic views represented in this study by Piaget question the absolute infallibility of that statement. Does developmental level affect modeling in any way? Can society expect violent actions to be faithfully copied, or is age/developmental level a modifying variable? Does society have to censor all aggressive acts portrayed on television to curb the ever-rising trend of violence?

LIMITATIONS OF THE STUDY

The boundaries and limits of this study were established before the actual study was conducted. Included in these restrictions were uncontrolled variables, the sample size involved, the location and description of the population, and the time span that was covered by the study. Each has been examined in turn with careful consideration given its effect on the total outcome of this study.

The elements which were beyond the control of the experimenter include the general excitement and ensuing discussion caused by the presence of the experimenter, assistants, and class disruption, and a breakdown of the standards and procedures of the design. These uncontrolled variables were minimized where possible.

The presence of the experimenter and assistants was an extraneous factor in the normal routine of the school. To control this, the faculty were originally told that the purpose of the experiment was to study creativity in elementary school children. Also the personnel connected with the experiment maintained an extremely low-key profile.

The size of the sample in this study was determined by three factors. It was important to the validity and reliability of this experiment that the size of the sample be sufficient to meet the requirements of the statistical procedures.

The first restriction which determined the sample size was the design of the study itself. The two-way between-

subjects analysis of variance with three subdivisions of each factor, resulting in nine cells required that at least nine subjects or a multiple thereof be used to complement the design. Therefore, the first limit on the size was that it be an integer of nine.

The second restraint on the sample size was the statistical demands to satisfy the requirements of a parametric test since the statistical test of choice for the completely randomized factorial design composed of two elements was a two-way between-subjects analysis of variance. A parametric technique assumes that (1) the samples were chosen at random, (2) the variances in the populations are homogeneous, and (3) the scores are normally distributed in the populations (Linton, 1975). The first assumption was met quite simply by the design itself which was a completely randomized procedure. The second assumption did not have to be met because only one population was considered. This was an intra-population, not an inter-population study. The third assumption was more difficult to meet. The original Bandura study (1961) discovered that the results did not resemble a normal distribution. However, Bela O. Baker's critique of S. S. Stevens' proscriptions on statistics (1971) stated that:

> As a maximally conservative empirical set. . . . the following restrictions would seem to be sufficient to compensate for almost any violation of assumptions investigated up to this time:
>
> a. Have equal sample size
> b. Use a two-tailed test

Therefore, to meet the third assumption and the second limit it was necessary to have equal size samples.

The third requirement was practicality. First, finding a private school with an extremely large number of students would have been difficult. Secondly, a large number in each cell multiplied by nine from the first requirement would have resulted in too great an amount of data to be comfortably manipulated. To solve this dilemma, the number ten was arbitrarily chosen.

The sample size was prepared by multiplying the number of cells, nine, by an equal number arbitrarily chosen to be practical, ten. The resulting figure, ninety, was therefore the sample size.

The research for this was conducted in the southern California area. From a socio-economic viewpoint, this area has enjoyed a high standard of living in recent times. In the choice of a private school as the location, it was somewhat obvious that each subject's family either had a good income or someone was definitely concerned with the subject's welfare. The school itself also had more stringent academic standards than did local public funded institutions. Accelerated class standings were also quite common among private schools in the area.

Because of the cultural background and age of the subject population, these children were fully familiar with television. All had been exposed to some amount of television since they were capable of focusing at a picture tube.

The population on which this study was based was composed of middle and upper socio-economic class. They were

thoroughly exposed to the mass media and were subject to a rather strict academic atmosphere.

CONCLUSION

In summary, this chapter has discussed the theoretical formulation of this work, hypotheses, definition of specific terms, and limitations of the study (extraneous variables, size, geographic location, and time). This was a basic examination of the fundamental points considered in the planning of this study.

Chapter 2

REVIEW OF RELATED LITERATURE

> And shall we just carelessly allow children to hear any casual tales which may be deversed by casual persons, and to receive in their minds ideas for the most part very opposite to those which we should wish them to have when they grow up?
>
> Plato, The Republic
> Book II

INTRODUCTION

As Fromm had written as a justification of his choice of human aggression as his first topic in a planned series of writings on psychoanalysis, aggression is one of the oldest human maladies (1973). The history of human development has filled volumes with the aggressive acts of people. It is a problem which has plagued society since its beginnings.

Studies and treatises of aggression and its causes have also filled the annals of history and philosophy. As quoted earlier, Plato posed the question to the parents of the children who were to be the ideal ruling class whether they wished their children to be influenced by idle thoughts of irresponsible strangers.

Nature or nurture on the topic of aggression has been an age-old question (Larson, 1976). Did the child learn to be

aggressive or are humans cursed with aggressive instincts? The debate is analogous to the mind body controversy and a conclusive answer will be equally difficult to reach.

Aggression and child rearing were topics that appeared again and again in the psychological literature over the decades since psychology's beginning. The debate's field was changed by the technical advances of the twentieth century. First mass audio communications swept the country early in the century. Most American homes were invaded by this vocal visitor. In the middle decades of the century, television became a dominant intruder into most households. This mass media was found to have been a form of escape for many people, particularly the lower socio-economic class and lower intelligence sections of the population (Lotte, 1959).

As television programming progressed from the early live works it became more and more representative of the culture. The popular shows turned to ever-increasing amounts of violence to maintain ratings. Accordingly, children watched tremendous numbers of hours of entertainment full of violence.

Upon closer examination the American culture gave lip service to the Christian ideal of turning the other cheek, while the economy thrived and expanded on aggression (Eron, 1971). The media paid its lip service with religious programming on Sunday mornings. The remaining seven evenings were filled with aggression resulting in pain and death. These matters were handled anesthetically with no emotion and

a total lack of empathy. Ethnic problems were particularly evident with large groups of Indians being murdered at a distinct distance (Larson, 1976).

