THE EFFECTS OF REINFORCEMENT ON THE

SOCIAL APPROACH BEHAVIORS WITH

CHILDREN OF LOW AND AVERAGE

INTELLECTUAL ABILITY

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CHAPTER I

INTRODUCTION AND STATEMENT

OF THE PROBLEM

In recent years research has been conducted in the areas of imitation, intelligence and social approach behavior. However, no attempt has been made to investigate possible relationships among these variables with children in a play setting.

Imitative learning has been the focus of attention for many investigators in the area of social learning. Bandura and Walters (1963) directed their efforts towards social learning research. They define imitative behavior as follows:

> Imitative behavior is often rewarded by the model and
> in addition brings rewarding consequences, provided
> the model exhibits socially effective behavior. Conse-
> quently, most children develop a generalized habit of
> matching the responses of successful models. Indeed,
> social behavior patterns are most rapidly acquired through
> the combined influence of models and differential rein-
> forcement (p. 4, 1963).

Newman (1971) integrated the concept of imitation from Bandura and Walters into his research. The purpose of his research was to show a relationship between intelligence and imitation associated with below and average intelligence children. The present study shall go beyond

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Newman's work by employing various reinforcers and concentrating on social interaction.

Current research indicates that play therapy provides a medium for behavior change and can be utilized to study the concepts of imitation and intelligence. Research on children with behavioral problems by Clement and Milne (1967) showed that a behavior modification program can be effective in changing social interaction behaviors. They also showed some difference in response to varied reinforcement among the population.

The present study applies itself to a closer look at this differential response to reinforcement types and expands the scope of Clement and Milne by using a public school population representing the norm and slow learner children. Since these types of children made up the bulk of the public school population it was hoped that patterns of response to different reinforcement techniques might be discovered, thereby creating some new tools and approaches for use by teachers and parents. Behavior modification techniques are still difficult to utilize in classroom situations, and the group test here might provide an easier vehicle.

Statement of the Problem

The literature in the areas of imitation, intelligence, reinforcement and social approach behavior of children reveals that few attempts

have been made to investigate the relationships among these variables.
While some researchers' efforts have been made relating intelligence
to imitation, a study aimed at discovering the relationships among
intelligence, imitation and social behavior in a play setting could
provide answers to some interesting questions.

The question arises, do children of low intellectual ability
display a difference in social interaction compared to children of
average intellectual ability? If so, how may this be interpreted?
Does imitative behavior play an important factor in increasing social
approach behavior? If so, what are the differences between low and
average ability children in social interaction behavior? Is this
behavior the same for low and average ability children? Do children
of different intellectual abilities respond differently or in the same
manner to various types of reinforcement? These questions pose a
challenge for investigation.

The purpose of this research was then to explore the questions
of the effects of types of reinforcement and intellectual level on the
social approach behavior of children. Adopted from Clement's and
Milne's (1967) work, social approach behavior may be operationally
defined as, social interaction between or among Ss in a particular
area of the playroom. For the purpose of the present study social
interaction was further divided into: (1) Parallel behavior--the S s
must be together within a designated area of the playroom with

another S(s). (2) Nonverbal behavior was defined as an S communi-cating with another S(s) by means of hand gestures, body movements, and finger pointing. (3) Verbal behavior was defined as an S talking in sentences to another S(s).

CHAPTER II

REVIEW OF THE LITERATURE

This review is divided into five sections: (1) Theoretical and

Empirical Data Pertaining to Social Behavior with Children; (2)

Intelligence and Its Relationship with Reinforcement of Social

Behavior; (3) Various Types of Play Therapy; (4) Toy and Age

Selection; and (5) Summary and Hypotheses. Each of these sections

will stress those studies which pertain to the present research.

Theoretical and Empirical Data Pertaining

to Social Behavior with Children

Social behavior is considered an activity elicited by stimuli

which emanate from a person or persons which may possess a stimu-

lus value for the individual (Hartup, 1965). A good portion of the

literature in child psychology has social behavior orientation (Hartup,

1965). Two areas of concern to social behaviorists are: (1) imitative

behavior in children and (2) effects of reinforcement on social behavior

in children.

Imitative Behavior

The amount of research on social behavior is extensive.
Stevenson (1961) reported that older pre-school and younger elemen-
tary school boys performed better than girls on simple tasks when
verbally reinforced by a female adult. Similar results were reported
by Gewirtz and Baer (1958) for nursery school children and by Steven-
son and Knights (1962) for retarded children. Baldwin (1967) dis-
covered that increases in social behavior occur with retarded children
when tokens, nutritive, and social and control reinforcements are
given. When these retarded Ss were divided on the bases of IQ (low
and high), the low group showed increased social behavior to nutritive
reinforcement, while the high IQ group preferred tokens. Peebles
(1969) also investigated increased social behavior with retardates.
His subjects were divided by IQ scores on the Stanford-Binet
Intelligence Test, mentally retarded 55-80 and average 96-118. In
the play therapy situation used in this study mentally retarded Ss
decreased their social interaction verbal reinforcement condition,
whereas average Ss increased their social behavior. Allen, Hart
et al (1964) also utilized behavior modification techniques with pre-
school children and found that their methods increased social behavior
with other children. Mithaug and Burgess (1968) found that Ss, 5-10
years of age, showed increased social behavior with other children
when they received token and verbal rewards. Social behavior did

not occur when tokens were given without verbal reinforcement. When token and verbal reinforcements were given simultaneously the social behavior was maintained. Van Den Heuvel (1969) found that verbal reinforcement did not increase social behavior of the children in his study.

The age of the subject is another variable which relates to a child's social behavior under reinforcement. Stevenson and Cruse (1961) found that five-year olds performed more appropriately to social reinforcement than did a group of 12-year olds. Results concerning the relation between mental age and reinforced tasks indicated that responsiveness to verbal reinforcement is related to mental age up to an intellectual level between 5-7 years. In children above this mental age level no such relation apparently exists (Stevenson and Fahel, 1961, Stevenson and Synder, 1960; Zigler, 1963).

Social class differences were reported by Zigler and Kanzer (1962) who found that verbal reinforcement by an adult of social behavior was less effective with middle class than with lower class children.

Several studies have been concerned with the effects of brief periods of minimal social contact on children's responsiveness to verbal reinforcement. Gewirtz and Baer (1958a, 1958b) found that verbal reinforcement produced greater changes in performance of

pre-school children on simple tasks when preceded by a twenty-minute period in which children were left alone than when preceded by no waiting period. Similar results are reported by Gewirtz and Baer in a second report where similar high effects of verbal reinforcement was utilized after social isolation with next highest effect in a no waiting period condition and the least effect when twenty minutes of comfortable interaction between experimenter and S was used. Other findings consistent with this are reported by Hartup (1958), Stevenson and Odom (1962) and Erickson (1962).

The behavior of social models functions importantly in transmitting both deviant and socially approved patterns of behavior to young children. Bandura and Walters (1963) cited three possible effects of exposure to a model: (a) modeling effect whereby precisely imitative response patterns not previously present in the observer's repertoire are transmitted; (b) inhibitory effects whereby the frequency or intensity of previously learned response patterns is altered by observation of a model, and (c) elicitation effects whereby observer responses are evoked which are not precisely imitative but are similar to the responses of the model. Recent research on imitation has been directed toward investigating these types of influence that models have on children's behavior and the determinants of imitation in children.

Bandura's and Kuper's (1964) research found that adults do indeed serve as powerful models for self-reinforcement in children,

even more so than peers. Earlier research by Wilson (1958) revealed that without models present learning did occur. Wilson hypothesized that learning may occur in the presence or absence of a model. Two groups of pre-school children were given a color discrimination task with a model present and absent. Upon imitating the model's behavior and choosing the appropriate color, the children were rewarded. Those children who had no model proceeded to learn by trial and error. The data revealed that imitative behavior (model present) produced less errors in learning while those children who had no model produced more errors in the process of learning. The only significant difference between the two groups was the amount of errors. Both groups learned the discrimination task, but the children with a model present were better able to discriminate and were more efficient in their learning than those children who had no model present.

The studies by Bandura and his associates indicate that responses of the model to the children influence their performance of an imitative response rather than their acquisition of the responses. Children who observed a model being punished for aggressive behavior showed relatively little imitative aggression when tested immediately after observing the model and further indicated to the experimenter that they disliked and disapproved of the model's behavior. When offered attractive incentives to reproduce the model's aggressive behavior, these children demonstrated they were able to do so

(Bandura, Ross, Ross, 1963). Rosekrans (1967) investigated: (a) the effects of perceived similarity to a social model in the performance of imitative responses; (b) interaction of perceived similarity and observed response consequences to the model on the subsequent performance of imitative responses; and (c) the effect of perceived similarity on the acquisition of learning of imitative responses as compared to its effects on the spontaneous performance of imitative responses. Results indicated that perceived similarity would enhance the effects of response consequences to the model. Subjects who perceived themselves as similar to the model, relative to those who perceived themselves as dissimilar, tended to imitate more on this measure with verbal reward and control treatments but less with verbal punishment.

Baer and Sherman (1964) were interested in verbal reinforcement and how its effects certains imitative behaviors in children. A puppet was used to demonstrate imitative behavior. Three imitative responses (head nodding, mouth movement and verbalizations) were established for children by the social interaction with the puppet. Children were asked (by the puppet) to imitate responses. They were verbally rewarded as they imitated the puppet. The verbal reward increased the strength of responding in the children. With no verbal reward the imitative behaviors previously established decreased.

Imitation may generalize from one situation to another. The imitation of a model depends in part on the contingent reinforcement present in that situation. Lovaas (1967) taught children to imitate vocalizations and nonverbal behaviors. Working with schizophrenic children, Lovaas and associates reinforced appropriate imitative vocalizations and nonverbal behaviors. Those children who were not reinforced with a model/imitator present had a difficult time learning the tasks. Reinforcement consisted of candy which was immediately put in the child's mouth on completion of a task. Eventually those children who were reinforced with a model present could generalize among themselves without a model present.

In their paper Gewirtz and Stingle (1968) deal with generalized imitation, which represents a response class containing an unlimited number of instrumental responses, varied in content and matched to cues from many models. These instrumental responses were acquired and maintained by an intermittent reinforcement schedule. Their view of generalized imitation has no supportive research due to their obtaining negative results.

Effects of Reinforcement on

Social Behavior in Children

Reinforcement has contributed in part to what Bandura and Walters refer to as imitation. Using reinforcement concepts, various

researchers have been able to tease out discrete behaviors for closer scrutiny. There are certain types of reinforcement which have greater effects on behavior than others (Martin, 1972). Similarly, certain types of reinforcement can facilitate or inhibit social behavior.

