To the Graduate Council:

I am submitting herewith a dissertation written by Norbert L. Reese entitled "A Comparison of Children's Verbal and Nonverbal Behavior Utilizing Modeling." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Robert G. Wahler

Robert G. Wahler, Major Professor

We have read this dissertation and recommend its acceptance:

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A COMPARISON OF CHILDREN'S VERBAL AND NONVERBAL BEHAVIOR UTILIZING MODELING

A Dissertation

Presented for the

Doctor of Philosophy

Degree

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ABSTRACT

Recent studies examining the relationship between children's verbal behavior and their nonverbal behavior have demonstrated consistent relationships between the two behaviors. There appear to have been two factors which have contributed to the outcomes of these studies. They have measured the two behavioral categories in similar setting conditions and the response categories designed to assess the two responses have had equivalent levels of abstraction.

There is reason to believe that children's verbal and nonverbal behavior can both be consistently modified by the same basic setting conditions. However, most of the previous studies have been correlational in nature. It was predicted in the present study that operational procedures designed to modify children's verbal behavior will also modify children's nonverbal behavior in a consistent direction. It was also predicted that operational procedures designed to modify children's nonverbal behavior will modify children's verbal behavior in a consistent direction. This comparison of functional relationships is a more powerful demonstration of consistency than previous correlational studies.

In this study six basic setting conditions were presented twice to two different groups of subjects. The setting conditions consisted of the presentation of an activity: a boy punching a balloon clown on a film or a tape recording followed by no, positive, or negative consequences. There were seventy-two school age boys in each of the two

groups of subjects. The subjects' verbal and nonverbal responses to each of the setting conditions were compared.

The results of this study do not support the primary hypothesis. However, a discussion of the results suggests possibilities for further research in the area of consistency between verbal and nonverbal behavior.

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CHAPTER I

INTRODUCTION

This study is a comparison of the relationships between children's verbal and nonverbal behavior. More specifically, children's evaluative responses to an activity are compared with their performance of that activity. The basic concern of this study is to determine if the basic setting conditions that modify one response (e.g. verbal) will also modify the other response (e.g. nonverbal) in a consistent direction. For example, if children's evaluative responses are modified in a positive direction, will children's nonverbal behavior increase in frequency?

Consistency in Human Behavior

A common assumption among both laymen and psychologists is that human behavior is relatively consistent. Everyone is aware of inconsistencies in the behavior of those around them, but these instances are often considered as exceptional. If someone is honest in one situation, it is expected that he will be honest in the next; if a child acts dependently at school, it is expected that he will also act dependently at home; and if a child expresses an attitude verbally toward a subject, it is similarly expected that his nonverbal behavior will be consistent with his verbally expressed attitude.

Mischel (1968) discusses literature concerned with consistency and generality in human behavior. In this review he divides the literature into two major areas; the first on intellectual and cognitive style variables and the second on personality variables.

The research he cites indicates that correlations of individuals' responses on different measures of intellectual and cognitive variables yield higher levels of consistency than correlations of individuals' responses on different measures of personality. However, the correlations of cognitive and intellectual variables are not always positive. A study by Guilford (1964) shows that 17 to 24 percent of correlations between different measures of ability could be considered to be zero. On the other hand, Anastasi (1961) states that correlations of alternate forms of the Stanford-Binet administered within one week of each other often exceed .90. Research correlating responses on Witkin's Rod and Frame Test and Embedded-Figures Test with responses on the Thurstone form of the Embedded-Figures Test using male college students as subjects, has yielded correlations ranging from .30 to .55 (Elliot, 1961). Correlations of comparable magnitude were also found when differing measures of field-dependence were correlated. This study involved subjects ranging in age from eight years old to college age (Witkin, Goodenough, and Karp, 1967). The research just cited indicates that correlations between seemingly related response measures vary considerably. However, especially on similar tasks, one finds reasonable correlations between different measures of cognitive and intellectual performance (Mischel, 1968).

Moving to Mischel's (1968) discussion of consistency of behavior as it relates to personality theory and research, lower level correlations are found. However, most definitions of personality are based upon the assumption that human behavior is consistent from setting to setting (Sanford, 1963). For example, Freudians in their conception of functional clusters implicitly accept that behavior is consistent (Wahler, 1972). They believe that if an individual manifests one type of behavior in therapy, then his other behaviors will be consistent with this manifestation. For example, an individual who washes his hands very frequently is also expected to be fastidious about his personal appearance and penurious about money matters (Freud, 1923). Another theorist, Piaget (1951) also expects human behavior to be consistent from one situation to another. According to Piaget, a child's first experiences with his parents are assimilated and become the basis for later reactions to other people.

However, as previously stated, research that attempts to find consistency between personality variables meets with less success than research on intellectual variables (Mischel, 1968). A study by Burwen and Campbell (1957) used interview techniques, TAT responses, autobiographical data, and other measures to assess the attitudes of Air Force personnel toward authority figures. When the subjects' attitudes toward the same authority figure on different measures were correlated, .35 was the highest correlation obtained. Correlations of the subjects' responses to different types of authority figures did not yield consistent relationships. A study by Sears (1963) correlated

different measures of dependency in children. Only one out of the twenty correlations reached significance.

Greater consistency between response measures can be found in some studies. Scores obtained on the California Personality Inventory were found to be quite stable for high school students retested after one year's time had elapsed (Gough, 1957). E. L. Kelly (1955) compared self-descriptions from questionnaires administered almost twenty years apart. The self-descriptions related to marriage yielded low correlations. However, the coefficients of stability for interests, political values, self-confidence, etc., were higher (e.g. from .45 to .60). Thus the consistency of individuals' responses on personality measures, as indicated by the previously presented data, varies considerably, and at best yields intermediate correlations.

Other Directions in the Study of Consistency in Human Behavior

Most of the studies previously cited indicate that attempts to show consistency in human behavior through correlations of differing response measures met with limited success. However, there are two factors that lead one to consider that more consistent relationships exist. The two factors are related and are often found in the same experiments. One appears to be related to the nature of the environment in which a response measure was obtained. For example, as Hartshorne et al. (1930) pointed out, the more similar the setting in which they obtained a response measure, the higher the correlation. The second

factor which appears to have interfered with positive results is the nature of the response categories. The Hartshorne et al studies indicate the more similar the nature of the response, the higher the correlation between the two responses. Biaggio (1967) and Cudrin (1965) also found that abstract response measures obtained in artificial testing environments do not correlate well with social behavioral responses obtained in less contrived settings.

There is another body of research which addresses itself to these two factors in the study of consistency in human behavior. A group of studies which used direct methods for recording behavior and which made behavioral observations in similar environmental settings is cited by Wahler (1972). In addition, the concept of covariance in behavior was introduced as a means of showing behavioral consistency. An example of this (Lovaas, 1964) is the case in which one increases a child's positive statements about a food through direct behavioral modification, and concurrent increases in the child's eating of that food occur. This shows that both responses covary with only direct manipulation of one, indicating behavioral consistency.

Several investigators have noted covariations among the behavioral responses of their subjects without having planned or predicted the relationship. Risley (1968) used shock to reduce the frequency of disruptive climbing in a retarded girl. He found that as shock reliably reduced the girl's climbing, the frequency of her eye contact with the person who administered the shock increased. Buell, Stoddard, Harris, and Baer (1968), working in a free play setting at a nursery school,

used teacher reinforcement to increase a girl's use of play equipment. In addition to increasing her use of play equipment, the authors also increased her interactions with her peers. Lovaas and Simmons (1969) used shock to eliminate a girl's self-destructive behaviors. The authors' therapeutic procedures also resulted in an end to the girl's whining and avoidance of adults. Wahler (1969) found that time-out procedures not only reduced children's oppositional behavior, but also resulted in an increase in their approaches to their parents. Disruptive speech behavior of two retarded girls was modified by the use of teacher attention in a study by Sajwaj, Twardosz, and Burke (1971). In addition to predicted changes, the authors also noted other changes in the girls' behavior following their specific modifications.

The studies previously mentioned all discovered naturally occurring unplanned covariations in the behavior of their subjects. The following studies were conducted with the express purpose of discovering relationships among subjects' responses. Patterson and Bechtel (1970) observed covariations in the behavior of a hyperactive child during baseline observations. They found that three behaviors--aggression, talking to neighbors, and noisiness--all positively correlated. When an intervention program focusing on one of the three behaviors was undertaken in the classroom, a significant and consistent change was noted in all three behaviors. However, a behavior that was unrelated to the three behaviors that correlated during baseline observations did not change following the intervention program. Wahler, Sperling, Thomas, Teeter, and Luper (1970) found baseline correlations between stuttering

and nonspeech related deviant behavior was directly related to a reduction in their stuttering. Similarly, observations in another study (Nordquist, 1971) showed baseline consistency between a child's bedwetting and his daytime opposition to parental instructions. These behaviors were shown to be related when, after manipulation of the oppositional behavior, bedwetting also ceased (Nordquist, 1971). In addition, Wahler and Nordquist (1971) found children's compliance with adult instructions was positively correlated with their imitation of adults. That is, the authors found that two children's imitation of adults was reduced as a reduction in their compliance with adult instructions occurred.