There was a generalization effect for children and naive adults between film and real life. Some confused characters with actors, and fantasy with real life. All of this confusion and repeated exposure to television violence reduced anxieties toward pain and violence (Larson, 1976).

Major objections to television violence raised by Singer (1971) included:

1) It is frightening and anxiety provoking (nightmares, night terrors, etc.)
2) Misinformation as to the frequency of crimes
3) May provide information and ideas for crimes
4) Frustration for ghetto viewers
5) May create a self-confidence and readiness to be violent

The problem had arisen, now society must arrive at some conclusions. Plato's careless person was now in most homes on one of several channels available to children at any time. Massive amounts of research on violence on TV were begun (National Institute of Mental Health, 1972).

BANDURA'S RESEARCH

Into this chaotic situation came a now classic study. The results of this work were the catalyst that forged many professionals into definite camps. Bandura exposed nursery school children to an aggressive model, and then allowed them an opportunity to be aggressive in the same environment. The results were very conclusive. Subjects exposed to an

aggressive model displayed aggressive behavior. Subjects exposed to a non-aggressive model displayed non-aggressive behavior (Bandura, Ross, & Ross, 1961).

This and subsequent work solidified the philosophies of much of the behavioral sciences. At one end of the spectrum were the behaviorists. They were a very American group who had always disagreed with the more traditional theories, but up to this time lacked any conclusive research to use as a base for their thoughts. To this group, the Bandura work was a stimulus for research. Some desired to prove Bandura right, while others wanted him to be wrong.

Opposing the behaviorists were the more traditional theorists whose beliefs were steeped in Freudian thought. The stimulus-response ideal was not relevant to this group. Here aggression was a method of releasing confined feelings or catharsis. These psychoanalytical believers found themselves with the proverbially strange bedfellows of the biological believers who found Bandura's work equally humorous.

Fortunately, not everyone could be so easily classified. Many felt confused. More data were required to reach a decision. As would be expected, the highly conclusive Bandura study inspired tremendous amounts of research.

The next point explored by Bandura himself was the question of real life versus filmed models. There was no significant difference between the two groups (Bandura, Ross, & Ross, 1963). This was an important finding; the previous research's validity with references to mass media had been

questioned. This study rather conclusively displayed that modeling was a powerful learning form whether it was in real life or television.

Another vital question was raised with reference to various learning phenomena from the mass media. Did not the moral conclusion of a program inhibit modeling of the violence during the plot? If the villains received their just punishment, logically, no one would want to copy the villains. However, the investigations of Bandura led to different findings. The basic law of behavior modification which stated that the more immediate the reward, the stronger the reinforcement of the response took precedence over the logic of the villain's ultimate demise. When a subject viewed aggressive actions being rewarded with a desirable response, the subject learned to be violent to meet his needs despite the ultimate outcome of the action (Bandura, Ross, & Ross, 1963).

A corollary to the preceding was that a subject viewing his own negative behaviors and their possible results may cause a temporary reduction in the use of that particular behavior. But this observation of his own behavior lacked sufficient impact to cause a constructive change (Bandura, 1973).

Harris moved his study from the laboratory to a field setting of a shopping center. This field study involved confederates blocking parking lot traffic with bicycles. Harris observed that when an aggressive model were

presented, there was considerable aggressive actions displayed in similar situations. If the original model displayed polite, considerate actions, there was less aggression, but not necessarily more polite behavior (1973).

Another field study several years later involved a survey of ecology of shoppers in another local shopping center. This New Mexico research found a positive correlation that suggested that either aggressive unpunished behavior is self-reinforcing, or a general trait of aggression does not exist in the human spectrum. Also, one event of aggressive behavior changes a person's self-concept and/or he or she becomes more aggressive as a result (Harris & Samerotte, 1975). It would appear from this study that viewing an aggressive model increases the amount of aggressive responses.

Several years after his original studies, Bandura proposed there were four operations in the process of modeling. First, the subject must have devoted attention to the original display. Secondly, the individual needed the mental capacity to retain the memory. Third, motor control was needed to reproduce the action observed. Finally, the event would not be imitated unless it was reinforced and demonstrated by a significant other person (Bandura, 1973).

Exposure to an event does not automatically mean the event will be copied. All four of the steps must be completed (Bandura, 1973). This was a significant point in the research. The fourth point concerning reinforcement and a

significant model was the first fault in the ironclad results of the Bobo doll's beatings several years earlier.

All the preceding work and events did have certain effects on the American culture. During the 1960's the motion picture industry initiated a form of self regulation, wherein all films were given one of four ratings. These included "G" for general audiences; "PG" for parental guidance recommended (may not be suitable for pre-teenagers); "R" for restricted (under age 17 not admitted without parent); "X" wherein no one under age 18 or 21 (depending on local law) is allowed.

Very recently the television networks have followed this example using two methods. The first phase was entitled "Family Viewing Time." During this prime time period, programming was to maintain a bland, wholesome atmosphere with a decided lack of violence and sex. The second phase consisted of a verbal and written warning which preceded particularly strong shows advising parents that the following show may not be acceptable for viewing by children.

NONBEHAVIORISTIC VIEWS

All of these precautionary systems have fallen under criticism from many sources. Erich Fromm criticized the system and clarified a popular point of view when he noted that these ratings and warnings were given to shows which contained a high level of sexual activity, not a bloodbath of violence (1973).

It was appropriate to note that Erich Fromm was a strong contemporary representative of the traditional philosophies stemming from Freud. The psychoanalytical beliefs on modeling were not conclusive. Traditional ideas from Freud's writings were based on the two life forces which motivate all behaviors. The positive force is Eros, the force of life; the negative force was later named Thanatos; it was the instinct for death and destruction.