The research in this area has been extensive. Kerr, Meyerson, and Michael (1965) applied general behavioral principles of reinforcement to a deaf mute child. The child learned to vocalize freely after two hours of intermittent exposure to the reinforcement contigency, which was joggling the child on the experimenters' lap. Clement, Fazzone, and Goldstein (1970) exposed boys to different reinforcements, token, verbal and two control conditions. They report that social behavior is affected by both the token and verbal reinforcements. Increased social approach behaviors were due to the token treatment group responding more than the verbal group with the verbal group changing more than the control group. Social approach behaviors were mentioned in Clement's and Milne's (1967) study. In this study a reinforcement program was utilized to observe discrete behavior changes in eight-year old children. The aim of the study was to increase the social interaction among the children, defined as social approach behavior. The results showed that increased social approach behavior was produced by token rewards more than verbal. Various dependent variables (statements by Ss, nonverbal expression, and solitary play) did not change between pre- and post-tests (WISC,

California Test of Mental Maturity, Children's Manifest Anxiety

Scale, and Children's Rorschach cards). Verbal treatment evidenced

more social approach change than did control treatment. The control

group evidenced no change in either social approach or the dependent

variables. Social approach behavior was measured by time sampling.

Similar studies have found token reinforcement is facilitative for

social behavior with children (O'Leary, Becker, Evans, Sandagas,

1969; Valett, 1966). Rosenfeld (1967) found verbal reinforcement was

adequate for maintaining any social behavior.

<div align="center">

Intelligence and Its Relationship with

Reinforcement of Social Behavior

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The area of intelligence and its relationship with reinforcement

of social behavior is rather vague and needs further investigation.

Related to the present research are studies of the effects of intellec-

tual level on social interaction task and imitation. Basecu (1954)

hypothesized that intelligence should correlate positively with per-

formance on concept formation tasks and ability to verbalize concepts

and negatively correlate with degrees of distractibility. His findings

supported his hypothesis. He found that high IQ Ss performed better

on these tasks with verbal reinforcement (social interaction) of

correct responses than did low IQ Ss. Low IQ Ss decreased in per-

formance with increased verbal reinforcement.

Piaget (1951) articulated the stages of imitation and the order of their emergence as they relate to the developing intelligence of the child. The final stage is the most important stage due to the emergence of intellectual conceptualization. Here imitation is really dependent on intellect. The perception of the child was influenced by his intelligence, which influenced his imitation.

Integration of the concepts of intelligence and imitation is represented in Newman's (1971) work, where he combined the concepts of intelligence, imitation, and reward in a task. The study was based on a simple discrimination task where relevant and irrelevant behaviors of the model were observed by the Ss. His thesis was that imitation is an assimilation process learned from a model. Newman had the Ss divided into high intelligence and low intelligence groups. High intellect Ss performed better at task imitation than did low intellect Ss. Newman concluded that a relationship between intellect and imitation was apparent. In addition the high intellect group responded well to reinforcement; however, no differences between high and low intellect groups existed without reinforcement. A study by McDavid (1959) found that the intellectual factors he used were not related to imitative behavior. His explanation for this finding was that a high intelligence child might use a leader's modeling as a cue for his own social behavior. The child might direct his attention to environmental cues not pertinent to the task

and pursue false leads in attempts to utilize the leader's response.

Such behavior may result in slower learning and lower scores for

these children.

Various Types of Play Therapy

Axline's (1949), Moustakas' (1951), and Ginott's (1961 and

1959) concepts of play therapy have given further impetus for those

who performed research in the area. Axline (1949) thinks that:

> A child's feelings and attitudes are revealed through his
> or her play. Then there comes into his expression more
> positive attitudes and feelings. Such play sessions reveal
> a bit of the child's inner world, projected outwardly in
> his play. This answers in part the question: What does
> the child think about ? What are his feelings and attitudes?
> How does he perceive himself and his world? (p. 150,
> 1949).

Axline further states, "The importance and force of emotionalized

attitudes in the lives of children is the basic problem" (p. 150, 1949).

Axline feels a child needs respect and acceptance by his parents

and teachers. These feelings of adequacy will be an outgrowth based

on stable emotional relationships.

Like Axline, Moustakas has similar concepts of the child.

Moustakas believes the play setting allows the child to express freely

in a permissive atmosphere those feelings which have been prevented

from materializing. Moustakas (1955a and 1955b) does not specify

particular feelings that might materialize which in some instances

may be primarily negative.

Ginott (1961), although not as completely non-directive as Axline and Moustakas, has an eclectic philosophy in play therapy. Ginott utilizes play therapy only with a small number of children. Group therapy for children supposedly reduces the child's tension, with greater spontaneity being induced by other group members. This seems to make it easier for the child to relate to others than in individual therapy. Also, the children identify with other children in the group. Play therapy provides a media for catharsis, play, and verbalization. Unlike Axline and Moustakas, most of Ginott's research has been on effective techniques in play therapy, such as limit setting in the playroom (Ginott and Lebo, 1960).

Slavson's (1948) view of play therapy is more analytical than Ginott's. He believes play group therapy has these advantages: (1) It serves as a catalytic effect on each S which makes it easier to bring forth fantasies. (2) It reduces repetition of behavior as often seen in play therapy. (3) Interactions and mutual support help to employ the materials in the playroom (p. 320). Slavson believes in role playing a fantasy (i. e., dog, fish, etc.). He then interprets this fantasy as it may relate to family life constellations. Also, Slavson believes that sublimation is always present in play therapy. Drives are converted into socially approved patterns of behavior and adaptations to reality.

Perkins (1967) investigated outcome effects of treatment procedures with behavioral problem boys. Specific objectives were:

(a) to compare the efficiency of play therapy and reinforcement therapy to facilitate the development of responsiveness to social reinforcement in behavioral problem boys, and (b) to compare play therapy and reinforcement therapy with no treatment controls. Perkins found that the therapist was more effective in increasing responsiveness to social reinforcement in a reinforcement therapy condition than play therapy. The play therapy condition did not differ from the control conditions in its effect on responsiveness to social reinforcement. Pre- and post-social responsiveness measures were administered in both reinforcement and play therapy groups.

Rabb and Hewitt (1967) using autistic, mentally retarded, schizophrenic, and minimally brain damaged children, demonstrated behavior changes in the classroom. Children were reinforced with tokens in the classroom for talking to other children and the teacher. Rabb and Hewitt concluded that, based on their work in the classroom, children who are severely disturbed in the age group of 4-6, but who are functioning below their ages, did benefit in social and communicative skills based on a token reinforcement situation.

Leland, Walker, and Taboada (1959) used play therapy with post-nursery male retardates. Their results indicated that group play therapy did not create any major changes in the level of social maturation. Leland and Smith (1965) in their techniques with retarded children used a process of conditioning and reconditioning.

According to Leland and Smith, play therapy is based on the premise that all behavior is lawful, that certain behaviors tend to be tension producing, and that aberrations of behavior are self-reinforcing. The way to deal with these aberrations is through a process of building and unblocking cognitive functions. This may be accomplished by using reward and punishment where reward becomes the permission to carry out behavior and punishment becomes an intrusion. Cognitive stimulation takes the form of a therapist serving as a model so that the patient will know what is expected of him. By the use of their structured and unstructured approach in play therapy, Leland and Smith believe that retarded children can benefit from play therapy.

Some researchers feel that group play therapy is not an effective tool for changing behavior. Levitt (1957) in his evaluation of psychotherapy with children did not find conclusive evidence of play therapy contributing to recovery from emotional illness. Rather the variation in improvement appears to be a function of the type of psychiatric illness. In an earlier study Levitt found any psychotherapy, group or individual, was inadequate for behavior change.

Other types of play therapy, such as those used by Schiffler (1967), Hare (1966), Mendes (1966), Fleming and Snyder (1947), and Lieberman (1965) have also proved to be ineffective for behavior change.

Toy and Age Selection

Nichols' (1961) play toys involved dart games and the use of projectiles in the playroom. These toys were found to be dangerous for children and were not recommended for future work. Lebo's (1958) and Ginott's (1961) criteria for toy selection seems more appropriate than Nichols'. Both Ginott and Lebo used a variety of toys in their playroom. Lebo (1958) discovered that certain toys, such as doll houses, paints, blackboards, puppets and blocks produce greater verbalization in children and children are more attracted to these toys. Ginott's and Lebo's studies fulfilled the criteria for toy selection in this research.

The age grouping of the children was based on studies by Lebo (1956), Ginott (1961), and Peck and Steward (1964). Lebo's and Ginott's work are quite similar. Lebo revealed that beyond the age of 10 years most children find the playroom activities boring and preferred sophisticated toys such as games to doll houses or finger paints. Ginott's work showed a similar age trend in toy preference. The lower the age the easier the child could relate to simple toys, whereas at 9 years or older many simple toys lost their appeal. Peck and Stewart (1964) found that the ages of 4 to 10 years was an optimal period to play with the types of toys described by Lebo's (1958) and Ginott's (1961) research, while those children beyond 10 years 6 months showed a discontent when subjected to these basic

toys. The age range used in the present study (6 years to 8 years) was based on Peck's and Stewart's finding and the information gained by the present experimenter in an earlier pilot study (Goldenberg, 1971).

<center>Summary and Hypotheses</center>

The review of the literature has shown that social behavior can be changed by various types of reinforcement. It has also shown that intelligence may be a factor with which a child may respond to a given type of reinforcement. Ames (1968) and Rossi (1968) in their work state that in the academic setting, which may be equated with a rein-forcement setting, children with IQs between 75-89 may be considered of low intellectual ability. Children with IQs between 90-110 are usually considered of average ability within the school setting (Terman and Merrill, 1962). Therefore, average and low IQ Ss should show differential abilities on reinforcement tasks.

Play and toys are a natural social medium for children of 6 and 8 years, and all the research presented indicates that children respond positively to this milieu and will interact at a higher rate with one another in such a setting. Clement and Milne (1967), who used such a setting with behavioral problem boys, had success. This study utilizes many of their techniques.

The hypotheses tested in the present study are:

1. that reinforcement (token and verbal) will lead to increased social approach behavior for low ability and average ability Ss, compared to non-reinforced controls;

2. that reinforcement (token and verbal) will yield increases over base rates of verbal and nonverbal aspects of social approach behavior for the average ability Ss;

3. that reinforcement (token and verbal) will show an increase over base rates of the verbal criterion more than nonverbal for the average ability Ss;

4. that reinforcement will increase the nonverbal responsivity more than verbal responsivity in the low ability Ss.