Consistency Between Verbal and Nonverbal Behavior

Another important area of behavioral consistency research in psychology has been the study of relationships between verbal behavior (e.g. written or spoken word) and nonverbal behavior (e.g. any behavior other than verbal). Almost fifty years ago researchers began studying these and related relationships in areas including attitudinal research (LaPiere, 1934) and morality research (e.g. Hartshorne and May, 1928). One classic study in attitudinal research was conducted by LaPiere (1934). He found little relationship, using two verbal measures, between hotel managers' stated intentions and their actions when confronted with a described situation.

Other researchers have had varying success in finding consistent relationships between verbal and nonverbal behavior. A recent group of

studies, concerned mainly with the behavior of children, has demonstrated that consistent relationships can be found. Thus the emphasis of this paper is on the behavior of children and the relationship between verbal and nonverbal behavior. In one of the first studies in this area, Hartshorne and May (1928) examined the relationship between children's responses from one paper and pencil test to another (e.g. tests on morality, intelligence, etc.) and children's actual classroom behavior. Their findings, as well as the findings of their collaborators (Hartshorne, May, and Maller, 1929; Hartshorne, May, and Shuttleworth, 1930) led them to conclude that neither honest nor deceitful responses on paper and pencil tests can be generalized to a child's classroom behavior. However, responses from one paper and pencil test to another were much more consistent (e.g. lowest correlations .20 range to highest correlations .85 range). Burton (1963) questioned the conclusions of Hartshorne et al and stated that a reanalysis of the data showed there is consistency between children's responses to paper and pencil tests and their classroom behavior. However, Mischel (1968) suggests that Burton only demonstrated that behavior is not random from one situation to the next.

Other investigators have also had little success with attempts to correlate children's verbal or written responses with their nonverbal behavior. Biaggio (1967) found no relationship between children's responses to tests of ego-control and cheating behavior. Cudrin (1965) did not find any relationship between children's moral judgements and their social behavior. Kaplan (1966) demonstrated that there was a

relationship between lower class children's responses to frustration and their moral judgements. However, he found no such relationship for middle class children. Comparing children's responses in the areas of moral judgement, verbal standards of right and wrong, and resistance to temptation, Hoffman (1963) found minimal relationships between the three.

Although many of the attempts to relate verbal and written statements to other types of behavior have been relatively unsuccessful, this has not always been the case. Results of a study by Mckinnon (1938), utilizing graduate students as subjects, showed that the students' classroom behavior was consistent with self-reports of their behavior. Finally, limited predictions of delinquent behavior were made from paper and pencil tests of moral judgements (Ruma, 1967). There was a significant correlation between poor moral judgement and subsequent delinquent behavior.

Other Directions in the Study of Consistency Between Verbal and Nonverbal Behavior

The previously discussed studies indicate that consistent relationships exist between children's behaviors. However, of special interest to the present study are the previously mentioned studies which have demonstrated consistent relationships between children's verbal and nonverbal behavior. In one example of this type of research, Lovaas (1964) demonstrated that reinforcement of children's positive statements about a food led to an increase in their preference for that food. Bandura, Ross, and Ross (1963) showed children films in which

aggressive activities were either rewarded or punished. Children observing aggressive behavior rewarded imitated the behavior more than children who saw the model punished. Additionally, the children observing the aggressor being rewarded also rationalized the aggressive actions. Sherman (1964) found a consistent relationship between children's positive statements about a toy and time spent with that toy. Wahler and Pollio (1968) demonstrated a positive relationship between a child's nonverbal and verbal behaviors in the course of behavior therapy. Specifically, after reducing a child's aggressive behavior, they found related changes from his pretherapy to his posttherapy responses on the Osgood-Semantic Differential. Finally, Hicks (1971) obtained children's evaluations of several filmed activities. He found a significant correlation between their evaluation of the activities and their later performance of those activities.

Statement of the Problem

The preceding discussion of literature concerned with consistency in human behavior has revealed disparate findings. However, it points up two factors which appear to account for much of the described discrepancy. That is, the less similar the setting conditions and the behavioral response categories under investigation, the less the likelihood of finding behavioral consistency. For example, Hartshorne and his collaborators may have encountered difficulties correlating test results with classroom behavior because abstract measures taken from paper and pencil tests on morality are too far removed from

classroom behaviors. Other researchers (e.g. Biaggio, 1967, and Cudrin, 1967) may have obtained low correlations because response measures obtained in contrived settings do not correlate well with behavioral responses in other social situations.

However, studies which have taken the above two considerations into account have had better success in obtaining results that demonstrate consistent relationships between verbal and nonverbal response measures. For example, a study by Hicks (1971) found consistent relationships between girls' evaluations of an activity and their performance of that activity one month later. In his study, girls viewed films of several activities and then secretly rated them on a good-bad scale. He later gave them an opportunity to play with those same objects involved in the activities, and succeeded in obtaining good correlations. In another study, Sherman (1964) found a positive relationship between a child's verbal statements about a toy and the time he spent playing with that toy. Both observations, verbal and nonverbal, were made in a nursery school setting. Thus, in both studies two concrete behavioral categories measuring different aspects of a given object or activity were found to be positively correlated. Additionally, the two positively correlated behavioral measures were obtained under essentially similar environmental conditions.

In addition, research has shown that if one behavior (e.g. verbal or nonverbal) changes, the other may change in a like manner. For example, Lovaas (1964) found that when he reinforced a child's positive statements about a food (increasing the frequency of the statements) the

procedures also resulted in an increased preference for that food. Thus there has been research indicating that one can find consistent relationships between children's verbal and nonverbal responses. Although this relationship has been demonstrated, the nature of the relationship has not been extensively explored. In addition, much of the previous research has been correlational, and more powerful evidence of this relationship has not been clearly demonstrated.

This study is perceived as a developmental step in the isolation of variables which demonstrate consistency in human behavior. Two types of response measures (e.g. verbal and nonverbal), with equivalent levels of abstraction and obtained with the same basic setting conditions, are used to find consistency between children's verbal and nonverbal behavior.

Hypothesis

Children's verbal and nonverbal responses will vary in a consistent manner as a function of identical basic setting conditions. Specifically, two groups of subjects will be exposed to the same basic setting conditions (e.g. a film or a tape of an activity with no, positive or negative consequences); a verbal response measure will be obtained from one group and a nonverbal response measure will be obtained from the other group. It is predicted that the verbal and nonverbal responses of children exposed to the same basic setting conditions will be consistent.

CHAPTER II

METHODOLOGY

Subjects

There were two groups of subjects, each with seventy-two white, male, first grade pupils from the Knox County School System. The schools from which the subjects came were almost entirely composed of white, middle and upper middle class, and surburban populations. Subjects were selected randomly from classes, and as proportionate a number as possible from each school were placed into each of the experimental groups. Therefore, although the schools differed in socioeconomic levels, these differences were balanced. Only subjects who obtained parental permission were included in the study. The number of subjects obtaining parental permission ranged from sixteen out of twenty-six in one class to twenty-four out of twenty-eight in another class.

Apparatus

This study was conducted in rooms available in the schools. One section of each room was cleared and a balloon clown (three feet in length), a toy car, crayons, paper, and a ball were placed in that part of the room. The balloon clown was the same clown used in the films, which will be discussed later. A super-8 movie projector,

films, slide photographs of the clown and models, a cassette recorder, earphones, and recorded cassette tapes were all placed in another part of the room.

Modeling: A Method of Eliciting Behavior

The main purpose of this study was to demonstrate a consistent relationship between children's verbal and nonverbal behavior. A review of the literature in this area had suggested that, to find a consistent relationship, it would be necessary to utilize similar setting conditions to assess each of the response measures. Thus it was essential to develop setting conditions which could be used to elicit and modify both verbal and nonverbal behavior.

The literature on behavioral consistency shows that researchers in that area had also worked with modeling techniques (e.g. Bandura, 1965; Hicks, 1971). Modeling techniques appeared to uniquely fulfill the setting requirements of the present study. That is, modeling techniques have been used to elicit and modify children's verbal (e.g. Bandura and McDonald, 1963) and nonverbal behavior (e.g. Hicks, 1968). Using one filmed modeling presentation, Hicks (1968) was able to modify children's nonverbal behavior. This type of presentation was adaptable for the elicitation of verbal and nonverbal responses, permitting a comparison of the two response measures to the same basic setting conditions.