There was also a more biological theory from Konrad Lorenz. According to this theory, all of life was composed of instincts which motivate behavior which is normally adaptive and helps preserve the species. These forces, however, cannot be stopped; they occasionally erupt with volcanic-like vengeance.

The theories of both Lorenz and Freud recommend vicarious aggression, such as violent movies, television, and sports as a safety valve for these potent forces (Fromm, 1973). Release of this pent-up energy was titled catharsis. This occasional explosion was vital to cleanse a healthy psyche.

The modeling versus traditional dilemma was a highly complicated one. This predicament was confused even more with the Feshback study. The experimental subjects of two socio-economic groups watched aggressive television programs. As a result, the lower class subjects displayed less aggression and no significant change occurred in the upper class subjects (Feshback & Singer, 1971).

This conclusion is very carefully qualified. The authors cautioned these results should not be generalized to females, younger children, or other cultures. This study supported catharsis, yet a most important qualification was made that modeling was an extremely complex phenomenon.

In an attempt to find a new perspective on this dilemma with aggression, a new theory was introduced.

PIAGET'S THEORIES

Jean Piaget was a Swiss psychologist who pioneered a comprehensive theory of the cognitive development of children. Until the 1960's, Piaget's work was not accepted in this country. The American culture preferred hard research such as its native schools of Thorndike and Watson. Such pragmatic and behavioristic philosophies were not followed by Piaget who did not follow rigorous statistical procedures. Non-scientific and impressionistic work was ignored in this country (Gorman, 1972).

All of this was relevant only because it explained why so little of Piaget's work had been used in contemporary research. Piaget was difficult to read, understand, and summarize (McCandless, 1967). Since his work had not been subject to intensive analysis, the most informative approach to Piaget was a brief biography and explanation of his theory.

Jean Piaget was born in the late nineteenth century in Switzerland. He had substantial training in zoology with

major interests in philosophy. During his early professional career he studied in Paris at Binet's elementary laboratory school. During that period, Piaget found he was more interested in the process a child used to arrive at an answer, rather than if he gave the correct answer. The chronological changes in the thought processes fascinated him as he carefully studied the development of his own children.

This work was always from an observational approach with a clinical or school population. Piaget was primarily interested in observation and inquiry. This information was then processed by a logical method which evolved into a theory of the development of intellect and cognitive reasoning.

During the past decade, many American professionals have come to realize that this man from Switzerland had valid and worthwhile thoughts. In 1969 Piaget was invited to be the key speaker at the American Education Research Association. The previously ignored theories' time had finally come and Piaget was greeted as a hero (Gorman, 1972). At the time of this study, he was a professor of psychology at the University of Geneva and director of the J. J. Rousseau Institute. Below is a summary of Piaget's stages of cognitive development: (See Table 1, p. 21)

Sensori-motor: Normal ages for this stage were birth to two years. Here the child learns the permanence of objects, reflexes, habits and manipulation to satisfy needs.

Table 1

Piaget's Stages of Cognitive Development

AGE	STAGE	COGNITIVE CHARACTERISTICS
0-2	Sensori-motor	reflexes & habits - awareness of permanent objects, use of means to gain ends
2-4	Symbolic thought	language
4-7	Pre-operational	syncretism of understanding, fusing together of two unrelated ideas - transductive reasoning, type of reasoning juxtaposing two facts with one supposedly explaining the other
7-12	Concrete operational	classifying & ordering, decentering & coordinating, reversibility & inductive reasoning
12 & up	Formal operations	hypothetical, deductive thinking, abstract & formal thought, all possible combinations, control of variables, verification of statements, proportion ability, integrated system of operations and transformation

Symbolic thought: The age range was usually two to four years. During this period a language system was learned as well as the concept of symbolic thought.

Pre-operational thought: The age range here was four to seven years. The principal characteristics were syncretism of understanding and transductive reasoning.

Concrete operations: Probable ages at this level were seven to twelve years. Typical features include the ability to classify and order, coordination, reversibility and inductive reasoning.

Formal operations: This has been defined as the age of twelve to adulthood. Here hypothetical deductive reasoning, abstract and formal thought, control of variables, proportionality, and integrated systems were all characteristic of this final level.

This work was concerned primarily with the pre-operational, concrete, and formal operations levels and their relationship to imitation. Piaget viewed imitation as constructive and creative and was vital to the socialization process of a child. Modeling encouraged not only new behaviors, but continued practice with current actions (Guillaume, 1971).

Piaget's keystones to his work have been accommodation and assimilation. Through accommodation, a person recorded and imitated actions and words from the environment, and through assimilation the individual was allowed to learn in different situations by recalling past information and applying it to current situations (Phillips, 1969).

CONCLUSION

In summary, technical changes in the twentieth century have resulted in young peoples' exposure to great amounts of

aggressive and anti-social behaviors. Bandura concluded that this type of exposure resulted in the reproduction of these observed behaviors. Subsequent research from both behavior modification and more traditional approaches have yet to clarify any concrete answers as to which theory is correct.

This project has offered a novel approach to the question of imitation. Piaget's theories on cognitive development were examined as a possible alternate approach.

Chapter 3

METHOD AND PROCEDURE

This chapter described the precise agenda followed during the preparation and experiment. This included the preparation of the stimulus films and tapes, procurement and choice of observers, determination of developmental level, actual testing procedures, and the follow-up debriefing sessions.

Sample

The population which was the base for this study was composed of middle to upper-middle class children who attend private school. No child with an emotional or mental handicap was included. This population was thoroughly familiar with television having viewed several thousand hours before beginning school.

The sampling procedure for the study required special consideration. Because Piaget's works were never designed to be placed in the cold, harsh light of statistical analysis (Gorman, 1972), there was no possibility of using any intercorrelation or reliability report to choose which items would have made the most valid and reliable brief form of the test.

Design and Statistical Analysis

This study was a two-way (A x B) between-subjects analysis of variance. The study is a completely randomized factorial design composed of two factors (Linton, 1975). See Figure 1, p. 26.

