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THE EFFECTS OF INSTRUCTION AND BEHAVIOR MODIFICATION ON THE GROSS MOTOR RECREATIONAL BEHAVIOR OF AUTISTIC-LIKE CHILDREN.
THE OHIO STATE UNIVERSITY, PH.D., 1978

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THE EFFECTS OF INSTRUCTION AND BEHAVIOR MODIFICATION
ON THE GROSS MOTOR RECREATIONAL BEHAVIOR
OF AUTISTIC-LIKE CHILDREN

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of the Ohio State University

By
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CHAPTER ONE

INTRODUCTION

There seems to exist in our society a dichotomy between leisure and non-leisure. One element in this dichotomy can be designated roughly as work. There are clearly designated periods of time during which we engage in behaviors which are tied more to external contingencies. During childhood and adolescence these periods of time are spent in academic or vocational training. An educational record of some sort is tied to our engaging in training activities and thus is contingent, to one degree or another, upon our behavior during this period. During adulthood we engage in the production of goods or services. This production is tied to an economic reward system, the epitome of a token economy.

On the other hand, there are clearly designated periods of time which are tied to different kinds of contingencies which are more internal in nature. These contingencies include such things as fun and personal satisfaction. We generally ascribe the term "leisure" to such periods. Never before in the history of our culture has the dividing line between work and leisure been so obvious and distinct.

Technology has not only sharpened the dividing line between work and leisure, it has caused, and is causing, a change in the work - leisure
ratio. Dumazedier has said, "Leisure is a continuous product of technological progress." (1967, p. 34) It is obvious that our leisure time is increasing. Kaplan (1960, p. 4) states that the average work week for farmers and laborers has dropped from 72 hours in 1850 to 40 hours in 1960. There has been a shift from a goods-oriented economy to a service-oriented economy. The Gross National Product has increased faster than the population. (loc. cit.) Everything from cars to food to education and transportation is mass-produced and easier to come by. All these point to the impact that technology has had on the way we use our time.

Furthermore, leisure is no longer restricted to those with wealth or power. Before the twentieth century, leisure was the property of the wealthy. The behavior of the poor was primarily directed toward survival; they had little time for play. Since the advent of the labor movement, however, work weeks began to be limited even for laborers. Trends toward more vacations and early retirement are also evident, further propagating leisure time.

Hence, the appropriate use of leisure is increasingly becoming an issue in our society. Toffler (1970) warns us of dire consequences should our society be unable to creatively use all of our free time. The press has often reported that children spend two, three, four or more hours watching television every day, obviously a questionable practice and certainly not creative. And if the creative use of leisure is an issue for the society at large, then it is certainly an issue for handicapped and disabled persons who tend to have even more free time.
Recreation

Recreation involves participating in an activity, during leisure time, which is personally fulfilling. There are two major requirements which determine whether or not an activity is recreational (Auxter and Tano, 1976). First, the activity is one that has been mastered by the participant to the point where it becomes enjoyable to recreate his experience. Second, the participant must voluntarily choose the activity based upon its fulfilling characteristics.

In addition, there are three prerequisites for participation in recreation. First, the participant must have either adequate skills in the activity he chooses, or the potential of attaining adequate skills with a modest degree of effort. Second, the participant must have the opportunity to participate in the activity. And third, the individual must have the desire and motivation to take part. Without these prerequisites it is very difficult to participate in fulfilling, worthwhile recreational activities.

Leisure Education

Differences exist between recreation on one hand and education on the other. These differences may lead some to believe that addressing one in conjunction with the other is impossible and contradictory. Education is, by its very nature, directive. It involves leading the student toward a set of preconceived goals or skills. These skills are not yet mastered, for if they were, we would be referring to re-education. Recreation, however, is entirely volitional and it involves the re-creation of previously mastered skills.
A presupposition of this study, however, is that education and recreation do indeed interface and are interdependent. A primary goal of education is to develop the prerequisites for recreation.' Especially when discussing a developmentally disabled population, recreational skills need to be trained. They do not develop by chance. In addition, education needs to teach reasons for an individual's participation in recreation and thereby develop that person's motivation for his involvement.

Other educational goals are to increase actual recreational participation and teach individuals to participate more independently. Especially with disabled persons, the initial recreational participation is often structured and dependent to a large degree upon supervision and direction. An educational goal would be to move the individual from the point where he is dependent on others for recreational involvement to the point where he can recreate independently. This involves movement along a decision-making continuum, encouraging and even forcing the person to make decisions regarding his use of leisure.