There are several theorists and researchers who have dealt with modeling and related concepts such as imitation, copying, and identification (Mowrer, 1960; Berger, 1961; Flanders, 1968; and

Bandura, 1971). Bandura (1971) had conducted research, discussed and developed theories, and described many functions of modeling. One function of modeling discussed by Bandura indicates that presenting an observer with a model's performance or description of an activity known to the observer increases his performance of the activity. In addition, rewards and punishments administered to the model following his performance of the activity serve to increase or decrease the probability that the observer will engage in the activity.

Several studies have indicated that viewing aggressive behavior leads to an increase in the viewer's aggressive actions (Lovaas, 1961; Mussen and Rutherford, 1961; Bandura, Ross, and Ross, 1963). Other studies have indicated that viewing rewards and punishments administered to a model following the model's performance of aggressive activities can modify the frequency of the viewer's aggressive actions (Bandura, Ross, and Ross, 1963; Bandura, 1965; Hicks, 1968). The above mentioned studies have varied in the use of live, filmed, and cartoon characters as models, indicating a wide range of modeling presentations can modify children's behavior.

In addition to the studies which show that modeling can affect children's nonverbal behavior, there have been studies which show that modeling procedures can be used to affect changes in children's verbal behavior. Bandura and McDonald (1963) and Cowan, Langer, Heavenrich, and Nathanson (1969) demonstrated that children's verbal evaluations of an activity can be altered by exposing them to a viewpoint counter to their own. In these studies modeling proved more effective than direct reinforcement in modifying subjects' behavior.

The previously cited research on modeling techniques show that those techniques can be adapted to the needs of the present study. That is, with one basic presentation (e.g. a short film of an activity) children's verbal and nonverbal behavior can be modified. Since both responses are being manipulated by the same basic presentation, their comparison is facilitated. In addition, modeling presentations serve to modify subjects' behavior and the ensuing behavioral changes are amenable to a functional analysis. This permits the comparison of verbal and nonverbal behavior outlined in the introductory chapter.

Setting Conditions

Setting conditions were developed to elicit both verbal and nonverbal behavior. There were a total of six basic setting conditions, each presented twice, once to elicit verbal behavior and the second time to elicit nonverbal behavior. This would permit a comparison of the two response measures to the same basic setting conditions. Two types of setting conditions were employed. Since each had been used previously to modify one of the two response measures, using both types increased the likelihood of finding a setting condition that would prove effective in modifying both response measures. In addition, these procedures provided comparisons of verbal and nonverbal response measures with the two different types of setting conditions. A film showing a boy punching a balloon clown was employed because film presentations of that activity had proven successful in modifying imitative nonverbal behavior (Hicks, 1968). Based upon the Bandura

and McDonald (1963) modeling study, tape presentations with descriptions of clown punching were employed because oral presentations had proven successful in modifying verbal behavior.

The subjects were taken individually into the experimental room by a female undergraduate student who assisted the experimenter. She gave each subject instructions before showing them one of the three possible films and three possible tape presentations. The experimenter, who served as observer, was present in the experimental room at all times.

The subjects who were to see one of the three film presentations were given the following instructions by the assistant:

> You are about to be shown a film of a boy your own age engaging in an activity. I am showing you the film to learn how you respond to the boy.

The film consisted of three parts. In the first part, five seconds in duration, a balloon clown was shown. In the second part, thirty seconds in duration, a small eight year old boy was shown punching the clown. In the third part, ten seconds in duration, one of the three possible consequences shown to modify subjects' behavior was administered to the model. The consequences included:

> No Consequences--There were no consequences following the clown punching.
>
> Positive Consequences--An adult model came into the picture, smiled at the model, rubbed him on the head, and joined him in punching the clown.
>
> Negative Consequences--An adult model came into the picture, grabbed the model, gestured at him angrily, spanked him, and made him stand in a corner facing away from the camera.

The adult model on the films was the experimenter. Since the experimenter was also visible when subjects viewed the films, this was

expected to increase the probability that the consequences administered on the films would modify subjects' behavior.

The subjects who were to hear one of the three recordings were given the following instructions:

> You are about to hear a recording of a boy your own age describing an activity he just did. I am playing the recording to learn how you respond to the boy.

The tape consisted of two parts. In the first part a boy, the one who punched the clown on the film, described the activity. A transcription of the recording is below:

> I like to punch the clown. It's a great thing to do. You hit him and his head bounces off the cement and just pops right up to you. He's a good little friend. You just hit him left-right. When you are angry just, just sock him right in the nose, and you just punch him right, right in his blown up nose. You just hit him. And you should try it too. It's a lot of fun. And, I like to punch the clown.

In the second part one of the three possible consequences, shown to modify subjects' behavior, was administered to the model on the tape. The consequences include:

> No Consequences--There were no consequences following the description of clown punching.
>
> Positive Consequences--An adult model stated, "Hey, you look like you were having a lot of fun punching the clown. I'd like to punch the clown with you. It's a lot of fun to punch it, because you can punch away at it without hurting anybody. You punched it well."
>
> Negative Consequences--An adult model stated, "You shouldn't have punched the clown, it was a very bad thing to do. You might have broken it or torn it up. It was especially bad to tell other children about it. You were bad."

In conjunction with the tape recordings, slides showing the child model, the adult model when appropriate, and the balloon clown were shown to

clarify the situation and make them equivalent to the film setting conditions.

Dependent Measures

Two types of dependent measures were utilized to assess subjects' verbal and nonverbal responses. Research by Hicks (1971) and preliminary investigations for this study led to the following question and answer sequence as one that would be understandable to the subjects:

> I want to find out if you think punching the clown was?
> 1. not bad at all
> 2. a little bit bad
> 3. very bad

The order in which the possible responses were presented was counterbalanced to eliminate an order effect.

The nonverbal response measures were also developed on the basis of previous research and pilot work. The nonverbal response measures consisted of obtaining the frequency of certain response categories listed on a predetermined checklist. After the presentation of a setting condition, the subjects' nonverbal responses were elicited by the experimenter who said to the subjects:

> I have to work for the next few minutes. Why don't you come over here and play with these toys for a while? You may do whatever you want.

Since the physical environment did not permit observation by any other method, the observer had to stay in the room. Following the verbal instructions, the subjects were allowed to play for five minutes before they returned to their classes. The observer was aware of the medium to which subjects were exposed, but had no knowledge of the consequences.

The subjects' behavior was recorded during five minute periods on the behavioral checklist. A response had to occur once during a ten-second time interval to be scored. Below is a list of the response categories:

1. Punching Clown--This consisted of punching or striking the clown with hands.
2. Miscellaneous Aggression Clown--This consisted of any aggressive activity directed to the clown, other than striking or punching the clown with hand.
3. Miscellaneous Aggression--This consisted of any aggressive activity not directed to the clown.

Experimental Strategy

There were six basic setting conditions in this study. The six setting conditions were presented twice, once to elicit a verbal response measure and once to elicit nonverbal response measures. The setting conditions consisted of combinations of medium and consequence. The conditions are listed below:

1. Film No Consequences--Film of punching clown with no consequences following the activity.
2. Film Positive Consequences--Film of punching clown with positive consequences following the activity.
3. Film Negative Consequences--Film of punching clown with negative consequences following the activity.
4. Tape No Consequences--Tape about punching clown with no consequences following the description.
5. Tape Positive Consequences--Tape about punching clown with positive consequences following the description.
6. Tape Negative Consequences--Tape about punching clown with negative consequences following the description.

Each setting condition was shown to a different group of twelve subjects. Only one type of response measure (e.g. verbal or nonverbal) was obtained from each subject. Although previous researchers in this area had obtained both response measures from the same subject, the present study avoided the possibility that a subject's response on one measure

could affect a response on another measure. This approach permitted comparisons and conclusions about the behavioral consistency of children in general, rather than comparisons about the behavioral consistency of specific children.

There were a total of twelve experimental groups. However, since verbal and nonverbal responses were qualitatively different, they could not be directly compared. Therefore the data were divided into two separate groups for analysis. One of the groups included subjects' verbal responses to the six basic setting conditions and the other group included subjects' nonverbal responses to the six basic setting conditions. Four 2 x 3 analyses of variance were performed to analyze the results from the two groups of data. Each analysis of variance furnished a functional analysis of the data for that group. The two types of response measures were compared by determining if a setting condition that elicited a significant change in one response measure (e.g. verbal) also elicited a concomitant change in the other response measure (e.g. nonverbal). This comparison was visually demonstrated by presenting the two response measures, shown as a function of the same basic setting conditions, graphed alongside each other.