The first factor, the independent variable, was the film to which the subject was exposed. There were three conditions of the film, a control group with a non-aggressive model, an experimental group A with an aggressive model, and an experimental group B with an aggressive model and the verbal warning.

The second factor, the moderating variable, is the developmental level of the subjects defined as pre-operational, concrete operational, and formal operations.

This particular design required statistical analysis in the form of a two dimensional analysis of variance. The null hypotheses presented in Chapter 1 were tested with these calculations. A two-tailed test was performed with an alpha equal to 0.05.

PROCEDURES AND DATA COLLECTION

The items for the brief form to be used in determining developmental level were chosen by a cognitive selection process by the experimenter. Factors which were considered were applicability to a group test, simplicity of an item, and its common acceptance in the literature.

The questions administered in this study were taken from Modgil's text for teachers. The points used to determine

Figure 1

Two-way Between-subjects ANOVA
(3 x 3)

FILM EXPOSURE

DEVELOPMENTAL LEVEL	Control non-aggressive	Experimental A aggressive	Experimental B aggressive with warning
Formal 12 years & up			
Concrete 7-10 years			
Pre-operational 3-6 years			

N = 90

Dependent Variable: number of aggressive acts modeled from film

The actual tests administered along with the correct answers are listed in Tables 2, 3, and 4, pgs. 29-31.

The answer forms were then scored. Subjects whose chronological age and developmental levels were appropriate, were placed at the proper level. By the method of random numbers these groups were divided into the control and experimental groups.

The procedure for the actual experimentation proceeded as follows:

By developmental level, each subject was individually taken by the experimenter to a location to view the appropriate film. Afterwards, the subject was taken to another area where the film setting was located and told that the experimenter must leave on some pretext. The subject was informed that he or she could use any of the materials. The time in the experimental condition was equal to the length of the film--approximately five minutes. At the end of the time period, the experimenter returned and escorted the subject back to class.

During the travel time, the conversation was aimed at art, primarily, with an occasional inquiry about television. The tone was neutral toward the experiment, subject oriented, warm and interested.

After all the subjects had viewed the film and had an opportunity to model, the students were gathered in small, informal groups for debriefing sessions. These sessions were designed with vocabulary and information levels appropriate to each of the three levels. The subjects were reminded that

Table 2

Test for Pre-operational Level

These questions composed the test administered to the five- and six-year-olds to determine whether or not they functioned in the pre-operational group:

1) Demonstrate: Two tall, thin glasses full of colored water are presented; pour one glass of water into a large, shallow bowl.

   Question: Which one has more, or are they equal?

   Scoring: If the subject answered equal, score one point for concrete level; any other answer retained subject in pre-operational level.

2) Question: What is 12 and 6?
   How can I get 12 again?

   Scoring: If the answer was subtraction, score one point for concrete. Any other answer placed the subject in the pre-operational level.

3) Demonstrate: Using twelve buttons demonstrate the following design:

   row A O O O O O O
   row B O O O O O O

   Then demonstrate this design:

   row A O O O O O O
   row B O O O O O O

   Question: What row has more, or are they equal?

   Scoring: If the subject answered A or B, retain in pre-operational. If subject answered equal, advance to concrete.

Note: Question 3 was used only when the subject had a score of one. At that point a score of two or zero would have resulted in a discontinuation of testing.

Table 3

Test for Concrete Operational Level

These questions composed the test administered to the eight- and nine-year-olds to determine whether or not they functioned in the concrete level:

1) Question: What is 12 and 6?
How can you get 12 again?

Scoring: If the answer of subtraction was given, the subject was at the concrete level. Any other answer rated in the pre-operational level.

2) Question: There are three people: Jo, Lou, and Jean. Jo is shorter than Jean; Jo is taller than Lou. Who is tallest of all?

Scoring: A response of Jo or Lou rated in the concrete level. The answer of Jean was a formal level response.

3) Question: "I am glad that I do not like liver, because if I liked it, I would always be eating it, and I hate eating something I dislike."

What is wrong with that story?

Scoring: If the subject comprehended the illogic of the statement, it was a non-concrete response. In this case, the answer for the concrete stage is a misunderstanding of the logic.

Note: With the logic questions (2 & 3), if there was a doubt about the subject's response, the examiner questioned with, "Tell me more," to clarify a point.

Table 4

Test for Formal Operations Level

These questions composed the test administered to the ten- and eleven-year-olds to determine whether or not they functioned in the formal level:

1) Question: I am glad that I do not like liver, if I liked it, I would always be eating it, and I hate to eat things I dislike.

   Scoring: If the subject responded with, you can't say that; if you disliked it, you wouldn't be eating it or some form thereof, the subject fell in the formal level. Any other response would not have qualified for the formal level.

2) Question: There are three people: Jo, Lou, and Jean. Jo is shorter than Jean; Jo is taller than Lou. Who is tallest of all?

   Scoring: A response of Jean was a formal level response. Jo or Lou as an answer would not have qualified.

3) Question: Fifteen is to 3 as 40 is to what?

   Scoring: A response of 8 was suitable for a formal response. Any other answer was not appropriate.

Note: With the logic questions (1 & 2), if there was a doubt about the subject's response, the examiner questioned with, "Tell me more," to clarify a point.

all activity was an experiment, but it dealt with aggression, not creativity. There was also an expression of gratitude to the subjects and staff for their assistance.

STIMULUS OBJECTS

The stimulus objects for this study consisted of two 8mm films made by the author. Both were of equal length, occurred in the same setting and starred the same child. The model's age fell into the upper end of the range, but this simplified filming. It was considerably easier to direct the older child. The costume worn by the model consisted of a non-sexist outfit of blue jeans and a printed Mickey Mouse Tee-shirt. The model also wore a baseball cap. A child was chosen as the model because of the greater possibility of sexual identification and the shorter effects of the modeling. In this way, inappropriate modeling was less likely to trouble the school during and after the experiment (Hicks, 1965).