Auxter and Tano (1976) have developed a system by which the goals of leisure and education can be accomplished with disabled persons. This system includes the following components:

1. Assessment of client's current recreational behaviors.

2. Instruction in recreational skills to broaden competencies. This instruction utilizes specific behavioral objectives and is teacher-directed.

3. Leisure educational training in which choices are made by the client which determine whether he will participate in his old recreational repertoire or in the newly trained recreational skills. This phase is still teacher-directed but is guided
by the client's interests. Contingencies are applied to encourage participation in newly-trained skills.

4. Leisure activity in educational settings in which the child chooses activities under supervision of the teacher but participation is entirely client-directed. Contingencies are applied to the choice of any activity, then fades as the activities become more self-reinforcing.

5. Leisure activity in the community which is usually non-directed or directed by recreation personnel in the community. The activities are self-reinforcing or reinforced by parents and peers.

A primary purpose of this study was to introduce certain elements of this system to autistic-like children.

Leisure and Developmental Disabilities

The institutionalized developmentally disabled are limited in recreation by their habitat. Institutional environments historically have been structured to the point where residents become dependent upon staff for meeting all their needs. There have been schedules for everything from waking and sleeping to teeth-brushing, including recreation. Although a great deal of "free" time usually exists in an institutional day, true recreation is limited for several reasons. First, there is generally a lack of equipment which limits the opportunity that residents would have to participate in a variety of activities. Second, lack of adequate supervision dictates that large groups of residents need to participate in the same or similar experiences so a few staff can monitor many residents. Third, decisions about what to participate in are usually made by the staff with little input from the residents.
The developmentally disabled who live in the community are also limited in their ability to recreate. Supervision to allow participation in a multitude of experiences may be a problem in the community as well as in the institution. But in general, both equipment and opportunities abound in comparison with the institution. The developmentally disabled in the community are limited in two other ways. First, they often lack prerequisite recreational skills. And second, they often lack the desire and motivation to engage in worthwhile recreation. Both of these limitations seem to be true with the autistic child in the community.

Leisure and Autism

A number of characteristics of the autistic child limit the normal prerequisite of skill development. Normal children often develop recreational skills quite naturally due to the inherent social reinforcement provided by peers and family. The autistic child, however, is almost by definition immune to social reinforcement (Rutter, 1971). The lack of expressive language development in many autistic children may also be perceived as an obstacle to social development which prevents social relationships from being a reinforcing element of recreational participation. Further, the autistic child’s ritualistic and compulsive behaviors coupled with stereotyped mannerisms may impede recreational skill acquisition. All these factors tend to make it difficult to train autistic children in novel skills.

There are also characteristics of autism which limit the child’s ability to choose recreational activities. At the top of the list is the inherent impulsivity and stereotyping in autistic children. When
left unchallenged, the autistic child often engages in repetitive and/or self-stimulatory acts. In addition, much of the autistic child's play involves manipulating objects with which he is thoroughly familiar (Black, Freeman and Montgomery, 1975). The autistic child therefore, does not usually undertake deliberate decision-making regarding his recreational behaviors. It is easy to see, then, that a well-designed leisure education program could be an important factor in the normalization of autistic children.

STATEMENT OF THE PROBLEM

The purpose of this study was to experimentally determine the effectiveness of certain elements of a leisure education program for autistic-like children. Autistic-like children were observed during an assessment phase in an unstructured leisure setting to determine current use of leisure time. Activities were then chosen for training based on the following criteria: 1) they were not currently engaged in by the client in our contrived recreational setting, and 2) they involved some degree of social interaction. These activities were then trained during an instructional phase to minimal criteria levels. Then leisure educational training was undertaken in which the clients were provided with the opportunity to choose between recently trained, low-interest activities and high-interest activities currently in his repertoire.

The major experimental problem in the study involved the determination of which reinforcing conditions were most effective in encouraging participation in low-interest recreational activities. This analysis was limited to the leisure educational training phase. The following contingency conditions were included: 1) Praise anything, in which
equipment was available for both low-interest and high-interest activities and the subject was praised for choosing either low-interest or high-interest activities; 2) Prompt and praise, in which the subject was prompted verbally and gesturally into a low-interest activity every two minutes, given a free choice every two minutes, and ignored if a high-interest activity was chosen; 3) Token economy, using animal stickers as tokens with natural puffed cereal, badges, and water as the primary reinforcers. The tokens were administered contingently upon participation in low-interest activities.