This experimental design permitted a comparison of subjects' responses to two stimulus modalities: film and tape. It permitted a comparison of subjects' responses to conditions of no, positive, and negative consequences. Finally, it permitted a comparison of subjects' verbal and nonverbal responses to all possible combinations of modality and consequence.

CHAPTER III

RESULTS

This study explored relationships between children's nonverbal and verbal behavior. The research design permitted a comparison of these two types of responses to the same basic setting conditions.

To check the reliability of scoring, the observer's scoring was compared with that of two independent observers. Agreement percentages were computed by dividing the total number of response possibilities into the number of responses in which the two observers agreed. Each independent observer rated the behavior of two different subjects. In their scoring of verbal behavior the observer and the two independent observers reached 100 percent agreement. The observer and one independent observer agreed 86 percent of the time, and the observer and a second independent observer agreed 89 percent of the time in scoring nonverbal behavior.

For purposes of analysis and discussion, the data are divided into four sections. The first section contains a comparison of subjects' verbal and nonverbal responses. The second section contains a comparison of subjects' responses to the different setting conditions. The third section contains a summary of subjects' nonverbal behavior and the fourth section contains a summary of subjects' verbal behavior.

Comparison of Responses: Punching Clown and Verbal Evaluation

The major purpose of this study was to compare children's verbal and nonverbal behavior. The graphs in Figures 1 and 2 present these comparisons for subjects' responses to the mediums of film and tape, respectively. These graphs permit a visual comparison of verbal and nonverbal response patterns to the mediums of film and tape, and to conditions of negative, no, and positive consequences.

The data for the three nonverbal response measures which were obtained during the five minute play sessions will be presented later in this section. However, the nonverbal response measure Punching Clown was chosen for this comparison because it is most directly related to the verbal measure; it is a reflection of the same activity that children were asked to evaluate verbally. Therefore, the comparison between Punching Clown[1] and Verbal Evaluation[2] would seem to yield the most meaningful comparisons between children's nonverbal and verbal responses.

The response level for Punching Clown was arrived at in the following way: the frequency with which each subject engaged in Punching Clown was obtained by adding the number of ten second intervals in which that subject punched the clown during the five minute free play

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[1]See pgs. 31 and 33 for statistical analysis of this data.

[2]See pgs. 40 and 42 for statistical analysis of this data.

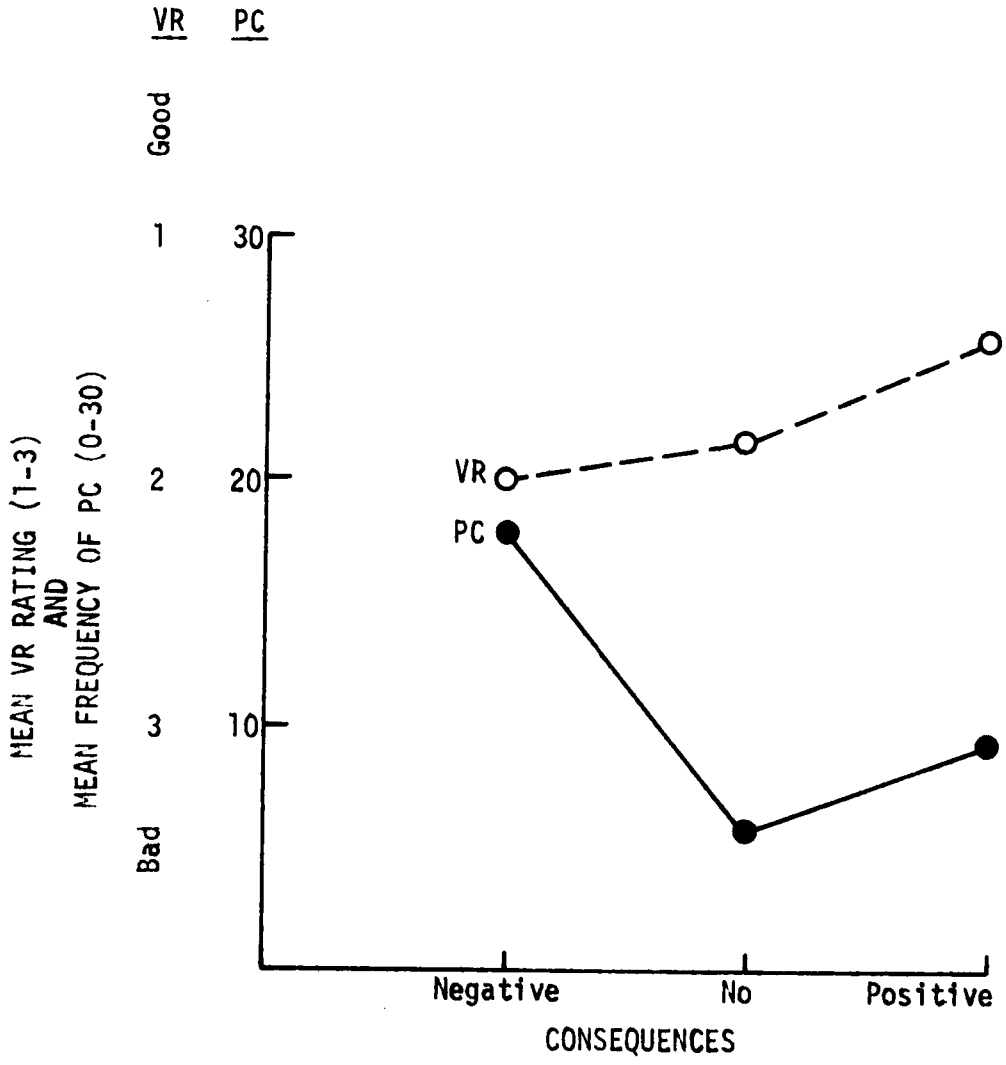


Figure 1. Subject response to film presentation of setting condition: Comparison of mean Verbal Evaluation (VR) and mean frequency of Punching Clown (PC) as a function of consequences.

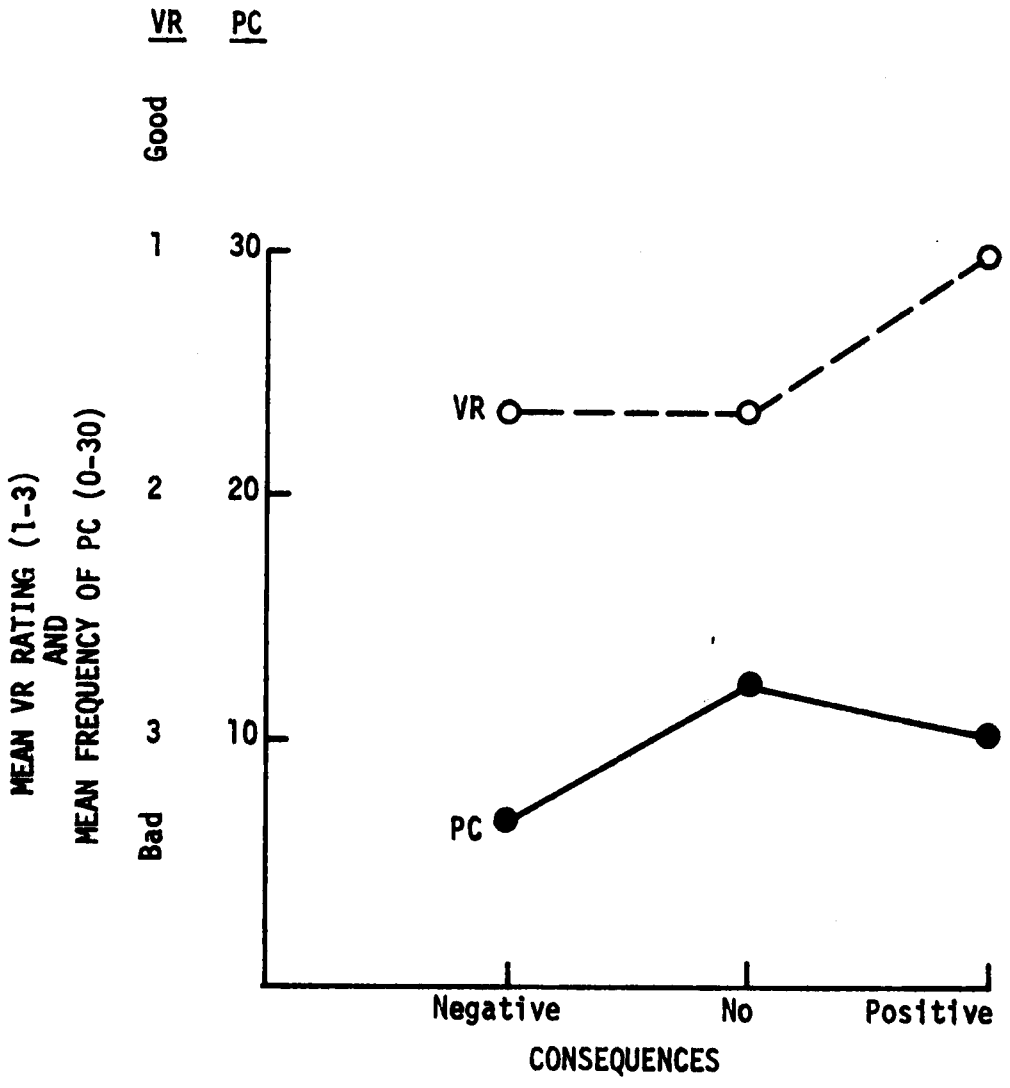


Figure 2. Subject response to tape presentation of setting condition: Comparison of mean Verbal Evaluation (VR) and mean frequency of Punching Clown (PC) as a function of consequences.