The setting for both films was identical. The picture consisted of a plain wall in the background. The foreground held a child's table and chair. The table was covered with blank drawing paper, clay in a plastic bowl, assorted writing/drawing instruments, a foam rubber ball, a cord, a group of plastic blocks, a few cups, and some boxes.

An identical environment was built at the school. The two observers were behind a screen and hidden from view.

Three scripts were required for this project. There were two versions of the film: aggressive and non-aggressive.

The third version of the film consisted of the aggressive film with the verbal warning. A synopsis of each film has been included as well as the text of the verbal warning. Appendices A, B, and C (pgs. 54-59) consist of photographs taken during the filming and of the warning.

The Control Film

In the control film the model examined and used each of the items on the table. Activities included drawing a picture, briefly stacking blocks, cups, boxes and other objects into a design. During the episode, the child maintained an attitude of contentment with self and work. See Appendix A, p. 55.

The Aggressive Film

The model in the aggressive film examined and used each of the items on the table in the film also. However, in this version, the child ripped the clay apart and pounded and beat on it. One object was used to strike another and the table. The expressions of anger and malcontent were viewed on the child's face during this segment. See Appendix B, p. 57.

The Aggressive Film with Warning

This film was identical to the aggressive film except that preceding the film there was a thirty second written and audible warning. See Appendix C, p. 59. The warning read:

The picture you are about to see is only a movie. You should not copy anything done in the movie. Thank you.

OBSERVATION AND SCORING

A most important facet of this study was a non-biased method of observation and scoring. The scorers were chosen from the parents who were members of the school's parents association. They were volunteers recommended by school officials. They did receive a stipend payment for their services. Three individuals were trained. Two were regular judges and one an alternate. These observers spent several hours studying, discussing and practicing event recording. After each was judged competent by the author and felt comfortable with the scoring, the actual experimentation began. As a norm for reference, the judges studied the aggressive film to learn which behaviors were being scored. Precaution was taken so that no observer scored his or her own child. The scorers were unaware of which film group a child was a member.

As a pre-established standard, when there was a discrepancy on the event count of aggressive acts, the higher of the two scores was always used.

SUMMARY

The preceding was a detailed review of the method and procedure used in the study. How the data was gathered and scored and what stimuli and subjects were used were also

discussed. While it was impossible to prevent or control all extraneous factors, careful thought and consideration was given to each facet of the experiment. This research was as fair, unbiased, and carefully performed as was realistically feasible.

Chapter 4

ANALYSIS OF DATA

The purpose of this chapter was to describe the demographics of the study, and to analyze from a statistical position the resulting scores. These operations allowed an inspection of the hypotheses listed in Chapter 1 so that they could be either retained or rejected.

RESPONSE ANALYSIS

The sample examined for use in this study originally consisted of 154 children. These children met the basic criteria of the proper age versus grade requirements. All were then given the simple test to determine developmental level (Tables 2-4, pgs. 29-31). One hundred thirty-eight children qualified. This group consisted of subjects in the pre-operational group, in the concrete operational group, and in the formal operations group.

To meet the statistical assumptions of the test used it was important that all cells have an equal number of subjects. Therefore, a random selection process was implemented. Each subject was placed in one of three film conditions. Each cell consisted of an equal number of males and females. To insure against the normal absences which were expected to occur, alternates for each sex at the various

levels were also chosen. During the actual experimentation only three alternates were required. Subjects used were predominantly middle class white children. All subjects reported having at least one television set in their home. All participants viewed a minimum of five hours of television a week with a majority of the sample reporting much more viewing.

STATISTICAL ANALYSIS

The data gathered during the experiment consisted of one score per subject. The score was a frequency count of the number of specific actions imitated from the aggressive films. Accordingly, a subject's score could have ranged from zero (signifying that none of the ten actions were displayed) to ten (in this event, all the aggressive acts were displayed).

The analysis of variance (ANOVA) test was used to analyze the data. The results are summarized in Table 5, p. 38. As the table showed, there was a significant effect as a result of the kind of movie the children were exposed to.

The mean scores from all three levels of the control group differ significantly from the remainder of the sample. This supported the classic Bandura work (1961) which concluded that the type of film viewed had a definite effect on the later behavior of a subject. The mean total for the control group was 0.3.

Table 5

ANOVA Table of Two-Way Between-Subjects Statistic
(3 x 3)

SOURCE	df	SS	MS	F
Film Exposure	2	1206.0	603.0	615.3*
Developmental Level	2	1.0	0.5	0.5
Film Exposure x Developmental Level	4	9.3	2.3	2.4
Error	81	79.6	0.98	
Total	89	1295.9		

*$p < .05$

from the F-ratio table at $\alpha = .05$
df 2,81 = 3.15
df 4,81 = 2.50

The aggressive film group's mean total was 8.6, while the group who received the warning had a mean total of 7.3. It became obvious that the film exposure was the significant key to the results of this study.

When the developmental level mean totals were computed, no such differences were found. These totals were: 5.5 for the pre-operational group, 5.5 for the concrete operational group, and 5.2 for the formal operations group. The trend never appeared in the developmental level statistics. It did not have a large effect from an examination of the cell and group means. For a further examination of these means, see Table 6, p. 40.