Limitations

The following limitations were placed on the study:

1. Three subjects were chosen for the study from an elementary class for autistic children in Columbus, Ohio.

2. None of the subjects met all the diagnostic criteria for Kanner's Syndrome (infantile autism) but were nevertheless described as autistic-like.

3. One subject was seven years old, two subjects were eight years old.

4. All subjects were living in the community with their natural parents.

5. One instructor was assigned to each subject. Instructors were Master's degree students in adapted physical education.

6. Only one subject, one instructor and the principal investigator were in the gymnasium during the sessions.

7. The sessions were 30 minutes in length.

8. Two subjects attended the sessions 5 days per week for 4 weeks.
(20 sessions) and one subject attended 3 days per week for 6 weeks (18 sessions). The termination of the study was predetermined and was in no way based on data trends.

9. The subject's recreational behavior in settings other than our contrived setting was not taken into consideration.

Definitions

The following terms have been used in the study and require operational definitions:

Autism - A syndrome characterized by extreme preoccupation with oneself, withdrawal, inappropriate responses to external stimuli (Leland and Smith, 1974, p.190), delays in speech acquisition, echolalia and an obsessive desire for maintainence of sameness (Rutter, 1971, pp. 9-10).

Developmental Disabilities - According to federal legislation, includes mental retardation, cerebral palsy, epilepsy or other neurological conditions closely related to mental retardation, or which require treatment similar to that required by the retarded (Leland and Smith, p. 193).

Education - A teacher-directed sequence of activities designed to expand the behavioral repertoire of a client toward some preconceived worthwhile goal.

Leisure - Any period of time to which are ascribed no external contingencies and can be used at an individual's discretion.

Leisure Education - A process by which clients are trained to independently choose activities which may potentially be personally satisfying.

Recreation - Activities engaged in during leisure which involve previously mastered skills, volitionally chosen by the client and personally satisfying to the client.
Recreational Skills - Skills which, once mastered, have the potential of meeting the criteria for recreation.

Low-interest - Activities using equipment which was not chosen by the subject during the assessment phase of the leisure education program. These activities were selected by the principal investigator for each subject and trained by the subject's instructor during the instructional phase of the program.

High-interest - Activities using equipment chosen by the subject during the assessment phase.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

A perusal of literature would seem to indicate that research in the area of recreational activities for autistic children is minimal. In fact, there are no articles which report the effects of leisure educational training on the recreational behaviors of autistic children. The research that has been reported falls into the following related categories: 1) theoretical programming for generally handicapped populations, 2) survey and observational research on recreation and autism, 3) research on the reinforcement characteristics of autistic children in play settings, and 4) research on the reinforcement characteristics of autistic children in language training settings. Each of these categories will be included in this review.

Leisure Education Programs

Auxter and Tano (1976) have developed a complex leisure education system for use with handicapped populations. Their system begins with a comprehensive assessment of the client's leisure potential. Clients are observed to determine positive recreational behaviors. They are then placed in a recreational hierarchy to assess the qualitative aspects of their recreational participation. Interests are investigated as well as
arousal and reinforcement characteristics. Finally, skills and prerequisite abilities are assessed. Based on this information, a leisure education plan is developed with the purpose of expanding the client's repertoire of recreational behaviors. There is an instructional phase wherein appropriate recreational skills are trained. Then leisure education training takes place. Clients are given choices between high and low interest activities and contingencies are applied to encourage participation in low-interest or newly-trained activities. As the client's repertoire becomes sufficiently broadened, unstructured recreation takes place either in the school or the community. This non-structured leisure is re-evaluated and further leisure education is planned based on this reassessment. Their system has been employed by the Westmoreland County Association for Retarded Citizens, Pa. However, no research has been undertaken in order to assess the effectiveness of their system in altering the recreational behavior of their clients.

The only reported research analyzing the effects of leisure educational training on modifying the recreational behaviors of clients was accomplished with geriatric patients in a nursing home. McClannahan and Risley (1975) utilized a less complex assessment by behaviorally recording any participation, speech, movement, and location of clients in order to determine how they spent their time. It seemed that most were sitting, lying, and generally not interacting with objects or people. Their lounge was then turned into an activity center. Three conditions were applied in the lounge: equipment not available, equipment available, and equipment specifically handed to a client accompanied by words of encouragement. The equipment usually involved fine motor recreational skills or table games. Participation in recreational activities increased to 74% during
the equipment-handed condition from 20% to 25% during the equipment-not available and equipment-available conditions respectively.