sessions (range 0-30). The response Verbal Evaluation was arrived at as follows: each subject's Verbal Evaluation of the setting condition to which he was exposed was obtained by asking him to rate the "badness" of clown punching and recording his oral response. These evaluations were limited to responses of "not bad" (1), "a little bit bad" (2), and "very bad" (3).

Points of convergence of divergence between verbal and nonverbal behavior can be ascertained by examining Figures 1 and 2. It can be seen that the pattern of subjects' Punching Clown responses do not match with the pattern of subjects' Verbal Evaluation responses to the setting conditions. Consistent relationships were not found between those responses elicited by film conditions (Figure 1), nor between those responses elicited by tape conditions (Figure 2).

Comparison of Responses to Setting Conditions

Figure 3 presents a comparison of children's mean frequency of Punching Clown for the mediums of tape and film. It can be seen from the graph that there are differences between subjects' responses to combinations of medium and consequence.[3] The subjects' highest level of clown punching occurs following Film Negative Consequences, but the second lowest level of clown punching occurs following Tape Negative Consequences.

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[3]See page 33 for statistical analysis of this data.

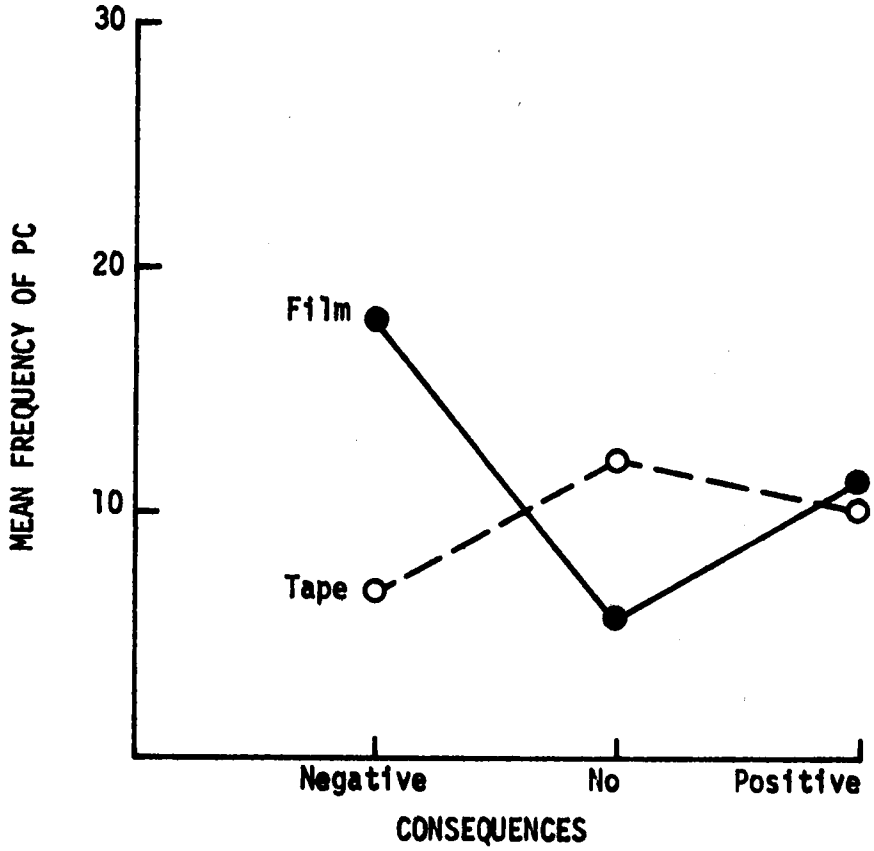


Figure 3. Mean frequency of Punching Clown (PC) as a function of medium and consequence.

Figure 4 presents a comparison of children's mean Verbal Evaluation for the mediums of tape and film.[4] It can be seen from the graph that subjects' responses to each of the two mediums follow basically the same pattern. Although generally, responses to the tapes tend to be "less bad" than responses to the films.

The implications of these comparisons will be brought out in the discussion of this paper.

Statistical Analysis of Nonverbal Data

The frequency with which each subject engaged in Punching Clown was obtained by adding the number of ten second intervals in which that subject punched the clown during five minute free play sessions (range 0-30). The frequency of Punching Clown for each subject as a function of setting condition, and the mean Punching Clown for each group of subjects exposed to that setting condition are presented in Table I.

Table II presents a summary of a 2 x 3 analysis of variance for Punching Clown. The analysis examines the main effects of medium (film or tape) consequence (negative, none, or positive), and their interaction. The analysis of the main effect of medium indicates that no significant differences can be attributed to that factor ($p = .51$). The analysis also indicates that no significant differences can be attributed to the main effect of consequence ($p = .62$). However, the analysis of variance indicates that the interaction of medium and consequence is significant ($p<.05$).

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[4]See page 42 for statistical analysis of this data.

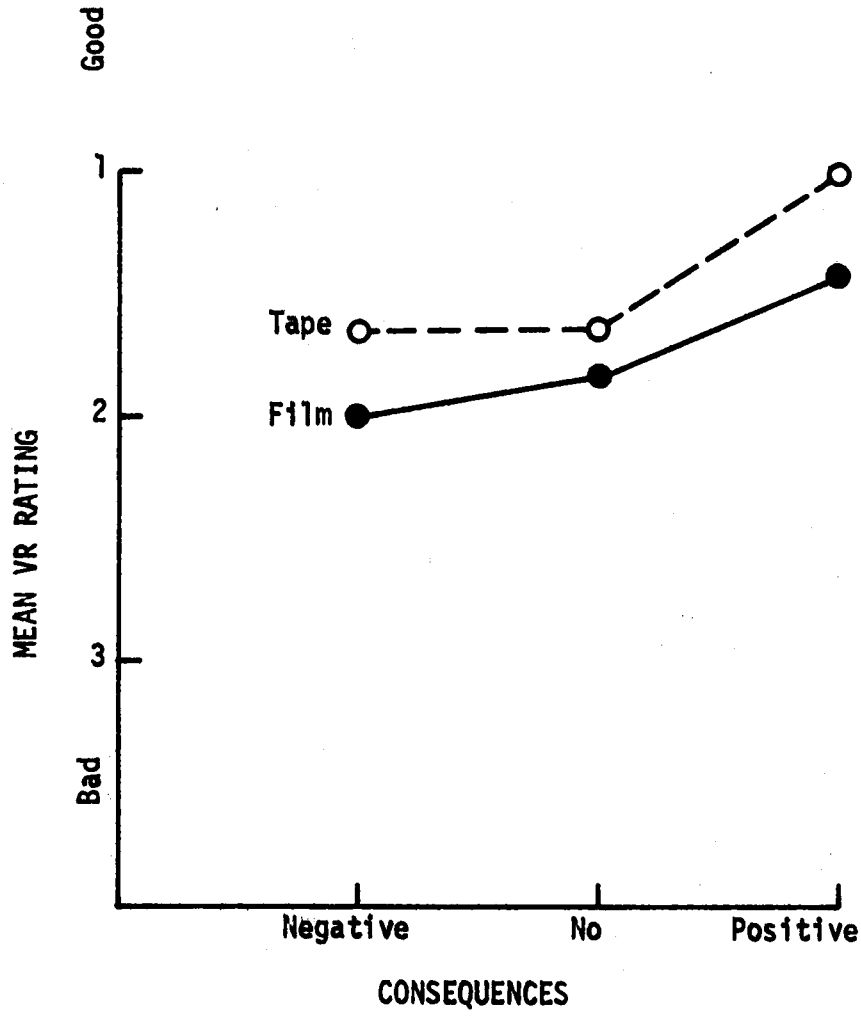


Figure 4. Mean Verbal Evaluation (VR) as a function of medium and consequence.