As a further exploration of the data, a Tukey's (a) Test of Unconfounded Means was performed. The results of this post hoc test not only confirmed the aforementioned significant difference between the control group and the groups who were exposed to the aggressive films, but showed a significant difference between the mean scores of the aggressive film group and the aggressive with warning group. The differences between cell means showed the pre-operational group score of 1.5 and the formal operations group score of 2.3 both exceeded the critical value of 1.34 to show a significant difference between the aggressive film with and without the warning. When either of the aggressive film groups was compared with the control film group the figures ranged from 6.3 to 8.6, all well above the critical value of 1.34. All of the differences between cell means which compared one

Table 6

Summary Table: Cell Mean Scores of Number of Aggressive Acts Imitated

DEVELOPMENTAL LEVEL	FILM EXPOSURE			
	Control	Aggressive	Aggressive with Warning	Total
Pre-operational	0.4	8.3	7.8	5.5
Concrete Operational	0.2	8.7	7.6	5.5
Formal Operations	0.3	8.9	6.6	5.2
Total	0.3	8.6	7.3	5.6

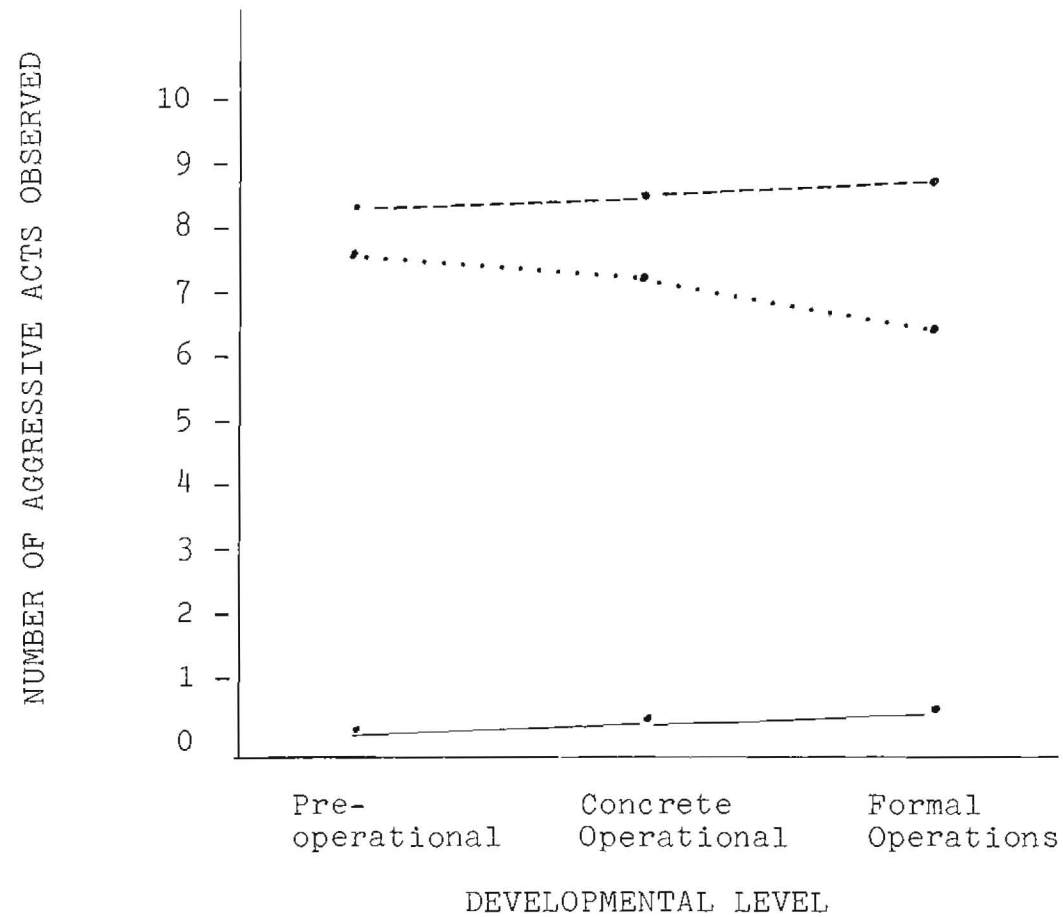
developmental level with another displayed no significant differences. These differences ranged from 0.1 to 1.2 with a mean of 0.67. This figure was well below the critical value of 1.34. The difference of 1.2 occurred only once and was an exception. It was the difference between the pre-operational and formal operations group who were exposed to the aggressive film with warning. This was evidence of a trend, but was not statistically significant. (The complete results of this test were recorded in Appendix D, p. 61). The results of this test not only confirm Bandura's work (1961), but expanded those ideas by showing that a warning did have some effect.

For a more visual analysis of the data, Figure 2, p. 42, has been included. The figure showed a sharp contrast between the control and aggressive films which indicated that children do imitate aggressive acts that are modeled for them. The group which received the warning showed a downward trend as the subjects climbed the developmental ladder, which indicated that a child who functions at a more complex level intellectually was capable of receiving, comprehending, and following instructions. There was little change in the mean cell scores of the experimental group who viewed the aggressive film.

The analysis of the data resulted in a significant F-ratio for the film exposure factor at the $p < .05$ level. This difference was confirmed by the Tukey test. This indicated that the film, the stimulus object, had a definite effect on later behavior. The post hoc test also uncovered

Figure 2

Graphic Presentation of Cell Mean Scores



a significant difference between the aggressive film group and the aggressive film with warning group. The difference demonstrated the effect the warning had on the subjects. The differences between the developmental levels were not significant, nor was there a significant interaction factor.

CONCLUSIONS

The first hypothesis stated:

There is no significant difference between the amount of aggressive acts modeled by the groups exposed to one of the three film conditions.

The F-ratio of 615.3 exceeded the table value of 3.15. Therefore, the null hypothesis was rejected at the .05 level. This rejection justified the statement that the groups were significantly different. The post hoc test revealed that all three groups (control versus aggressive, control versus aggressive with warning, and aggressive versus aggressive with warning) were significantly different from each other at the .05 level. All three of these differences, along with the mean totals of 0.3, 8.6, and 7.3 showed that the stimulus a subject was exposed to had a definite effect on modeling.