Wehman and Marchant (1977) trained gross motor recreational skills in severely retarded children using a task analysis approach. Sequential programs were developed for each of four skills and behavior modification was administered to appropriate gross motor behaviors. There was some progress as measured by steps achieved on each gross motor program. In another article, Wehman (1977) argues for the use of task analysis, skill sequencing, shaping and chaining, prompting, modeling and fading, and reinforcer sampling for training recreational skills.

Though none of the above techniques and systems have been applied to autistic children, they all have potential relevance to leisure educational training for that categorical population. This study was designed to incorporate some of their techniques.

Autism and Recreation

All the reported research relating specifically to the recreational behaviors of autistic children has been observational and survey-oriented. Black, Freeman and Montgomery (1975) observed five autistic boys in four play settings using a socialization scale to determine categories of behaviors exhibited. They observed their preschool age subjects in a stark environment, a play therapy unit, a playroom and an outdoor play-deck. They were primarily interested in touches (social), acts of aggression, verbalizations and vocalizations, and object play. The following conclusions were drawn: 1) Some subjects exhibited the same behaviors of the setting; 2) The children interacted more with objects than with peers; 3) Object play was at the manipulative stage and was repetitive and often
negative in nature; 4) In the stark environment, most play was solitary and repetitive; and 5) The play therapy environment seemed to encourage modeling and imitation as well as social and gross motor play.

Dewey (1973) reported the results of a survey administered to parents of autistic children describing the kinds of recreational activities engaged in by their children. Toys, games, sports, and other gross motor activities were listed. Some of the gross motor activities included ball activities, scooter courses, balloon tapping, swings, climbing, trampoline, kickball, volleyball, bowling, frisbee, tumbling, and tag. She suggests using the autistic child's obsessive interests as the starting point for developing recreational skills.

Reinforcement Characteristics of Autistic Children

Play and Recreational Settings

A few authors have analyzed the effectiveness of certain kinds of reinforcement on behaviors of autistic children in play or recreational settings. Strain and Weigerink (1975) utilized social praise and contingent attention to alter the social play of two behaviorally disordered preschool-age children. He used teacher praise and attention contingent on social play during sessions with pegboards, an "athletic ball," blocks and a water pail. He was able to significantly increase social play in all the activities.

Romanczyk, Diament, Garen, Trunell, and Harris (1975) used social reinforcement and food to increase both isolate and social play in eight behaviorally disordered school-age children. In two studies, subjects were prompted into social and isolate play and reinforced by food paired with approval on a variable interval schedule. In the second study, a
fading procedure was instituted in an attempt to render the successful effects of reinforcement more resistant to extinction. The fading technique was also successful.

Finally, Shakel (1976) utilized food and praise to change cooperative and uncooperative behaviors of two autistic boys in a play setting. He tried to change those behaviors by using play apparatus specifically designed for cooperative play as well as reinforcement of food and praise. The presence of the apparatus alone did not increase cooperative play; reinforcement seemed to be necessary.

Language Training Settings

A vast bulk of research applied to autistic children has been done in the area of language training. It makes sense that since the primary problem of autistic children lies in their inability to relate with others, attempts should be made to develop the means by which relationships are developed; communication skills. This research could be classified as follows: 1) general findings and theoretical considerations, 2) food as reinforcement, 3) social praise as reinforcement, 4) token economies as reinforcement, and 5) research on prompting. Research in each of these areas will be briefly summarized.

Several authors have concluded that primary reinforcers (those that meet physiological needs) seem to be most effective with autistic children, and that autistic children have difficulty in acquiring secondary reinforcers. As a result of early research, Ferster (1961) formulated a theoretical position that acquiring secondary reinforcers broke down when the autistic child failed to associate the primary with the paired neutral
stimulus. Lovaas (1971, pp. 124-43) has testified that in his research, the only way he could condition the acquisition of secondary reinforcers was by pairing them with the withdrawal of pain. Frankel and Graham (1976) argue against the blind use of food as reinforcement for all autistic children and call for individual consideration when deciding on reinforcers. As a result of follow-up research, Lovaas, Koegel, Simmons, and Long (1973) state that assessing reinforcers needs to be done on an individual basis since some clients after months of training and experience would respond to secondary reinforcers. Finally, Lovaas (1977, pp. 71-106) has testified that in spite of the inability of autistic children to acquire secondary reinforcers, it is the reinforcement which develops and maintains language skills rather than the arousal characteristics of the presentation stimuli.