Table I

Frequency of Subjects' Punching Clown as a Function of Setting Condition, and the Mean for Each Group as a Function of That Setting Condition

Film Positive Consequences	Film No Consequences	Film Negative Consequences	Tape Positive Consequences	Tape No Consequences	Tape Negative Consequences
0	0	30	26	26	0
30	6	25	0	0	30
2	2	0	2	4	0
25	29	1	11	0	0
5	0	21	10	30	0
30	0	30	3	0	1
19	0	30	0	30	5
0	1	30	2	27	0
0	0	19	29	0	20
8	12	0	24	0	0
8	0	28	0	28	26
8	20	1	14	0	0
T = 135	T = 70	T = 215	T = 121	T = 145	T = 82
$\underline{X}$ = 11.25	$\underline{X}$ = 5.83	$\underline{X}$ = 17.92	$\underline{X}$ = 10.08	$\underline{X}$ = 12.08	$\underline{X}$ = 6.83

Table II

Summary of an Analysis of Variance for Punching Clown as a Function of Medium and Consequence

Source of Variation	df	MS	F	P
Between				
FT	1	72.000	0.50	.51
C	2	70.042	0.49	.62
FT X C	2	453.792	3.16	.05
Within	66	143.460		
Total	71	149.127		

Duncan's New Multiple Range Test was used to make comparisons between the mean Punching Clown for the six groups involved in the significant interaction. The results show that the mean of Film Negative Consequences was significantly greater ($p<.05$) than the means of Film No Consequences and Tape Negative Consequences. None of the other differences between means of Punching Clown groups reached significance. These data are graphically presented in Figure 5.

The frequency with which each subject directed aggressive activity, other than clown punching, to the clown (Miscellaneous Aggression Clown) was obtained by adding the number of ten second intervals in which the activity occurred during five minute free play sessions (range 0-30). The frequency of Miscellaneous Aggression Clown for each subject as a function of setting and the mean for each group of subjects exposed to that setting condition are presented in Table III.

Table IV presents a summary of a 2 x 3 analysis of variance of Miscellaneous Aggression Clown. The analysis examines the main effect of medium, consequence, and their interaction. No significant differences can be attributed to the main effect of medium ($p = .92$), consequence ($p = .71$), nor their interaction ($p = .11$).

The frequency with which each subject engaged in aggressive activities, other than those directed to the clown (Miscellaneous Aggression), was obtained by adding the number of ten second intervals in which that activity occurred during five minute free play sessions (range 0-30). The frequency of Miscellaneous Aggression for each subject

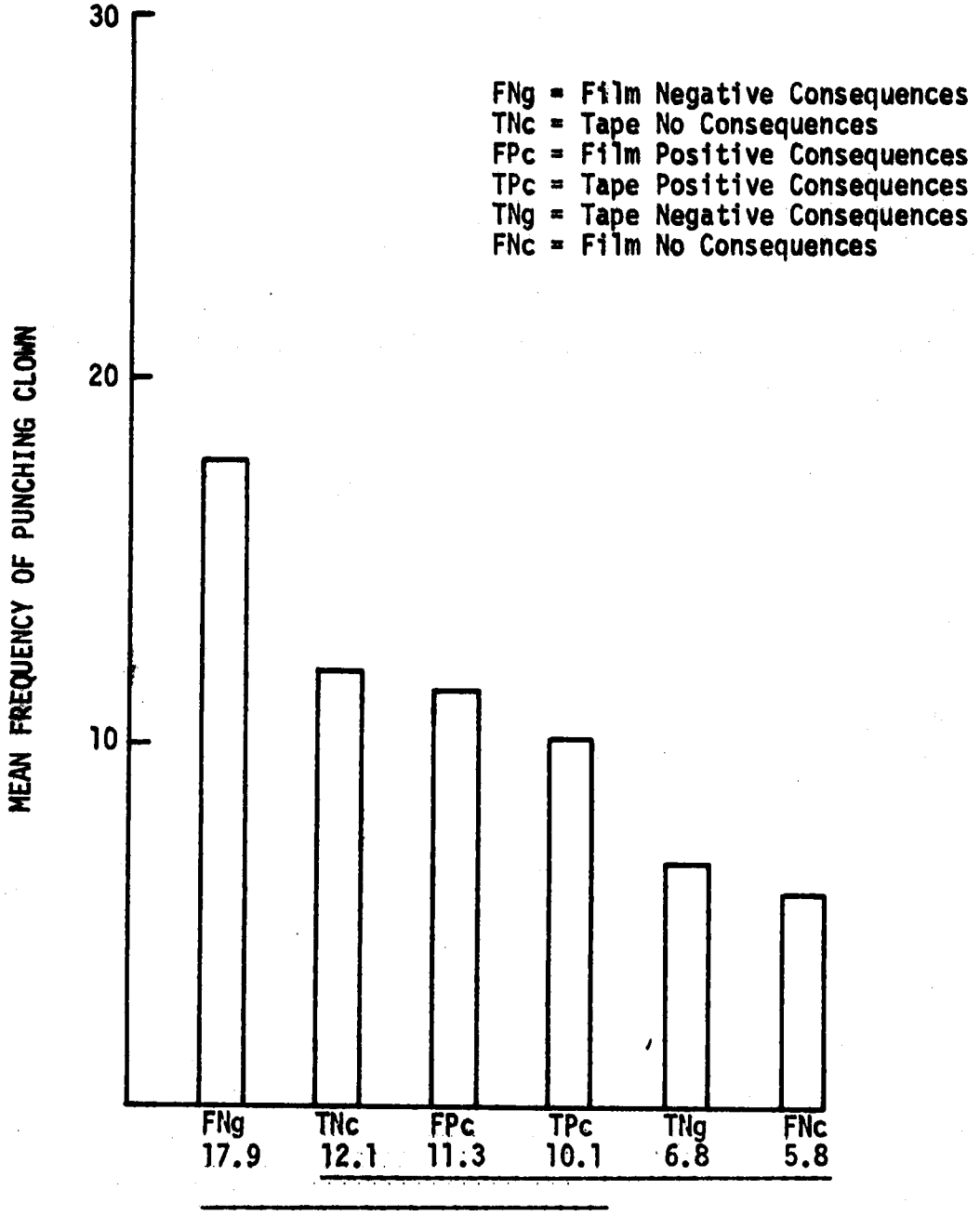


Figure 5. Mean frequency of Punching Clown (PC) as a function of setting condition.

Any two treatment means not underscored by the same line are significantly different ($p < .05$).

Any two treatment means underscored by the same line are not significantly different.

Table III

Frequency of Subjects' Miscellaneous Aggression Directed to the Clown as a Function of Setting Condition, and the Mean for Each Group as a Function of That Setting Condition

Film Positive Consequences	Film No Consequences	Film Negative Consequences	Tape Positive Consequences	Tape No Consequences	Tape Negative Consequences
0	0	3	0	0	0
0	14	2	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	2	5	0	0
0	0	0	0	0	0
0	0	0	0	2	3
0	0	0	0	0	0
0	0	0	23	0	3
3	14	0	5	0	0
0	1	1	0	2	6
4	3	1	0	1	0
T = 7	T = 32	T = 9	T = 33	T = 5	T = 12
$\underline{X}$ = .58	$\underline{X}$ = 2.67	$\underline{X}$ = .75	$\underline{X}$ = 2.83	$\underline{X}$ = .42	$\underline{X}$ = 1

Table IV

Summary of an Analysis of Variance for Miscellaneous Aggression Clown as a Function of Medium and Consequence

Source of Variation	df	MS	F	P
Between				
FT	1	0.125	0.01	.92
C	2	4.667	0.35	.71
FT X C	2	30.500	2.28	.11
Within	66	13.370		
Total	71	13.421		

as a function of setting condition, and the mean for each group of subjects exposed to that setting condition are presented in Table V.

Table VI presents a summary of a 2 x 3 analysis of variance for Miscellaneous Aggression. The analysis examines the main effect of medium, consequence, and their interaction. No significant differences can be attributed to the main effect of medium ($p = .56$), consequence ($p = .86$), nor their interaction ($p = .30$).

Statistical Analysis of Verbal Data

Each subject's Verbal Evaluation of the setting condition to which he was exposed was obtained by asking him to rate the "badness" of clown punching and recording his oral response. These evaluations were limited to responses of "not bad" (1), "a little bit bad" (2), and "very bad" (3). The Verbal Evaluation of each subject as a function of setting condition, and the mean for each group of subjects exposed to that setting condition are presented in Table VII.