CHAPTER III

METHOD

Subjects

The subjects consisted of 30 males divided into two levels of
intellectual ability, low (a_1) and average (a_2), with fifteen subjects
in each group. The fifteen Ss were further divided into three treat-
ment groups, token, verbal and control with five Ss per group
(refer to Appendix A).

The Kuhlmann-Anderson Group Intelligence Test, Booklet A
and B, was administered by the examiner in the child's classroom,
for the purpose of differentiating between low and average learners.
The tests were administered several weeks prior to the beginning
of the research. Subjects whose scores were in the 75-89 range
were defined as slow learners and those whose scores were in the
90-110 intellectual range were defined as average. The mean IQ
for the low ability group was 80.8 with a standard deviation of 4.53
and an IQ range of 75-88. The mean IQ for the average ability
group was 96.3 with a standard deviation of 4.17 and an IQ range
of 90-105. The mean age of each group was seven years and one

month (7-1) with a range of six years and one month to eight years.

All children were selected from a public elementary school which served a predominately upper lower class areas of a northwestern city of approximately 300,000 in population. Permission was obtained from the parents of each child used in the study.

Room and Apparatus

A kindergarten room 70 ft. by 30 ft. was utilized in the study. The play area was contained in a corner of the kindergarten room (see Figure 1). The play area dimensions were 12 ft. by 10-1/2 ft. and lighting was adequate. Boundaries of the play area were established by utilizing desks (see Figure 1). A television camera was situated outside the area by approximately five feet. Beyond the camera was a cassette recorder, blackboard shieldings, video-recorder and the television monitor in which judges were viewing the behaviors.

The recording took place on an Ampex-Video Recorder. The recorder was used in conjunction with a Shure two-channel amplifier, a Shure microphone and a Sony television camera. A 17-inch television monitor completed the audiovisual system. An Ampex cassette tape recorder was used with twenty-second intervals recorded on tape. The entire recording system was shielded by three mobile blackboards (5 ft. 10 in. by 4 ft. 10 in.) with a cotton cloth covering the bottom area of each blackboard.
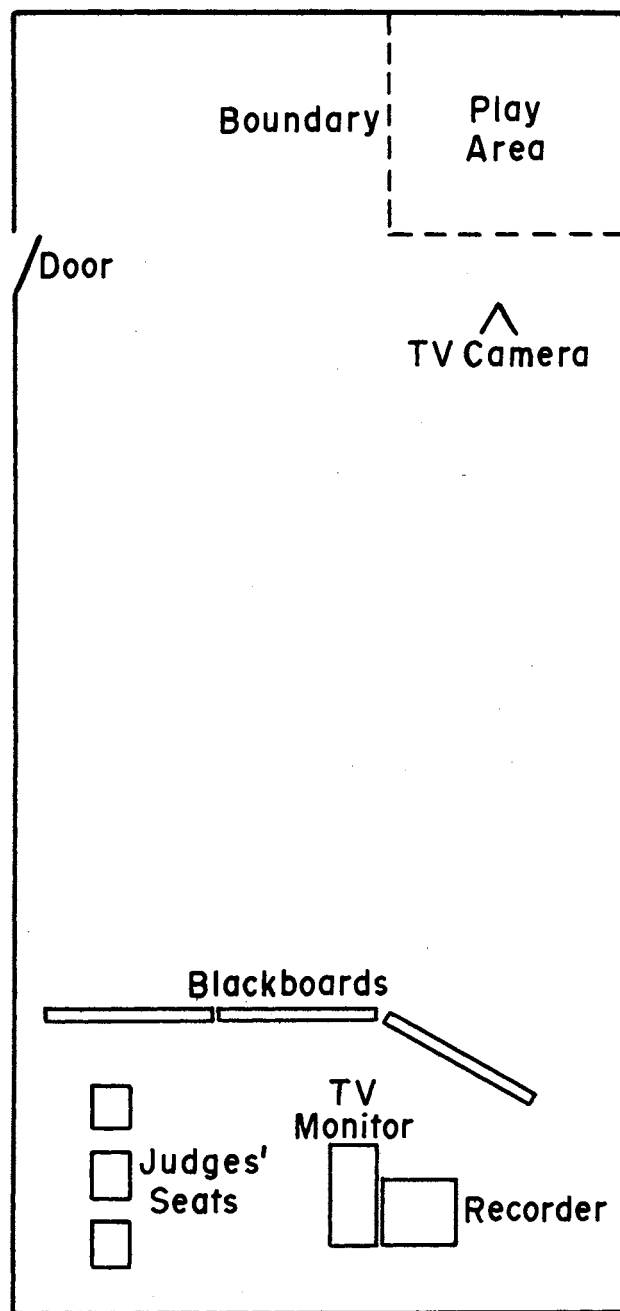
Figure 1. Diagram of Experimental
Room and Play Area

Materials

There were several varieties of play toys with which each S could participate and play. These include a doll house (with dolls), finger paints, clay, chalkboard, Chinese puzzle, checkers and board, tempera paint, cradle, building blocks and a mechanical car to build. Most of the toy selection was based on Lebo's (1958) suggestions.

Reinforcing paper tokens were cut into two inch squares, and upon fulfilling social approach behavior the Ss received these tokens from the Experimenter ($\underline{E}$), whereupon they put these tokens into their pockets. At the end of the session the tokens were exchanged for individual candy-coated cereal pieces.

Testing Instrument

The testing instrument used was the Kuhlmann-Anderson Group Intelligence Test Booklets A and B, for first and second grades. The test contains verbal and quantitative items of a general nature. The reliability of this instrument was considered adequate test-retest coefficients, with as much as two grades between testings, range from .83 to .92, for Booklets K to CD split-half coefficients range from .93 to .95 (Pidgeon, 1965). Validity range over all booklets was noted from the high .40's to the high .80's. The validity on Booklets D and E was correlated together as .80 and .77 (Buros, 1965). The Kuhlmann-Anderson test manual indicates validity

correlations with Stanford-Binet Form LM of .56 and .65. Dearborn

and Rothey (1944) showed validity correlations with Stanford-Binet

and Kuhlmann-Anderson within one or two points of the median IQ

with three administrations for both tests. A standard test adminis-

tration was performed, by the E, giving the test in the classroom to

between five and eight Ss per administration. Each administration

was sixty minutes.

Procedure

Pre-Experimental

The E developed a teacher incentive program through the

public school system. The aim of the program was to provide a

practicum experience in learning about behavior modification for

primary grade children. Four seminars were conducted on the

topics of what is learning, what is reinforcement, what is social

interaction, and controlling behavioral children. Each seminar was

one hour in length. A reading list was supplied and discussions were

held on topics from this list. In addition, a practicum experience

was provided by viewing, on a television monitor, social interaction

among children who did not participate in the research. E explained

and demonstrated in the play area, the various types of social approach

behaviors (parallel, non-verbal, and verbal) with those Ss not being

used in the research. E demonstrated the various treatments (token,

verbal and control) with these Ss. The purpose of these demonstrations was to acquaint the teachers, as judges, with those behaviors they eventually will score. The teachers were told to ignore any physical aggression, hitting or obvious aggressive activity because this was not a social behavior (Ginott, 1960). Also Ss in the social approach area who were responding verbally to a S outside of the judges view were not counted. Finally judges were not to count parts of the body as being in the area unless they could see approximately 3/4's of the S's body on the television monitor.

As mentioned in a preceding section (apparatus) audiovisual equipment, microphone and tape recorder were used. Twenty-second interval beeps were recorded on a cassette recorder and used. The reason for twenty-second interval beeps was based on a pilot study by Goldenberg (1971) in which appropriate social interaction behavior among Ss was observed.

Those teachers who were interested in this program, as described above, signed up for this research project. They were informed about the nature of their participation as judges and the intent of the research. Three teachers, who were judges, were chosen from all of the primary grade teachers. They each received incentive pay from the public school system based on their participation. The total amount of time for pre-training all judges was sixteen hours.

Training of Judges

Training one judge per criterion was the $\underline{E}$'s initial function.
The judge continued scoring this one criterion for base rate and eight
sessions of the study. Each judge was assigned to judge one of these
three criterion for social approach behavior: (1) parallel behavior--
the Ss (at least two) must be within the area designated and noted by
the television camera during a twenty-second intervals recorded on
the tape recorder. If social approach behavior was accomplished,
an appropriate mark was made under the S's identification number
(1, 2, 3, 4, or 5). (2) Non-verbal behavior was defined as at least
two Ss being in the approach area for twenty-second intervals. If Ss
(at least two) walked toward one another this was counted as an
approach behavior and scored accordingly under the appropriate Ss.
If an S responded to another S's non-verbal gesture (wave of hand,
not of head, smile or any other obvious overt non-verbal response)
this was scored under the appropriate S's or S's identification on the
score sheet. (3) Verbal behavior was defined as at least two or more
Ss talking in sentences in the approach area for twenty-second inter-
vals. Specifically, if an S spoke in a sentence and directed it to
another S, these verbalizations were to be scored according to how
long he spoke. If the S did not respond to the verbal behavior, he
was not scored; however, if a reply was made to an S or Ss this was
scored under the appropriate identification of that S or Ss.

Experiment

Before any of the treatments were implemented a base rate was

established for each subject and for each ability group (low and

average). To establish a base rate the reinforcing tokens and verbal

reinforcements were withheld from all Ss. The E was in the play

area during the establishment of the base rate; however, E's role

was that of a participant observer. Meanwhile the judges were view-

ing the base rate behavior on the television monitor and scoring the

appropriate criteria for social approach behavior. A base rate was

established after one session for each subject and each ability group.

(See Appendix B.)

The Ss were brought to the experimental room, five at a time,

by an adult volunteer worker. The volunteer worker had prepared

the children by stating that a man was interested in how children play

together and with their toys. While the E had five Ss in the play area,

the remaining ten Ss of that ability group (low and average) would be

in another room watching television with the adult volunteer worker.

At the end of a thirty-minute session, the volunteer worker would

escort five more Ss, of a different treatment group, to the experi-

ment room. The volunteer worker would then exchange those new Ss

for those Ss who finished the session. He would permit those Ss who

finished to leave for home. This procedure was maintained for low

and average ability group run on different days of the week. The

order of administering treatment sessions was token, verbal, and control for each low and average ability group.