A multitude of researchers have used food as reinforcement for training language skills. Rosenbaum and Breiling (1976) used candy to train reading comprehension in a 12 year old autistic-like girl. Three projects (Hingten and Churchill, 1971, Freeman, Ritvo and Miller, 1975, and Hargrave and Swisher, 1975) have used cereals as reinforcers to train imitative behaviors, non-echolalic speech and picture naming. Finally, both McLean and McLean (1974) and Fulwiler and Fouts (1976) used choices of food and drink to train imitative behavior, and signed and vocal words and phrases in autistic children.

One study used social praise and social punishment in training pre-academic and social tasks in an autistic child. Moore and Bailey (1973) cued a preschool-age child's mother as to when to socially reinforce and reprimand her child. The mother's praise and punishment were adequate contingencies and effectively changed both pre-academic and social behavior.
It is interesting to note that this was the only reported research which used only social reinforcers, and that the person implementing this reinforcement was the one most likely to have acquired a significant personal relationship with the client.

Two researchers have utilized token economies in training language skills in autistic children. Bonvillian and Nelson (1976) used a token economy over a six month period to train elements of American Sign Language to a nine year old autistic boy. Choices of toys or to play outside served as back-up reinforcers. Wheeler and Sulzer (1970) used a poker chip economy to train syntax in an eight year old echolalic boy. Four poker chips yielded a 30 second opportunity to have edible reinforcers, play with toys, be tickled or rocked.

Finally two authors have determined that the kind of stimulus prompts affect the acquisition of language skills in autistic children. Lovaas (1977, pp. 107-37) discusses the difficulty that autistic children have in discrimination learning due to non-relevant cue-attending (overselectivity). He then describes research which determines that autistic children do not learn discrimination tasks with extra-stimulus prompts, but they do learn them with within-stimulus prompts. Within-stimulus prompts emphasize relevant cues while extra-stimulus prompts merely direct the child's attention on the task. Schreibman (1975) reports similar findings for six autistic children. She found that they never learned a task without prompts, and the prompt was almost always of the within-stimulus variety.
Summary

The following categories of related literature were discussed:
1) leisure programming for generally handicapped populations, 2) survey and observational research on recreation and autism, 3) research on the reinforcement characteristics of autistic children in play settings, and 4) research on the reinforcement characteristics of autistic children in language training settings.

Three studies were discussed which relate to leisure programming in general. Auxter and Tano (1976) propose a complex leisure education system including assessment, instruction, leisure educational training, and non-structured leisure components. McClannahan and Risley (1975) experimented with a simple leisure education process with geriatric patients in a nursing home. They used a behavioral assessment and manipulated conditions during an activity period. Wehman and Marchant (1977) trained several gross motor recreational skills in severely retarded children using task analysis.

Two studies were cited regarding the behavior of autistic children in recreational settings. Black, Freeman and Montgomery (1975) observed autistic children in four settings and found their play manipulative, repetitive and solitary. Dewey (1973) surveyed parents of autistic children to determine recreational interests of their children. A number of indoor gross motor activities were cited and were incorporated into this study.

Very little research has been conducted in the area of reinforcing characteristics of autistic children in recreational settings. Two studies, neither of which used classicly autistic youngsters as subjects,
used food, praise and contingent attention to increase social play. One study (Shakel, 1976) reported the development of cooperative behavior in two autistic boys using food and praise.

Most of the operant research done with autistic subjects has been centered in the area of language training. Several major conclusions have been reached. First, autistic children seem to have difficulty acquiring secondary reinforcers. Second, individual differences abound in the autistic population regarding reinforcement characteristics. Third, food and drink seem to be the most effective reinforcers for autistic children, as well as the reinforcers most often chosen. Fourth, when token economies are successful with autistic children, food is usually the back-up or primary reinforcer. And fifth, within-stimulus prompts are more effective than extra-stimulus prompts in instructional situations with autistic children.
A leisure education program was implemented with three autistic-like children. The title and purpose of each phase are contained in Table 1.

It should be noted at this point that activities which each subject chose during the assessment phase will hereafter be designated as "high-interest activities," and that activities chosen by the investigator to train are hereafter designated as "low-interest activities."