Table VIII presents a summary of a 2 x 3 analysis of variance for Verbal Evaluation. The analysis examines the main effect of medium (film or tape), consequence (negative, none, or positive), and their interaction. The analysis of medium indicates that no significant differences can be attributed to that factor ($p = .08$). The analysis indicates that significant differences can be attributed to the main effect of consequence ($p<.01$). It also indicates that no significant differences can be attributed to the interaction of medium and consequence ($p = .88$).

Table V

Frequency of Subjects' Miscellaneous Aggression as a Function of Setting Condition, and the Mean for Each Group as a Function of That Setting Condition

Film Positive Consequences	Film No Consequences	Film Negative Consequences	Tape Positive Consequences	Tape No Consequences	Tape Negative Consequences
0	14	1	0	0	0
0	2	0	3	0	0
2	0	0	0	1	0
0	0	1	0	5	0
6	0	0	0	0	1
0	2	0	0	0	0
0	0	0	0	0	12
0	0	0	0	0	2
0	0	2	0	0	0
0	1	0	0	0	0
3	0	0	0	0	0
2	0	0	0	0	0
T = 13	T = 19	T = 4	T = 3	T = 6	T = 15
$\underline{X}$ = 1.08	$\underline{X}$ = 1.58	$\underline{X}$ = .33	$\underline{X}$ = .25	$\underline{X}$ = .50	$\underline{X}$ = 1.25

Table VI

Summary of an Analysis of Variance for Miscellaneous Aggression as a Function of Medium and Consequence

Source of Variation	df	MS	F	P
Between				
FT	1	2.000	0.35	.56
C	2	0.875	0.15	.86
FT X C	2	7.125	1.24	.30
Within	66	21.524		
Total	71	21.314		

Table VII

Subjects' Verbal Evaluations as a Function of Setting Condition, and the Mean for Each Group as a Function of That Setting Condition

Film Positive Consequences	Film No Consequences	Film Negative Consequences	Tape Positive Consequences	Tape No Consequences	Tape Negative Consequences
1	2	3	1	2	1
3	2	2	1	2	3
1	1	2	1	3	2
2	2	1	1	1	3
1	1	2	1	1	2
1	2	3	1	1	1
2	2	3	1	1	2
1	2	1	2	1	1
1	2	3	1	2	1
1	2	1	1	2	2
1	2	2	1	1	1
2	2	1	1	3	1
T = 17	T = 22	T = 24	T = 13	T = 20	T = 20
$\underline{X}$ = 1.42	$\underline{X}$ = 1.83	$\underline{X}$ = 2	$\underline{X}$ = 1.08	$\underline{X}$ = 1.67	$\underline{X}$ = 1.67

Table VIII

Summary of an Analysis of Variance for Verbal Evaluation as a Function of Medium and Consequence

Source of Variation	df	MS	F	P
Between				
FT	1	1.389	3.18	.08
C	2	2.389	5.47	.01
FT X C	2	0.056	0.13	.88
Within	66	0.437		
Total	71	0.495		

Duncan's New Multiple Range Test was used to make comparisons between the mean Verbal Evaluation of the three consequence groups. It indicates that the mean of Verbal Evaluation - Positive Consequences was significantly "less bad" ($p < .05$) than the means of the No Consequences and Negative Consequences groups, differences between other means do not reach significance. These data are graphically presented in Figure 6.

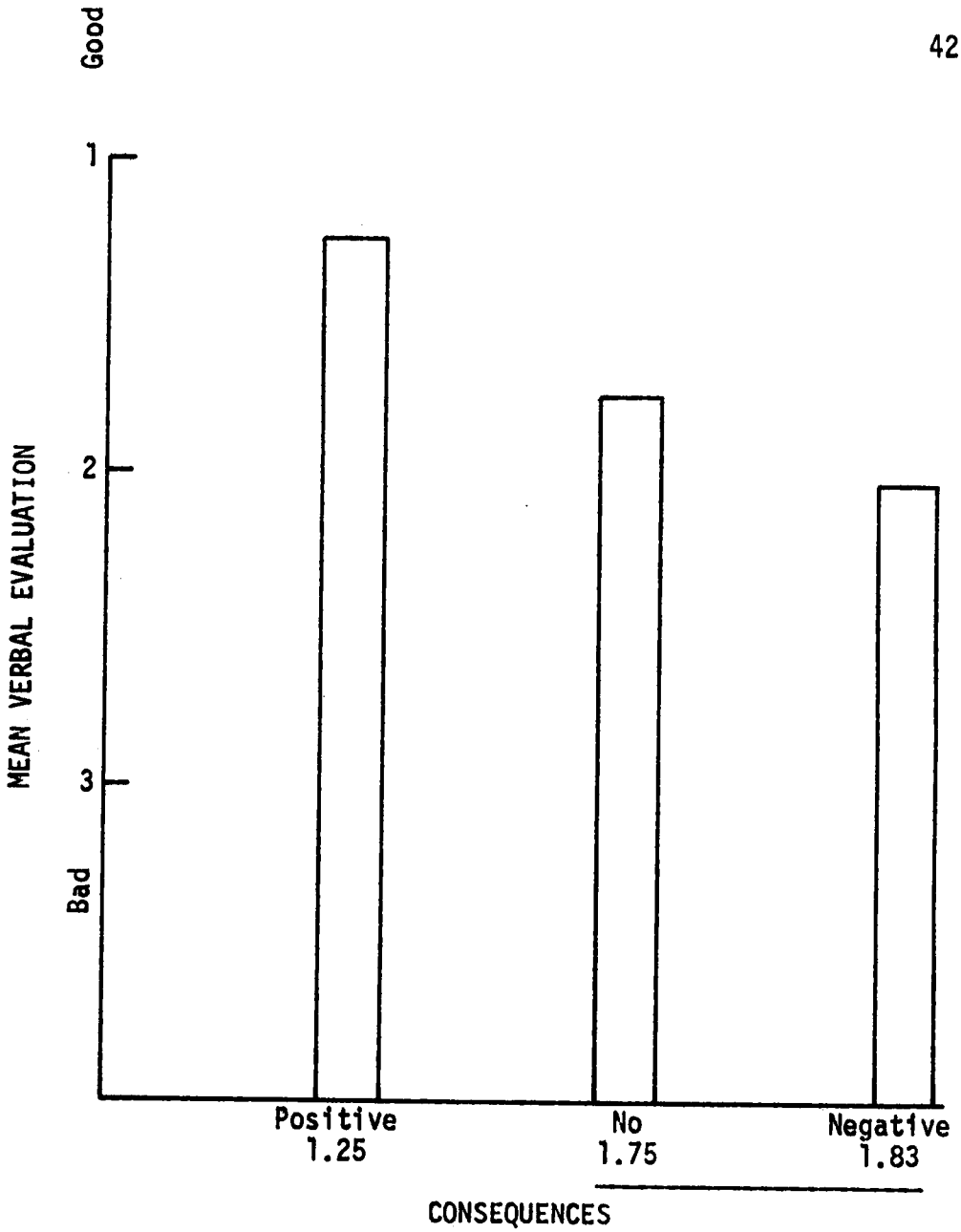


Figure 6. Mean Verbal Evaluation (VR) as a function of consequence.

Any two treatment means not underscored by the same line are significantly different ($p < .05$).

Any two treatment means underscored by the same line are not significantly different.

CHAPTER IV

DISCUSSION

The purpose of this study was to compare children's verbal and nonverbal behavior. Previous research had indicated that two factors would increase the probability of finding consistency between the two behavioral measures. If one increased the similarity between the setting conditions with which responses were elicited, research indicated that there was an increased probability of finding behavioral consistency. Additionally, research indicated that by increasing the similarity between response categories used to measure different types of behavior, the probability of finding consistency between the two response measures was increased.

Modeling procedures were utilized, which previous research had indicated would modify children's verbal and nonverbal behavior. In addition to observing children's verbal response to the operations which were designed to elicit and modify verbal behavior, children's nonverbal behavior was also observed. The same procedures were followed with respect to operations designed to elicit and modify children's nonverbal behavior.

Hypothesis

The basic hypothesis of this study was that verbal and nonverbal response measures would vary systematically as a function of the same

basic setting conditions. It is clear that the basic hypothesis was not directly supported by the data. Significant modifications of subjects' responses were elicited by some of the setting presentations. However, the changes in one type of response were not accompanied by concommitant changes in the other type of response. Specifically, subjects' verbal ratings became most positive following the presentation of setting conditions with rewarding consequences. This was not accompanied by an increase in subjects' clown punching with those setting conditions. Additionally, subjects engaged in the most clown punching when they observed a film with punishment. This setting condition, however, did not elicit the most positive verbal ratings.