The second hypothesis stated:

There is no significant difference between the amount of aggressive acts modeled by the members of the three groups determined by developmental level.

For this factor the F-ratio was 0.5 which was less than the table value of 3.5. The null hypothesis was retained.

The lack of a difference between the developmental levels in this instance suggested that cognitive development was not a relevant factor. The mean totals for the three levels in order were 5.5, 5.5, 5.2.

The third and final hypothesis stated:

There is no significant interaction between any of the groups.

The last F-ratio was 2.4 which was not greater than the table value of 2.5. Statistics dictate that the null hypothesis be retained. Therefore, there was no significant interaction between the groups. However, an examination of the trends as shown in Figure 2, p. 42, suggested that there may have been an effect. The mean cell scores also displayed this trend. The pre-operational group's mean was 7.8; the concrete operational group's mean was 7.6; the formal operation group's mean was 6.6. All of these means were for the aggressive film with warning group. As the figures decrease so the developmental level increased. There was definitely a trend. Perhaps a larger sample, a stronger warning, or a more frequent warning would have resulted in a significant difference. The point was worthy of further investigation. Although further study might prove to be relevant, for the experiment no significant interaction was found.

SUMMARY

The preceding has been a statistical analysis of the data collected during the experiment utilizing an analysis

of variance (3 x 3). These results were then used to review the hypotheses which were the basis of this study. The film viewed was found to have a significant effect. The control group displayed virtually no aggressive behaviors. The subjects who viewed the aggressive film with warning displayed certain aggressive actions but a significantly smaller amount than the group who watched an aggressive film. The developmental level was found not to be a significant factor. The interaction factor was found not to be significant with the reservation that further study may show that there was a significant effect.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter was to assimilate all the data presented in the preceding four chapters. Goals included to attempt to extract conclusions, to summarize, and to produce recommendations for further research.

SUMMARY

This experiment, after a thorough review of the literature, hypothesized that imitated aggression was somehow modified by a preceding warning when related to a cognitive developmental level. A study was designed which employed a two-way analysis of variance. The stimulus objects consisted of three films, the non-aggressive (control), the aggressive, and the aggressive with warning. The moderating variable was Piaget's cognitive developmental levels, pre-operational (4-7), concrete operational (7-12), and formal operations (12 and up).

A controlled environment was chosen and the stimulus objects (the films) were produced. After the training of observers, subjects were given a simple test taken from Piaget's works to determine their cognitive developmental level. Those subjects whose age and test scores met the predetermined criteria were placed in a pool. From this pool,

subjects were chosen at random to participate. Since each cell had an absolute size requirement of ten, five females and five males were chosen to fill each cell.

Each subject viewed one of the three films determined by the cell to which he/she belonged. The subject was then escorted to a setting identical to that of the film. Here the experimenter informed the subject that he/she could use any of the materials on the table to do whatever he/she wished. During this time the subject was observed by two independent judges who employed the means of a frequency count. They kept an integral count of the number of discrete aggressive acts.

After the allotted time, the subject was returned to class. Following the close of experimentation, debriefing sessions with all participants were held. Two weeks later school authorities reported no difficulties had occurred due to the experiment.

The data collected were organized and subsequently analyzed. The resulting figures were compared to table values and upon this information the three hypotheses were retained or rejected. The hypothesis concerning differences due to the three films was rejected. The film the subject was exposed to had a definite effect on the amount of aggression modeled. If the subject viewed no aggressive acts, no aggression was modeled. If the subject observed aggression, aggression was imitated. If the subject was in the warning group, aggression was modeled, but significantly less than the subjects who were not warned. The second hypothesis

concerning developmental level was retained. The cognitive functioning level of the subject did not appear to affect the amount of aggression modeled. The interaction hypothesis was retained by a very close margin.

The strongest statement which may be made about this work was that Bandura's work (1961) was reaffirmed. Subjects have imitated aggressive actions which they have observed. As a secondary point the cognitive functioning level of a child alone does not affect the amount of aggression modeled. The implications were that when cognitive level was considered as a moderating variable from an interaction standpoint it may have had an effect on modeling aggression. Although this phenomenon was not statistically significant, the results did show an obvious trend in that direction.

RECOMMENDATIONS

The trend towards a relationship between the aggression modeled and cognitive developmental level as the interaction factor in this work was sufficiently encouraging to justify further study in this area. Research which would emphasize the warning group in particular with larger sample sizes should be able to shed more light in this area. Implications are that ten subjects per cell was simply too small to measure this phenomenon.

In the context of this study, data were found to support Bandura's theory of modeling (1961). Evidence was found to support further study of the theory that the higher cognitive

levels of subjects have an effect on modeling. That is, the child who can reason, deal in abstract thought, and other advanced mental processes can also observe, interpret, and follow a warning to override the basic learning mode of modeling. Further study is certainly desirable in this area.

CONCLUSION

While this study did not identify any cure-alls for the aggression and violence modeled from television and the movies which plague society, it did uncover the possibility of mitigating circumstances. This research did uncover a trend of interaction between cognitive developmental level and a warning not to model. When the child who functions in the more complex thought processes was told not to imitate, the results showed a trend that suggested that the warning may inhibit the modeling of aggressive acts. This would tend to lend some validity to the current motion picture rating system for violence. It is certainly an area deserving of further study.