Each day of the study E met the five Ss at the door of the experimental room and escorted them to the play area, making casual conversation about sports and school. Prior to the entry of the Ss to the play area the judges were already seated behind the shielding as mentioned previously in the training session. After entering the experimental room and being taken to the play area E made some introductory statements to the Ss. The statements to each treatment group were somewhat different.

Control Instructions

The Ss gathered around the E in the play area. Any questions asked regarding television camera and shielding were truthfully answered by the E.

The E began:

'Hi! My name is Ed! Today we are going to have lots of fun in the play area. Before we begin I would like to mention a rule of the play area and tell you about the boundaries of the area. First rule, rowdiness or hitting and pushing is not allowed in this area. If anyone disobeys this rule he will be reminded of the rule only twice! Okay! If he continues he will have to stay after everyone goes home for dinner. Now these desks (E pointing) are the boundaries of this area. No one is allowed outside these boundaries except for emergency (bathroom, feeling ill). Does everyone understand what I just said? If there are no questions the toys are in this area (E pointing) so enjoy yourself.'

Control Group

The control group session had no E present. However, the
E joined the judges behind the shielding observing the Ss on the tele-
vision monitor. The television camera was focused on the social
approach area (center of the play area). In case of undue behavior
problems by the Ss the E was able to enter the play area and take
appropriate action if either the rule or boundaries were violated.

Token Instructions

The exact procedure was maintained for Ss entering the experi-
mental room and explanation of instructions, as previously mentioned
in the control section. However, after the usual instructions were
given some additional information was conveyed to the Ss.

The E began the new information by stating:

'All right! Here is some paper. I will give each of you
some paper. Now, I will give you some cereal in exchange
for this paper I just gave you. Sometime during the period
I shall give you a piece of paper, like this, and at the end
of the session you can exchange it for some cereal. Okay!'

E remained in the play area during this session. If the Ss fulfilled
the criteria for social approach behavior (1) in the area for twenty-
second intervals, (2) verbally or non-verbally responding to an S or
Ss, the E waited an interval and gave those Ss a reinforcing paper
token. The token was not administered immediately to those Ss and
some delay of reward did occur. The reason for this delay was for

E to attend to those Ss who met the criteria and who were not necessarily in close physical proximity to each other. E recorded on a pad amounts of reinforcement (token) distributed to each S in each ability group. The intervals of twenty-seconds could be heard by low decibel beeps from a cassette tape recorder.

Verbal Instructions

The exact procedure was maintained for Ss entering the experimental room and explanation of instructions as previously mentioned in the control section.

The verbal group session was conducted without reinforcing paper tokens. The E remained in the play area. If the social approach behavior was fulfilled by being in the area for twenty-seconds and non-verbally or verbally responding, the E attended to those Ss and verbally reinforced them by stating: "That's very good, I like what you are doing, --(name of S or Ss)."

Scoring

The judges observed the various social approach behaviors on a television monitor. They scored during the play session. Each judge scored on a 8-1/2 in. by 11 in. sheet labeled for their criterion (see Appendix C). The treatment conditions were located vertically on the left side of the score sheet while Ss identification numbers

were across the top of the sheet. Scoring was performed within a twenty-second interval period. If some doubts were evident in scoring, a replay of the video tape of that session was possible. Video tapes were utilized as many times as each judge believed it was necessary.

A Pearson's product moment correlation coefficient was performed on each criterion with the judge and the $\underline{E}$ at the beginning of training, end of training, beginning of actual play session and the final termination of play sessions. Each correlation was significant at the $p < .01$ level in both sessions four and seven (see Table I). A sample correlation between $\underline{E}$ and judge can be seen in Appendix D. Each judge tallied the responses on a score sheet (refer to Appendix B).

Summary of Design

Thirty subjects were divided into two intellectual groups and then randomly assigned to one of the two reinforcement conditions or the control condition. This procedure resulted in three treatment conditions for both intellectual groups with 5 Ss per treatment condition. The experimental procedure obtained during the baseline period gave a frequency response rate per twenty-second intervals over the thirty minutes of the baseline period. The independent variables in this study were the following: (1) token reinforcement, (2) verbal reinforcement, (3) control (no reinforcement), and (4) low and average Ss. The dependent variables were parallel, verbal, and

TABLE I

PEARSON'S PRODUCT MOMENT RELIABILITY CHART
BETWEEN EXPERIMENTER AND JUDGE

	Session	Low Ability	Average Ability	Session	Low Ability	Average Ability
Parallel	#4	$r = .95^*$	$r = .67^*$	#7	$r = .97^*$	$r = .75^*$
Non-Verbal	#4	$r = .94^*$	$r = .91^*$	#7	$r = .91^*$	$r = .87^*$
Verbal	#4	$r = .98^*$	$r = .94^*$	#7	$r = .90^*$	$r = .96^*$

$^* p < .01$ $n = 15$

non-verbal behaviors which combined were defined as social approach behavior. Each criterion was measured by the frequency response rate per twenty-second interval for each session.

The experimental model was a three factor analysis of variance on each criterion for social approach behavior. The three factors were: (A) ability groups (low and average Ss), (B) treatments, and (C) sessions.

Attendance at all sessions was not 100 per cent; therefore, the following procedure was used for estimating frequency response rates for missing Ss. The mean of the Ss raw score from the session preceding and following the missed session was computed. Second, the mean raw score obtained by the Ss group on the day he missed was computed. The mean of these two means served as the estimated raw score for the day he missed. Most of the Ss attended all of the sessions. Four Ss from the low ability group were absent a total of six days and three Ss from average ability group were absent a total of five days.

Comparisons for differences among the three criteria for social approach behavior were using a Chi-square test for k independent samples. An arbitrary sample of data on single subjects was chosen from the second, sixth, and seventh sessions. Multiple and single scores were used as the observed and expected values respectively. Multiple scores were operationally defined as two judges scoring

within the same twenty-second interval period on the same subject (see Appendix E). Multiple scores could reflect errors and a combination of behaviors occurring at the same time. The probability seemed low for the latter. Single scores were defined as only one of the two judges scoring a subject in the same twenty-second interval period. An arbitrary sample of twenty-five twenty-second periods was chosen out of each session.

The analysis for differences among social approach criteria is presented in a Chi-square table (see Table II). There were significant differences at the $p < .05$ level between multiple and single scores in the frequency of scoring for the social approach criteria. Consequently, the null hypothesis was rejected and the alternate was accepted as showing differences among verbal, parallel and non-verbal criterion.

TABLE II

MULTIPLE VERSUS SINGLE SCORES
ANALYSIS WITH CHI SQUARE ON
LOW ABILITY AND AVERAGE
ABILITY SS

Ability Groups

Scores	Low	Average	Total
Multiple	22	13	35
Single	53	62	115
Total	75	75	150

$x^2 = 8.28^*$

$p < .05$

CHAPTER IV

RESULTS

The results for the analysis on verbal behavior are presented
in Table III. The main effect of sessions was significant at the
$p < .10$ level. The interactions of ability groups by treatments and
treatments by sessions were significant at the $p < .10$ level. The
interaction of ability groups by sessions was significant at the $p < .05$
level. Simple effects analysis on ability groups by treatments inter-
action showed the following: there were no significant differences in
frequency of responding between low and average Ss in the verbal
treatment condition (see Table IV). Both low and average groups
exhibited no trends in any of the treatment conditions (see Figure 2).
Treatment by sessions interaction showed the following simple effects
analysis: (1) There were significant differences in frequency of
responding between token and control treatment conditions at the
fifth session (see Table IV). (2) Similarly, there were significant
differences in frequency of responding between token and verbal treat-
ment conditions at the fifth session (see Table IV). A sudden increase
in responding of the token group from sessions four to five was noted
(see Figure 3). (3) Significant differences were noted between the

TABLE III

THREE FACTOR ANALYSIS OF VARIANCE ON VERBAL BEHAVIOR WITH REPEATED MEASURES

Source	df	Sum of Squares	Mean Square	F Value
Between Subjects				
A (ability groups)	1	34.504	34.504	.723
B (treatments)	2	37.075	18.537	.388
AB	2	242.258	121.129	2.540[*]
Subjects Within Groups	24	1144.500	47.687	
Within Subjects				
C (sessions)	7	375.762	53.680	2.263[**]
AC	7	373.262	53.323	2.248[**]
BC	14	589.325	42.094	1.775[*]
ABC	14	239.865	17.133	.722
A x Subjects Within Groups	168	3983.900	23.713	

[**] $p < .05$
[*] $p < .10$

TABLE IV

SIMPLE EFFECTS OF F-TESTS FOR ABILITY AND
TREATMENT VARIABLES WITH VERBAL
AND PARALLEL BEHAVIORS

	Ability Group (A)		Treatments (B)
	Treatments	Sessions	Sessions
Verbal	$A_1B_2 - A_2B_2 = .0034$	$A_1C_8 - A_2C_8 = 12.92^{**}$ $A_1C_7 - A_2C_7 = 10.15^{**}$ $A_1C_3 - A_2C_3 = 6.56^{*}$	$B_1C_5 - B_3C_5 = 21.96^{**}$ $B_1C_7 - B_2C_7 = 13.44^{**}$
Parallel	$A_1B_1 - A_2B_1 = .022$ $A_1B_2 - A_2B_2 = .005$	$A_1C_4 - A_2C_4 = .011$	