While the basic hypothesis of this study was not directly supported by the data, there are trends in the findings which suggest limited behavioral consistency. For example, subjects' verbal and nonverbal responses to the film presentations follow consistent trends (excluding nonverbal responses to the negative consequences conditions which will be discussed later). In addition subjects' verbal responses to the film and tape presentations follow basically the same trends, with one exception. Subjects' responses to the tape setting condition with negative consequences appear to be best accounted for by two factors. The wording of the child model's description of clown punching contained the word "good" in reference to the clown. In this case the model's description appears to have served a self-rewarding function. This conclusion was also supported by the fact that subjects' verbal responses to the tape medium were consistently more positive than their

responses to the file medium. The second factor is related to the nature of the modeled activity, which will be discussed in more detail later in this chapter. However, it appears that subjects did not accept the negative consequences administered to the model and their verbal response could only be slightly modified in that direction. In the case of the verbal response to the negative tape setting condition, the consequences were counteracted by the child model's statement.

However, responses to one setting condition suggest inconsistent verbal and nonverbal responses. That is, subjects' verbal and nonverbal responses to the visual presentation with negative consequences were not consistent. The highest level of imitation occurred following this presentation, but verbal ratings were the most negative. The verbal response was in the predicted direction; however, the nonverbal response was unexpected. There are many explanations which could be suggested to explain subjects' nonverbal behavior, a seeming anamolie in the data. For example, the boomerang effect has been demonstrated in attitude research. Atkins, Deaux, and Bieri (1967) have shown that if the discrepancy between a suggested attitude change and subjects' attitude is too great, change in the direction opposite from the one advocated may occur.

There appear to be several factors which can be related to the Freedman (1965) study and which might account for subjects' nonverbal responses to the film with negative consequences. Freedman showed a subsequent increase in activity following the threat of severe

punishment for engaging in the activity in the previous month. The severe punishment threatened in the Freedman study paralleled the severe punishment administered to the model on the film with negative consequences. The combination of nondirective instructions used to elicit the nonverbal response measure and the lack of modification of subject responses with any of the negative conditions appear to have paralleled the permissive situation that was developed by Freedman. The severe punishment administered to the model and the permissive situation that developed appear to have led to the increase in clown punching.

The lack of consistency between verbal and nonverbal responses to the negative film may have been partially the result of the methods used to measure the responses. The characteristics of the response measures may also have contributed to the overall lack of consistency in this study. The instructions used to elicit nonverbal responses were less structured and more permissive than those used to obtain the verbal response measure. The verbal response measure itself was more structured than the nonverbal response measure. To obtain the nonverbal responses subjects' were told to do whatever they wanted to do. However, to obtain verbal responses, subjects were asked what they thought of clown punching. Additionally, the verbal response was limited to one of three choices, while the nonverbal response measure was more open-ended. The open-ended nature of the nonverbal response measure may have diluted the effects of the modeled consequences. A combination of these factors contributed to the difficulty in finding consistent relationships.

Two factors, related to the choice of subjects, may have contributed to the differences between the results of this study and results of previous studies. Previous studies made comparisons of the same children's responses on two different measures. The present study compared the responses of different children chosen from the same population. Another factor is the age of subjects. Bandura and McDonald (1963) suggest that age is not an important factor in predicting the effect that modeling procedures will have upon subject's evaluative judgements. However, Cowan, Langer, Heavenrich, and Nathanson (1969) suggest that younger children may be more susceptible to environmental influence. Additionally, many studies on imitation used subjects approximately one year younger than those in the present study.

Modeling Techniques: How Efficacious?

An additional factor which contributed to the difficulty in finding consistent relationships was the effect modeling techniques had upon the behavior of subjects. Rewarding the model had significant effects upon verbal behavior, but did not have clear-cut effects upon nonverbal behavior. Punishing the model led to the opposite of the predicted effect upon nonverbal behavior (in the case of the film presentation). In other presentations the negative consequences did not result in significant modifications of verbal nor nonverbal behavior.

A review of the literature on the effects of rewards and punishments to a model on imitation (seen after the completion of the present study)

indicate findings different from those obtained in the present study (Thelen and Rennie, 1972). The authors stated that punishing a model has been found to be a good means of suppressing imitation (not found in the present study), and that rewarding a model has led to inconclusive results (effect of reward more clearly demonstrated in the present study).

However, there is another researcher, not cited by Thelen and Rennie, whose findings are not in agreement with Thelen and Rennie. Hicks (1968) found that if subjects expected to receive modeled consequences, the probability of both the rewards and punishments affecting their behavior was increased. It had been thought that the type of conditions used by Hicks had been duplicated in the present study. However, one difference was that Hicks had the observer comment on the activities in the film, rather than having the consequences occur in the film. From the results of the present study it appears that subjects did not expect to receive observed consequences.

Some of the factors mentioned earlier appear to have resulted in subjects not expecting nor accepting the consequences. In addition to subjects' recorded responses, anecdotal remarks following the film negative consequences indicated that the children did not feel the negative consequences would be administered to them.

Another factor which may have limited subjects' imitation responses, and thus indirectly limited the possibility of finding consistent relationships between verbal and nonverbal behavior, was the nature of the modeled activity. Bandura (1971), in discussing his research

findings, stated that observing a prohibited behavioral activity releases inhibitions to engage in the activity. Another example of the effect that the nature of the modeled activity can have upon imitation was found in Dubanoski (1967). His results indicated that rewarding a male model for engaging in female grooming activity decreases male children's imitation of that activity. It is possible in the present study that rewarding a relatively common activity added little impetus to imitate the activity. On the other hand, punishment of the activity may have made it more attractive. These findings suggest that the nature of an activity interacts with the type of consequence to affect the level of imitation.

Implications for Further Research

The results of previous research when contrasted with findings of the present study suggest that changes in the methodology along the lines indicated in the introduction, could result in more consistent relationships between verbal and nonverbal behavior. The changes might involve obtaining verbal and nonverbal measures in a free-play environment. This would preclude the need for differential instructions and would permit the use of more equivalent measures to obtain the two types of responses. It would, however, necessitate much longer time periods to obtain the responses for comparison. An additional step might be to obtain response measures in naturally occurring environments such as school classrooms.

There were indications that the relationship between verbal and nonverbal behavior is more complex than pre-supposed. The nature of the behavior and its consequences are factors which appeared to be important in the finding of consistent relationships. Scaling is one method, the use of which would provide a greater understanding in this area. Part of the difficulty in obtaining predicted results seemed to be based upon the extreme nature of one of the consequences which interacted with the selected activity. Obtaining children's evaluations of various activities and consequences could provide the basis for a continuum from which one could systematically select a balanced range of activities and consequences for comparison. It is also possible that if subjects are selected on the basis of a pre-experimental measure, consistency can be increased. For example, Hovland, Harvey, and Sherif (1957) found that subjects with more extreme scores regress towards the mean when presented with a communication contradictory to their prior attitude. These means of selection could also be applied to the area of modeling research.

In addition, there were indications that medium may play an important part in affecting modeling results. This needs to be more systematically explored.

Final Observations

1. The results of this study did not directly support the hypothesis that verbal and nonverbal behavior would vary systematically as a function of the same basic setting conditions.

2. There were indications of limited behavioral consistency in the results which need further exploration.

3. Medium appears to be an important factor in eliciting and modifying behavior. The relationships were not clear-cut in the present study, but merit further study.

4. Modeling procedures proved less effective in altering subjects' behavior than previous research had indicated would be the case.

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VITA

Norbert L. Reese was born in Chicago, Illinois, on June 15, 1945. He attended elementary school in the Chicago public school system. He attended and graduated from Tucson High School of Tucson, Arizona, in June, 1962. He then enrolled in the University of Arizona of Tucson, Arizona, and in August, 1966, was awarded a Bachelor of Arts degree in Psychology.

In September of 1966 he enrolled in the graduate program of the Department of Psychology at the University of Tennessee, in Knoxville, Tennessee. He received a Master of Arts degree in Psychology on August 22, 1970. In addition to his class experience he obtained professional training as a Veterans Administration Clinical Psychology Trainee and as an Assistant Psychologist at the Pineville, Kentucky, Area Mental Health Center. He obtained teaching experience as a laboratory instructor in experimental psychology during four quarter sessions. He also served as an Instructor for two Introductory Psychology courses at the Oak Ridge Extension of the University Night School. His graduate training was interrupted by a one year leave of absence. In addition, the completion of his dissertation was delayed while he worked as Director of a youth counseling program from the summer of 1972 through the spring of 1974.

His current plans include obtaining a position in applied psychology and receiving further clinical training.