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REFERENCES CITED

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APPENDICES

APPENDIX A

SCENES FROM THE NON-AGGRESSIVE FILM

APPENDIX A

SCENES FROM THE NON-AGGRESSIVE FILM

APPENDIX B

SCENES FROM THE AGGRESSIVE FILM

APPENDIX B

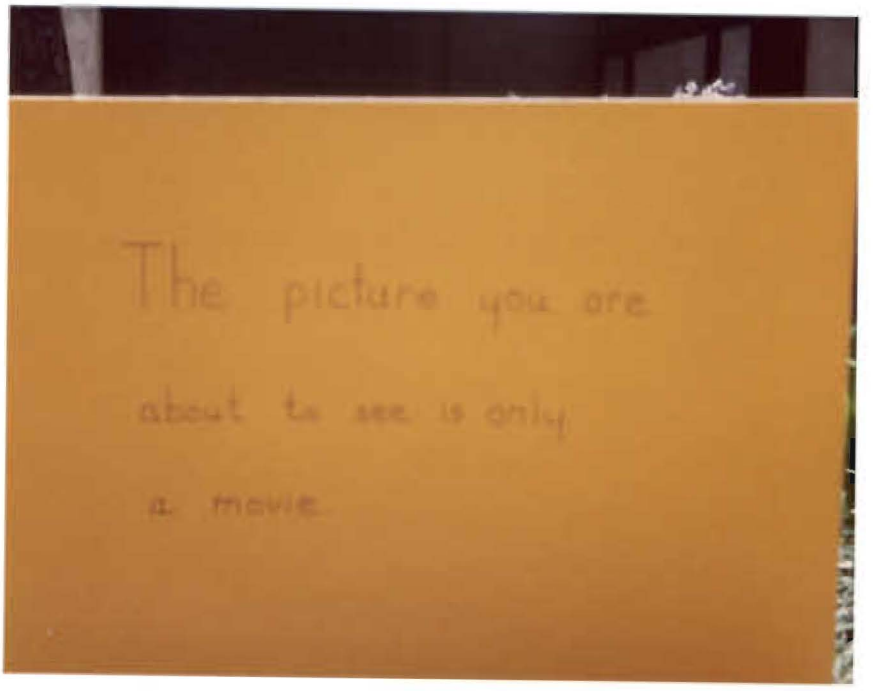
SCENES FROM THE AGGRESSIVE FILMS

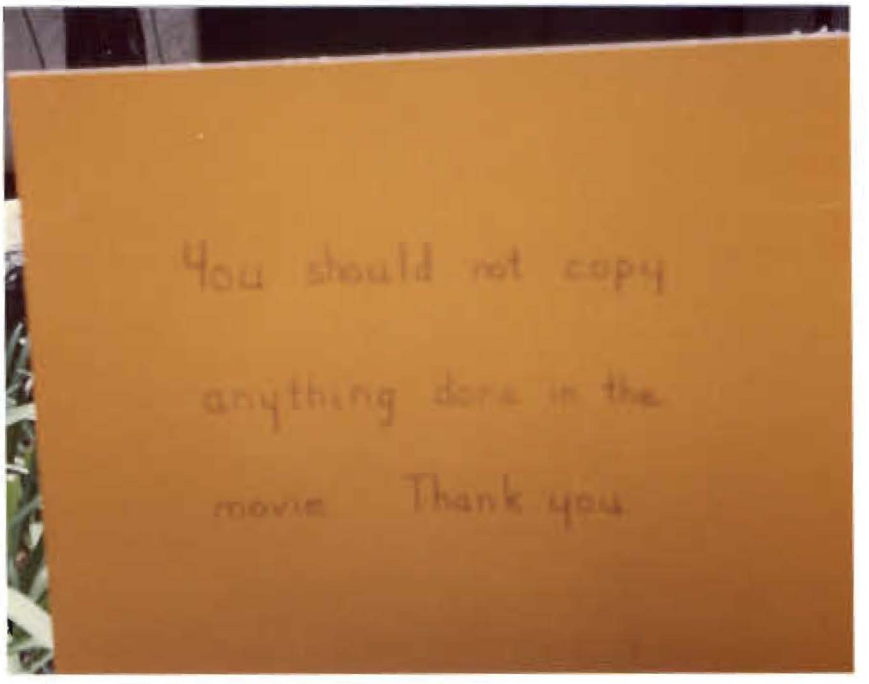
APPENDIX C

PHOTOGRAPH OF THE WARNING

APPENDIX C

PHOTOGRAPH OF THE WARNING





APPENDIX D

RAW SCORES AND CELL MEANS

APPENDIX D

RAW SCORES AND CELL MEANS

Film Condition

Developmental Level	Control score/frequency	Aggressive score/frequency	Warning score/frequency	Total means
Formal	1 - 3 0 - 7	10 - 3 9 - 4 8 - 2 7 - 1	9 - 1 8 - 1 7 - 3 6 - 3 5 - 2	
	$\bar{X} = 0.3$	$\bar{X} = 8.9$	$\bar{X} = 6.6$	5.2
Concrete	1 - 2 0 - 8	10 - 2 9 - 4 8 - 2 7 - 1	10 - 1 9 - 2 8 - 2 7 - 3 6 - 1 5 - 1	
	$\bar{X} = 0.2$	$\bar{X} = 8.7$	$\bar{X} = 7.6$	5.5
Pre-operational	1 - 4 0 - 6	10 - 2 9 - 1 8 - 5 7 - 2	10 - 1 9 - 1 8 - 4 7 - 3 6 - 1	
	$\bar{X} = 0.3$	$\bar{X} = 8.6$	$\bar{X} = 7.8$	5.5
Total means	0.3	8.6	7.3	

$N_{cell} = 10$

$N_{Total} = 90$

Score Range 0-10

APPENDIX E

TUKEY'S (a) TEST: UNCONFOUNDED MEANS

APPENDIX E

TUKEY'S (a) TEST: UNCONFOUNDED MEANS

Differences Between Cell Means

Row 1:	6.3*	2.3*	8.6*
Row 2:	7.4*	1.1	8.5*
Row 3:	7.4*	1.5*	7.9*
Column 1:	0.1	0.1	0.2
Column 2:	0.6	0.2	0.4
Column 3:	1.2	1.0	0.2

Critical Mean Value = 1.34

*$p < 0.05$