** $p < .01$

* $p < .05$

Key: A = Ability Group   B = Treatment   C = Sessions
     1 = low   1 = token   1 = first   5 = fifth
     2 = average   2 = verbal   2 = second   6 = sixth
                        3 = control   3 = third   7 = seventh
                                            4 = fourth   8 = eighth
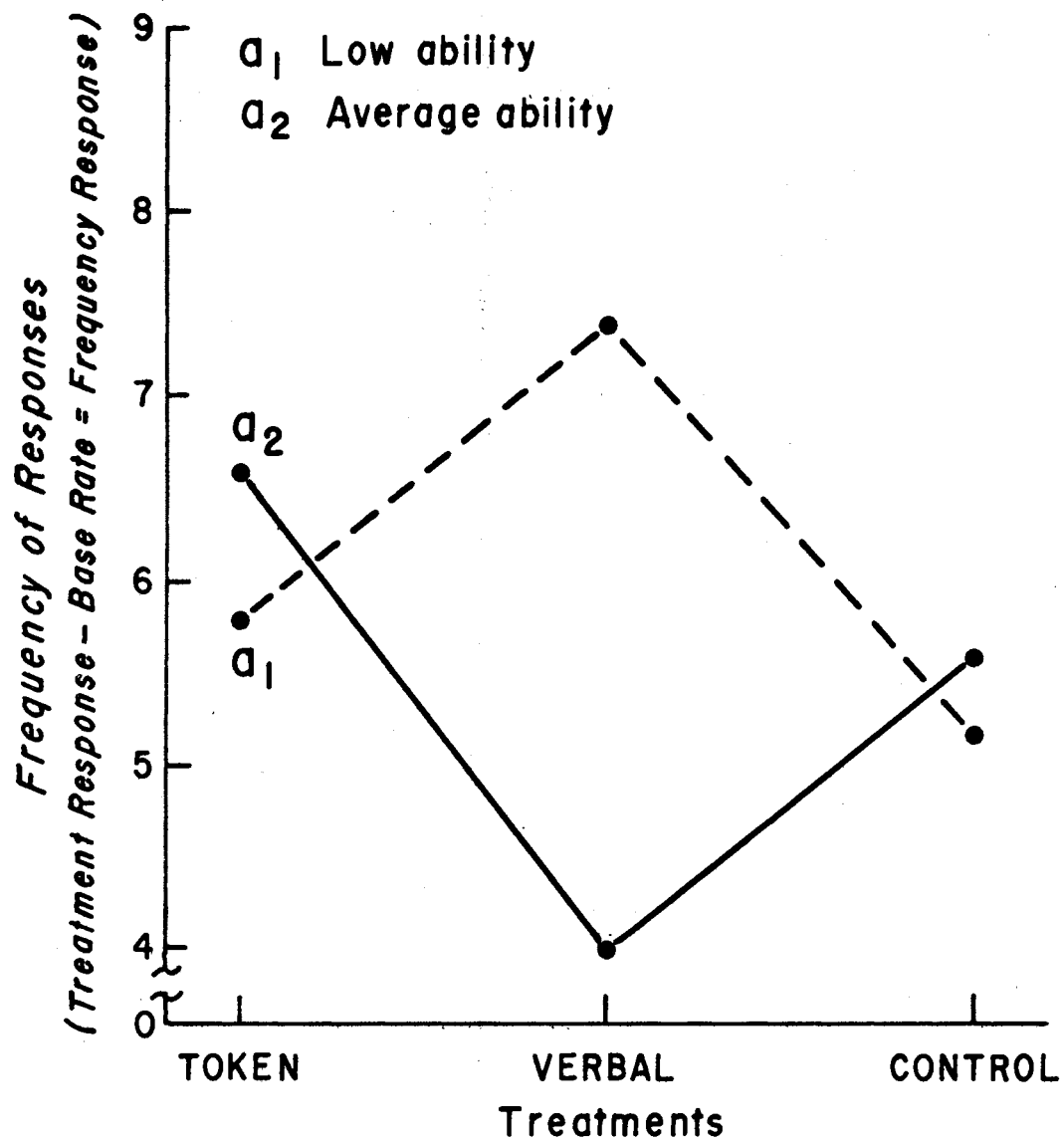
Figure 2. Simple Effects of Ability Groups X
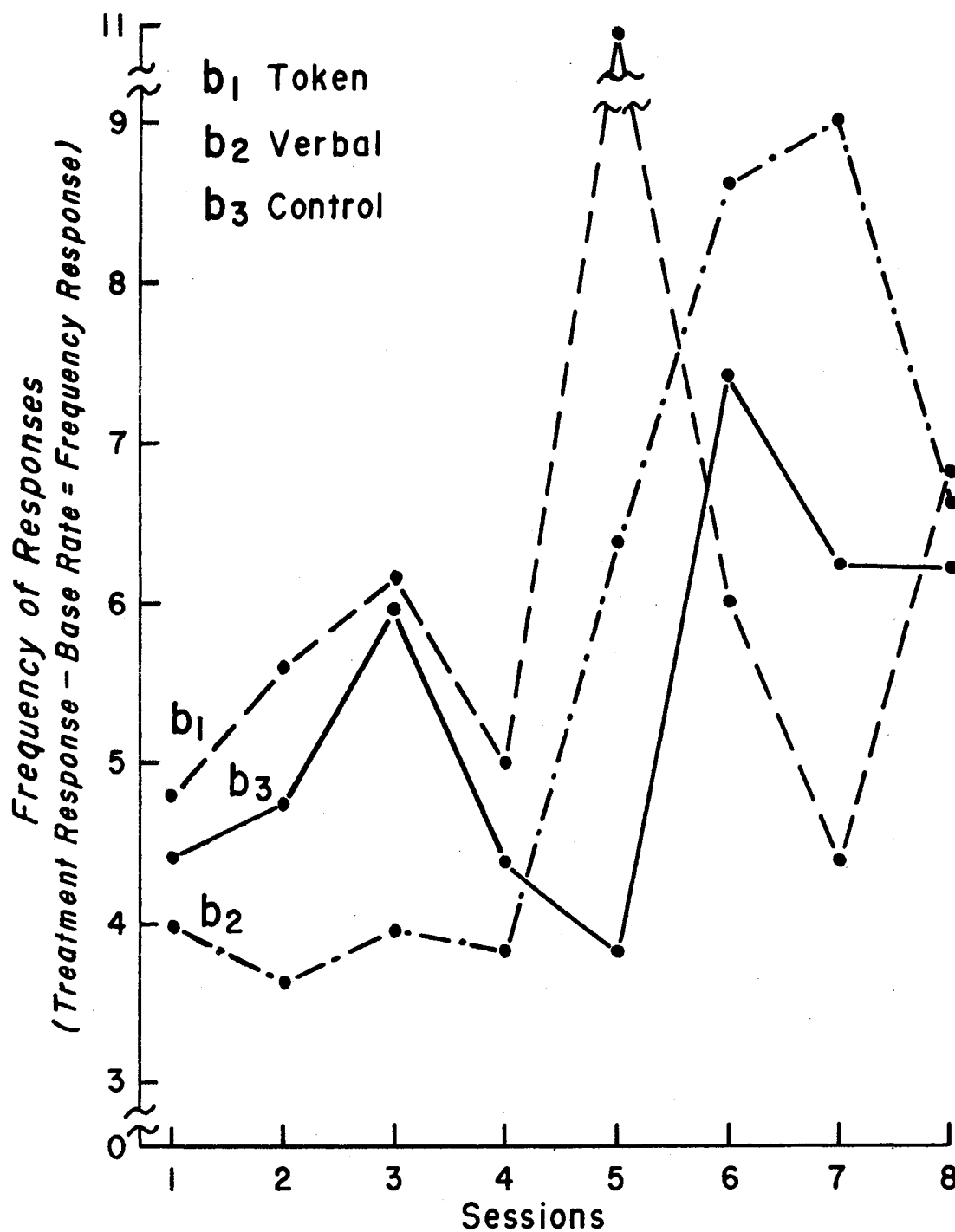Treatment for Verbal Behavior

Figure 3. Simple Effects of Treatment Conditions
X Sessions for Verbal Behavior

token and verbal treatment conditions at the seventh session (see Table IV). A decrease in the rate of responding was shown in the token group from the fifth through the seventh sessions. The contrary was true for the verbal treatment condition which increased from sessions five through seven (see Figure 3). The simple effects analysis on ability groups by sessions interaction showed the following: (1) There were significant differences between low and average groups at the third session (see Table IV). (2) Similarly, significant differences between low and average groups were found at the seventh and eighth session (see Table IV). Figure 4 shows a sudden drop in performance from the sixth to the eighth sessions for the average group. An increase in performance was observed from the fourth session to the eighth for the low group (see Figure 4). Figure 5 showed combined responses of low and average groups. An increase was noted from the fourth to the eighth session (see Figure 5).

The results of the analysis on parallel behavior are presented in Table V. Only the interactions of the ability groups by treatments and ability groups by sessions were significant at the $p < .05$ level. Ability groups by treatments simple effects showed the following: (1) There were no significant differences between the low and average groups on the token and control treatment conditions (see Table IV). Data show a decrease in performance of the low group from token to control. A slight increase in performance was shown regarding the
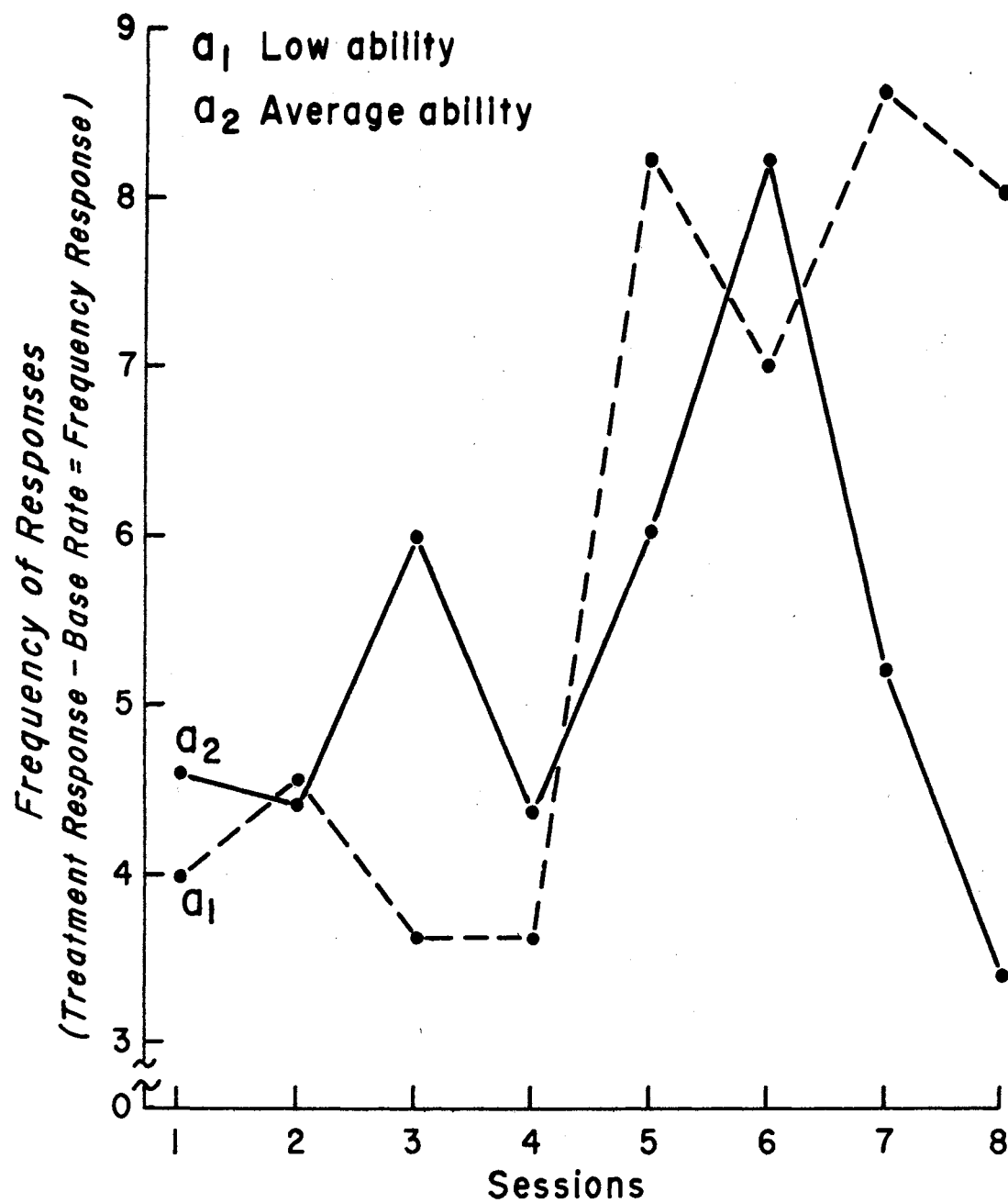
Figure 4. Simple Effects of Ability Groups X
Sessions for Verbal Behavior
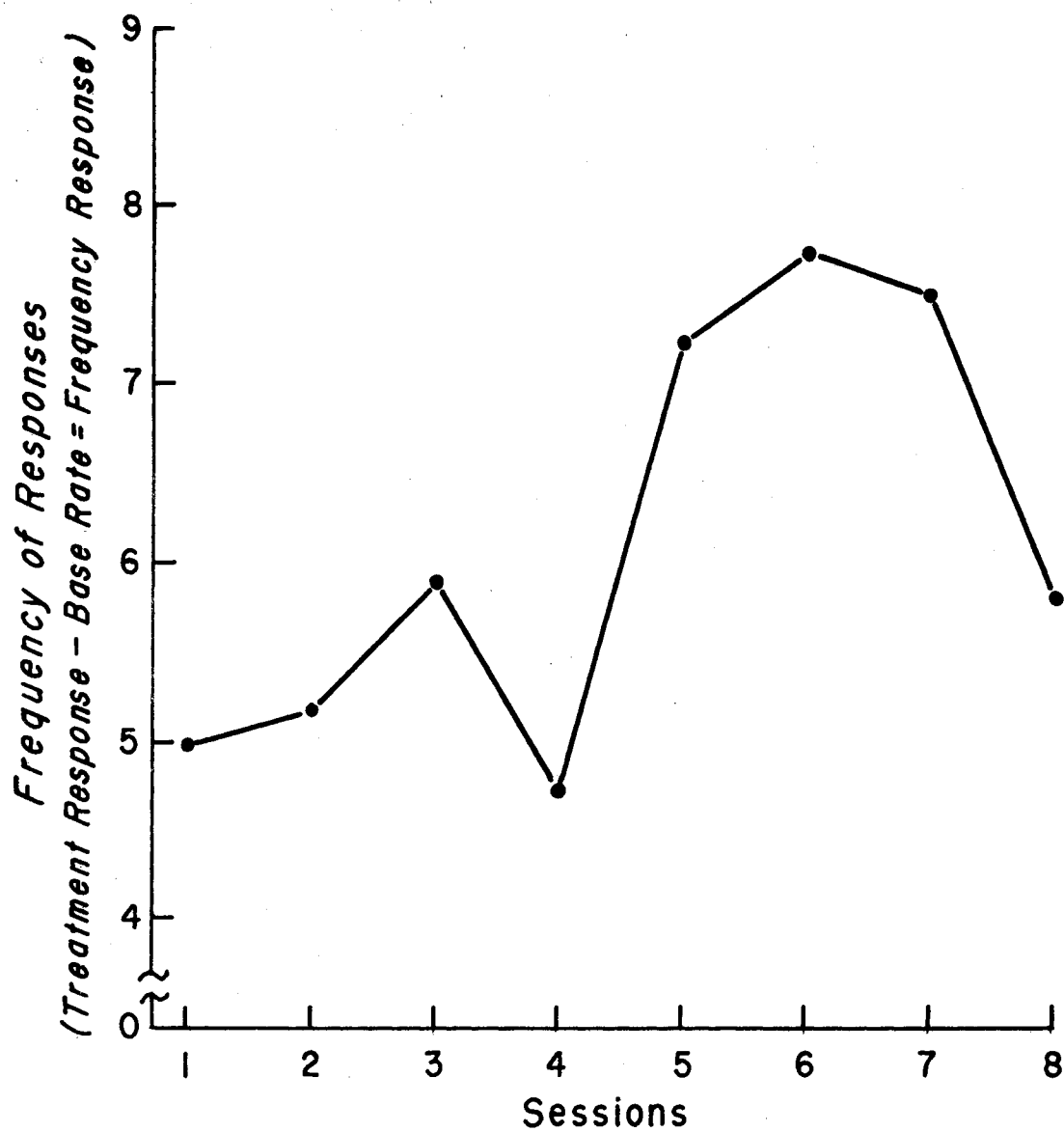
Figure 5. Main Effects with Sessions
on Verbal Behavior

TABLE V

THREE FACTOR ANALYSIS OF VARIANCE
ON PARALLEL BEHAVIOR WITH
REPEATED MEASURES

Source	df	Sum of Squares	Mean Square	F Value
Between Subjects				
A (ability groups)	1	86.400	86.400	.452
B (treatment)	2	682.058	341.029	1.785
AB	2	1967.025	983.512	5.148*
Subjects Within Groups	24	4584.700	191.029	
Within Subjects				
C (sessions)	7	433.983	61.997	1.175
AC	7	813.866	116.266	2.203*
BC	14	1051.341	75.095	1.423
ABC	14	644.508	46.036	.872
C x Subjects Within Groups	168	8863.300	52.757	

* $p < 0.05$
$p < 0.10$

average group from token to control conditions (see Figure 6). The simple effects analysis for ability groups by sessions are shown in Figure 7. No significant differences were shown for any one particular session between low and average groups (see Table IV). It was noted on Figure 7 that the low group was responding lower than the average group until the sixth session. Figure 8 illustrates the simple effects analysis for treatment conditions by sessions. No significant differences were found for any one particular treatment condition between low and average groups.

The results of the analysis of variance on nonverbal behavior are shown in Table VI. No main and interaction effects were significant.
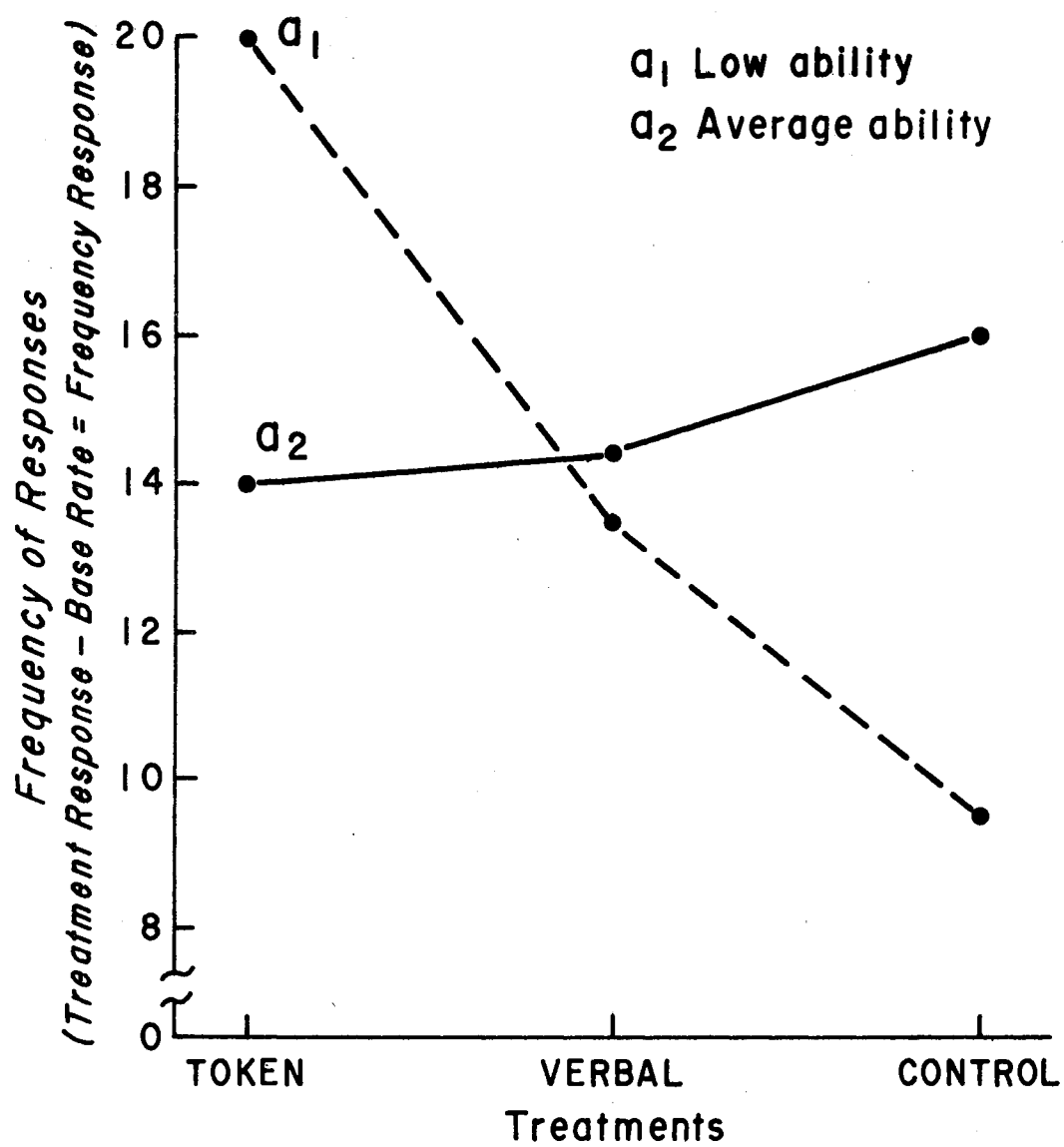
Figure 6. Simple Effects of Ability Groups X
Treatment for Parallel Behavior
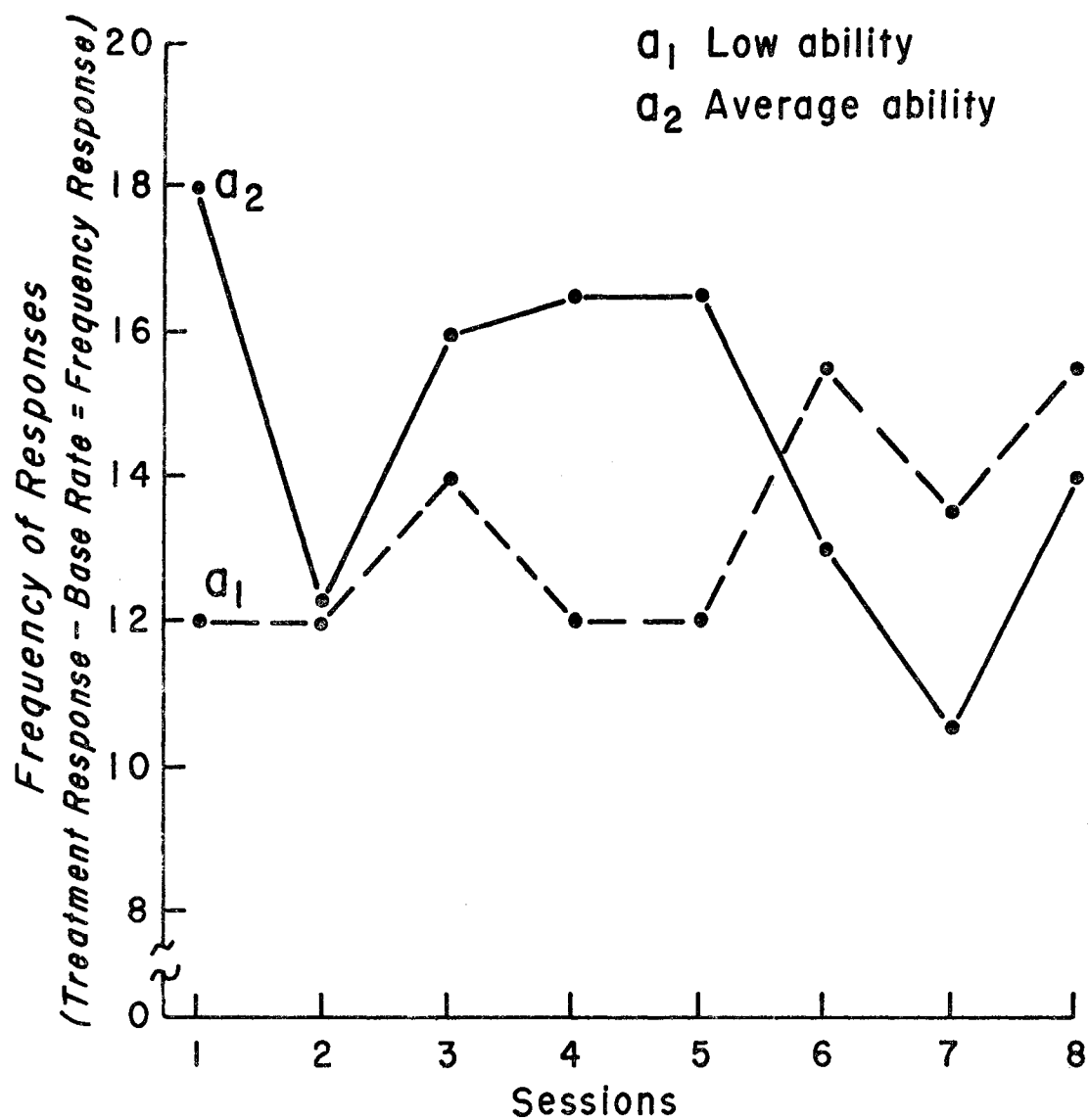
Figure 7. Simple Effects of Ability Groups X
Sessions for Parallel Behavior
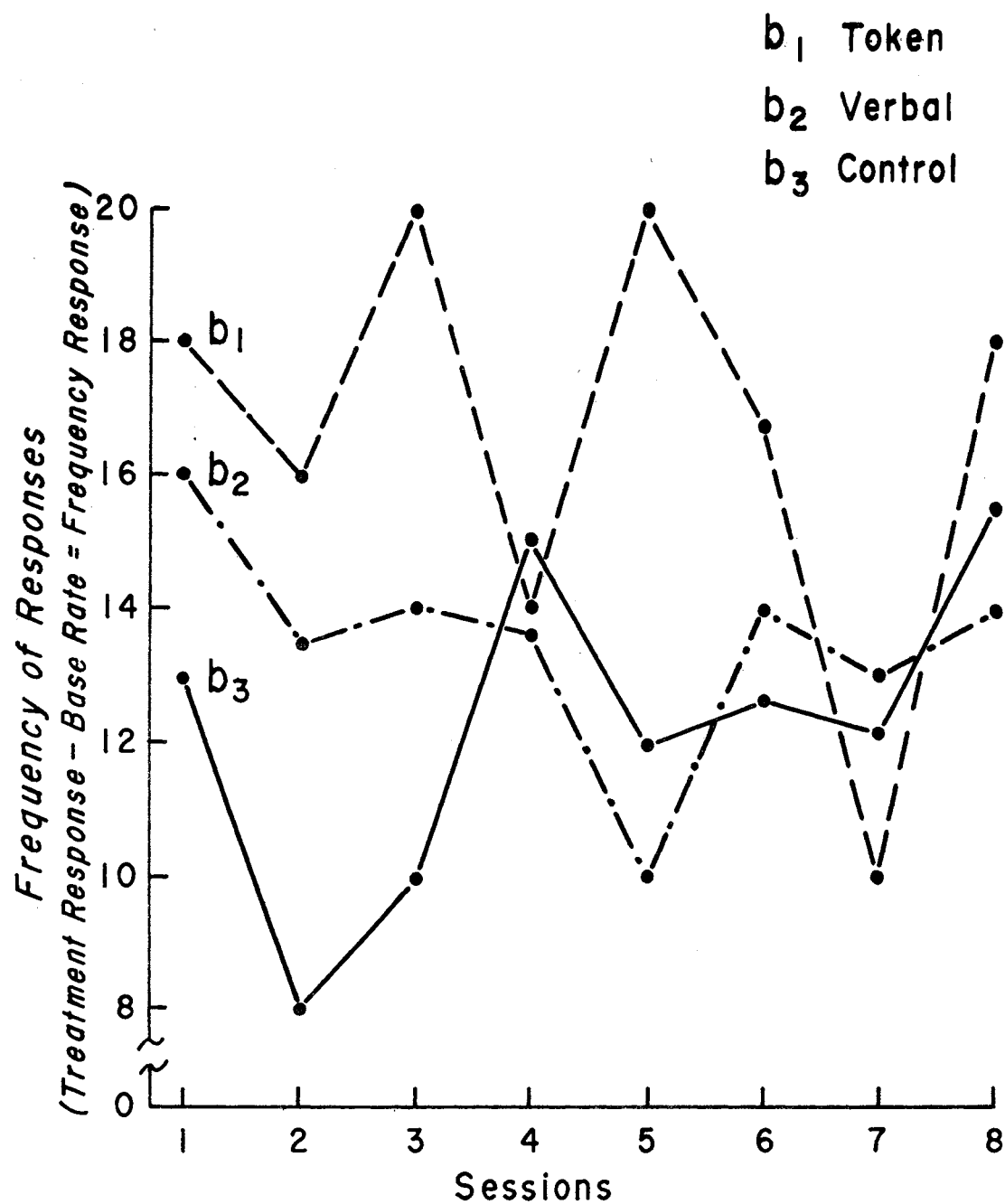
Figure 8. Simple Effects of Treatment Conditions X Sessions for Parallel Behavior

A

TABLE VI

THREE FACTOR ANALYSIS OF VARIANCE ON NONVERBAL BEHAVIOR WITH REPEATED MEASURES

Source	df	Sum of Squares	Mean Square	F Value
Between Subjects				
A (ability groups)	1	53.204	53.204	1.089
B (treatments)	2	165.558	82.779	1.695
AB	2	78.808	39.404	.807
Subjects Within Groups	24	1171.800	48.825	
Within Subjects				
C (sessions)	7	40.895	5.842	.479
AC	7	40.695	5.813	.477
BC	14	237.041	16.931	1.390
ABC	14	187.791	13.413	1.101
C x Subjects Within Groups	168	2046.200	12.179	

p < .05

F value did not meet p < .05 level.

CHAPTER V

DISCUSSION

The present study was designed to investigate the effects of

reinforcement on social behaviors of low and average intellectual

ability children. A behavior modification schedule was employed.

Three treatment conditions were administered: token, verbal, and

control. It was hypothesized that both low and average ability groups

would show increased responsivity based on reinforcement (token and

verbal). The results were not strongly conclusive, but suggestive of

significant relationships.

Hypothesis 1, dealing with reinforcement (token and verbal)

increasing social approach behavior for low ability Ss and average

ability Ss, compared to non-reinforced Ss was not confirmed. Some

trends toward increased verbal behavior were observed in the token

and verbal treatments over the sessions. However, the sudden

increase of verbal behavior of the control group on session five

was rather difficult to explain. Similar trends in parallel behavior

were also noted. A trend of increased parallel behavior in the token

treatment may give credence to the Clement and Milne (1967) and

Clement, Fazzone and Goldstein (1970) concept that token reinforce-

ment produces more behavior change. Baldwin (1967) and Mithaug and Burgess (1968) in their studies found that behavior changes in Ss are due to token and verbal reinforcements. The Ss in the token treatment condition seemed to perform better than the Ss in the verbal and control treatment conditions even though the differences were not statistically significant. Lovaas' (1967) research has established that similar reinforcing situations (candied reinforcer) do produce a behavior change. A trend is also noted in which Ss respond more to verbal treatment more than to control. This trend is in keeping with the studies of Baer and Sherman (1964), Stevenson and Knight (1962), Stevenson and Cruse (1961), Basecu (1954) all contend that verbal reinforcement produces behavioral changes.

Hypothesis 2, dealing with token and verbal reinforcement showing increases over base rates of nonverbal and verbal aspects of social approach behavior for the average ability Ss, was also rejected. Since the nonverbal analysis had no significant main and interaction effects, this particular aspect of the hypothesis cannot be supported. The rationale for this lack of significance may be sought in McDavid's (1959) study, in which there was no relation found between intellectual factors and imitative behavior. His view was that more intelligent children may become confused in the learning process based on false cues in their surroundings. Interference becomes more evident as the child attempts to solve a task with other

children around him. This may be applied to the present study as evidence for non-significant results on nonverbal behavior. The results on the verbal aspect of social approach behavior do not support the other part of this hypothesis. The performance of the average ability Ss was not significant relatively to any treatment condition. However, support may be shown for Newman's (1971) work where he found no difference between high and low intellect groups without reinforcement. Likewise, there were no differences between low and average ability groups in the control treatment condition.

Hypothesis 3, dealing with the average ability Ss responding with more verbal than nonverbal behavior in the token and verbal reinforcement condition, was confirmed and consistent with theoretical expectations. The simple effects analysis on ability groups by sessions interaction showed the following: There were significant differences between low and average ability groups at the third, seventh, and eighth sessions. A trend toward increased verbal behavior in the token and verbal treatment conditions was indicated. These findings correspond with those of other investigators (Clement and Milne, 1967; Clement, Fazzone and Goldstein, 1970; Lovaas, 1967; Baldwin, 1967; Mithaug and Burgess, 1968; Baer and Sherman, 1964; Peebles, 1969; and Newman, 1971). With the exception of Newman (1971) and Baer and Sherman (1964) the previous studies believed that reinforcement (token) does produce behavioral change. Newman's (1971) work

revealed that high intellect subjects respond well to reinforcement (token) based on their ability to imitate from other models. Baldwin's (1967) study also revealed that high intellect Ss respond to tokens better than low intellect Ss. Peebles (1969) also found that average intellect Ss respond better to any reinforcement and thus increases social behavior. Baer and Sherman (1964) found that verbal reward increased behavior change in children based on previous modeling. In the present study imitation or modeling was seen as each S observed another S responding to either token or verbal reinforcement. It may be possible that average ability Ss might be able to perceive imitation faster, thus respond to reinforcement better, due to the intellectual factor. Piaget (1951) mentioned that imitation is influenced by intelligence, and without this intellectual quickness children may have difficulty imitating. Basecu (1954) found that high intellect Ss performed better on verbal tasks when verbally reinforced.

Hypothesis 4, dealing with reinforcement increasing the frequency of the nonverbal behavior more than the verbal behavior for the low ability group, was not confirmed. The increase in verbal performance for the low ability group from sessions four to eight, though not significant, was large enough to suggest this aspect be further investigated. This increase cannot be explained by supportive research.

The present results indicate that token and verbal reinforcement can change the behaviors of average ability children particularly in the verbal behavior area. Evidence is given to support many of the behavior modification theories which believe that changes in behavior are contingent upon some type of reinforcement schedule. It is important to note that imitation and intellectual fuctioning seem to have a differential relationship to the concept usage of low and average ability children (Newman, 1971). Possibly verbal reward may be a strong reinforcing agent for those children who may be able to conceptualize and assimilate. Whereas for those who have difficulty conceptualizing, material rewards may serve their needs better. Needless to say, the exploration between a low and an average ability child regarding his cognitive functioning is just beginning.

There are several implications of the results of the present study. First, average ability children seemed to socially interact contingent on reinforcement (token and verbal). Secondly, there were no differences in the frequency of response of the control treatment condition for low and average Ss. Thirdly, the judges' and E's reliability was satisfactory. Fourthly, the differences among criteria can be seen as partially valid. From the experimenter's point of view, restricting the size of the play area made it convenient to distribute the verbal and token reinforcements to the Ss.

If the present study were to be replicated, several modifications are suggested. A more thorough screening device for the Ss should be employed. The intellectual testing alone cannot provide an adequate sample of low or average ability. A defined educational and behavioral criteria such as the intellectual test can serve as adequate screening devices. From these screening techniques a more homogeneous sample of low and average ability children can be provided. Also a better measure of validity of the several aspects of social approach behavior could make this a stronger criterion. Possibly a better defined behavioral test measuring verbal, nonverbal and parallel behaviors can be devised. Pre- and post-testing can be implemented and then statistically analyzed for validity. If this pre- and post-testing could be accomplished the results might be similar to Clement's and Milne's (1967) and Clement's, Fazzone's and Goldstein's studies. It is also suggested that two experimenters participate in the play area. One experimenter cannot respond to every child's behavior contingent on reinforcement within the time interval. Two experimenters might be able to reinforce those children who meet the criteria within the same time interval that the behavior occurs. Also E bias should be reduced when training judges. Written instructions for the judges regarding scoring procedures and social approach criteria could reduce the E bias.

Extensions of the present work could attempt to answer several questions that have resulted: (1) Do lower level ability children, below IQ level of 70, respond to token reinforcement? (2) Do differential effects of reinforcement produce changes in behavior with children of a lower level ability? (3) Can teachers teach children to respond to certain types of reinforcement; therefore, controlling a behavior based on that type of reinforcement? (4) With a better method of experimentation using the same Ss could the same results occur?

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this study was to investigate the effects of
reinforcement on social behaviors of low and average intellectual
ability children. A behavior modification schedule was used. Social
approach behavior was defined as social interaction between or among
Ss in a particular section of the play area. Social approach behavior
had three criteria: (1) parallel, (2) nonverbal, and (3) verbal. Low
and average ability was operationally defined as IQ scores on the
Kuhlmann-Anderson Group Intelligence Test of 75-89 and 90-110,
respectively.

The two groups, 15 low ability and 15 average ability Ss, were
each divided into three treatment groups (token, verbal, and control)
of 5 Ss each. Each treatment session lasted 30 minutes. There
were eight sessions in all.

Three judges observed both groups for eight weeks. Prior
training of each judge on one criterion was established. Reliability
between each judge and experimenter was significant. Differences
among the social approach criteria were established statistically.

Four hypotheses were presented: (1) Reinforcement (token and verbal) will lead to increased social approach behavior for low and average ability Ss, compared to non-reinforced controls. (2) Reinforcement (token and verbal) will yield increases over base rates of verbal and nonverbal aspects of social approach behavior for the average ability Ss. (3) Reinforcement (token and verbal) will show an increase over base rates of the verbal criterion more so than nonverbal criterion for the average ability Ss. (4) Reinforcement will increase the nonverbal responsivity more than verbal responsivity in the low ability Ss.

The results were found to support hypothesis 3. The other hypotheses were rejected. The results generally agreed with a number of studies which have found positive relationships between reinforcement and behavior change. Also the results suggested relationships between imitation and verbal reinforcement. The present results indicate support of the theory that reinforcement can produce behavioral changes.

The major implications of the present studies were seen to be: (1) Average ability children seem to socially interact contingent on reinforcement (token and verbal). (2) There were no differences in the frequency of responses in the control treatment condition for low and average ability Ss. (3) Judges-experimenter reliability was satisfactory. (4) The differences among criteria can be seen as

partially valid. Restricting the size of the play area was convenient

for the experimenter's distribution of reinforcements (token and

verbal).

Several modifications and extensions of the present work were

suggested for further research. Additionally questions raised by the

present results were seen as bases for further research.

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APPENDIX A

AGES AND IQS OF LOW AND AVERAGE

ABILITY SS

		Low Ability			High Ability	
Ss	Nos.	Age	IQ	Nos.	Age	IQ
Token 1	10	7-11	81	23	6-3	91
2	9	6-9	79	9	6-7	90
3	21	7-10	83	7	7-11	95
4	8	6-5	76	5	8-0	99
5	11	7-3	77	6	7-1	96
Verbal 6	18	7-6	80	18	6-6	101
7	14	7-3	88	21	7-3	102
8	4	8-0	87	11	6-1	105
9	22	8-0	86	17	8-0	99
10	5	7-9	77	3	6-2	95
Control 11	3	6-4	79	10	7-5	94
12	20	6-1	75	2	7-4	96
13	7	6-2	76	13	7-10	91
14	13	6-3	87	4	6-11	93
15	23	7-4	81	19	7-10	97

APPENDIX B

BASE RATE SCORES FOR ALL SS

	Token		Verbal		Control	
	Low	Average	Low	Average	Low	Average
Parallel	0	19	12	27	6	13
	10	15	12	9	5	34
	36	15	0	29	5	29
	30	5	12	28	4	36
	33	8	0	0	0	0
Verbal	0	10	5	5	0	1
	2	3	4	6	7	7
	5	5	5	2	3	10
	2	1	1	4	5	11
	2	4	0	4	3	10
Non-Verbal	7	2	5	14	6	1
	0	0	7	3	3	6
	7	3	0	2	11	16
	5	0	5	0	5	16
	11	5	0	0	4	0

APPENDIX C

SAMPLE SCORING SHEET

Sample Score Sheet: Day 3, Verbal Criterion for Average Ability Ss

	1	2	3	4	5	
Token Condition	4	2	2	5	6	19
Verbal Condition	2	5	8	6	10	31
Control Condition	2	10	2	4	8	22

APPENDIX D

SAMPLE OF EXPERIMENTER-JUDGE

CORRELATION

PEARSON PRODUCT MOMENT CORRELATION WITH
EXPERIMENTER AND VERBAL JUDGE
IN SESSION 7 - LOW ABILITY SS

Ss	Experimenter (X)	Judge (Y)
1	12	14
2	2	3
3	6	5
4	4	3
5	0	0
6	20	24
7	15	19
8	18	18
9	0	0
10	0	0
11	17	17
12	18	19
13	13	14
14	4	5
15	5	5

X = 134   Y = 146

r = .90

APPENDIX E

SAMPLE OF MULTIPLE AND SINGLE

SCORING SHEET FOR SOCIAL

APPROACH CRITERIA

PLAY SESSION #2 AVERAGE ABILITY
SUBJECTS WITH TOKEN TREATMENTS

	Ss	Judge #1 Verbal	Judge #2 Nonverbal	Judge #3 Parallel
1	3	0	0	0
2	3	0	0	0
3	3	0	0	0
4	3	0	X	X
5	3	0	X	X
6	3	0	X	X
7	3	0	X	X
8	3	0	0	0
9	3	0	0	0
10	3	0	0	0
11	3	0	0	0
12	3	0	0	0
13	3	0	0	0
14	3	0	0	0
15	3	0	0	0
16	3	0	0	0
17	3	0	0	0
18	3	0	0	0
19	3	0	0	0
20	3	0	0	0
21	3	0	0	0
22	3	0	0	0
23	3	0	0	0
24	3	0	0	0
25	3	0	0	0

Number of 20 Second Interval Periods

VITA

Edward Elliott Goldenberg

Candidate for Degree of

Doctor of Philosophy

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