Subject Selection

Three subjects were selected from a class for autistic children in Grandview Heights, Ohio. The subjects were all living at home in various sections of the Columbus, Ohio suburbs. They were of middle to upper-middle class socio-economic status. The first names of the subjects were Hal, Kenny, and Jerry.

None of the subjects exhibited all the symptoms characteristic of early infantile autism (Kanner's Syndrome). However, all had been described as autistic-like at one time or another in their educational records.
Table 1

Designation and Purpose of Each Phase of the Leisure Education Program

<table>
<thead>
<tr>
<th>PHASE</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>1. To determine subject's interest in equipment and activities.</td>
</tr>
<tr>
<td>Planning</td>
<td>1. To analyse the subject's interests;</td>
</tr>
<tr>
<td></td>
<td>2. To choose activities in which the subject are not interested;</td>
</tr>
<tr>
<td></td>
<td>3. To develop an individual education plan to train subjects in activities which they have not chosen.</td>
</tr>
<tr>
<td>Instructional</td>
<td>1. To implement the individual education plan for each child.</td>
</tr>
<tr>
<td>Leisure Educational Training</td>
<td>1. To present subjects with choices between high-interest and low-interest activities;</td>
</tr>
<tr>
<td></td>
<td>2. To experimentally determine conditions most effective in encouraging participation in low-interest activities.</td>
</tr>
</tbody>
</table>
Hal, age eight, rarely exhibited spontaneous speech but could verbally communicate about concrete subjects or events when asked questions. He was good natured and responsive during all phases of the program. His motor development seemed quite normal for his age.

Kenny, age seven, exhibited only babbling sounds initially, but began to imitate the instructor's speech toward the end of the program. He was very cooperative in all phases of the program. Kenny's motor development was relatively normal though at times impulsive.

Jerry, age eight, exhibited a wide variety of spontaneous speech, including babbling as well as some very clear two and three word combinations. He was at times non-compliant and required more tactual prompts during the instructional phase and during the prompt and praise condition of the leisure educational training phase. His motor development was normal but usually impulsive.

The parents of the subjects were given the choice of bringing their child five days per week for four weeks, or three days per week for six weeks. Hal's and Kenny's parents chose the former schedule and Jerry's parents chose the latter.

Location and Staff

The sessions were held in the gymnasium at the Nisonger Center for Developmental Disabilities, on the campus of the Ohio State University. Each child was assigned an instructor from the Master's degree program in adapted physical education at Ohio State. The instructors brought entirely different backgrounds and personalities to the project. Three instructors, all of whom were Master's students in adapted physical education, were used in the study. One instructor was an enthusiastic
and energetic graduate student from New York City. His undergraduate training was in physical education. Another instructor was a graduate student from Israel. He had been in the United States for only five years and had studied physical education in Youngstown, Ohio for his undergraduate study. The other instructor's professional and undergraduate experience was in special education with specialization in orientation and mobility for the visually impaired.

The Leisure Education Program

A conceptual model for leisure education has been proposed by Auxter and Tano (1976). Their model includes the following phases: assessment, instruction, leisure educational training, non-structured leisure in educational settings and, non-structured leisure in the community. The Leisure Education Program undertaken for this research is similar in concept to this model but has been abbreviated due to the time and resource constraints of the project. Hence, this Leisure Education Program included a simplified assessment phase, an instructional phase, and a leisure educational training phase. The two unstructured leisure phases were omitted.

Session Schedules

The total number of sessions attended by each child varied depending on whether the subject came five or three days per week and on the number of days the subject was absent. The number of sessions attended by each child for each phase is noted in Table 2.
Table 2

Number of Sessions Attended in Each Phase for Each Subject

<table>
<thead>
<tr>
<th></th>
<th>Hal</th>
<th>Kenny</th>
<th>Jerry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>2</td>
<td>2</td>
<td>1½</td>
</tr>
<tr>
<td>Instructional</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Leisure Educational Training</td>
<td>15</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

The Assessment Phase

Equipment: The following equipment was selected for the assessment phase: balance beam, balls, balloons, bean bags, bowling pins, wall gym (for climbing), frisbee, hula hoops, jump rope, rings (for swinging), ropes (for swinging), scooter boards, trampoline, tumbling mats, tricycle, and yarnballs. The equipment was selected on the basis of indoor gross motor activities derived from Dewey's (1973) survey of parents of autistic children regarding the recreational interests of their children. The equipment was placed in the gymnasium the same way for all subjects during the assessment phase. Figure 1 depicts this arrangement.
Figure 1: Location of equipment for the assessment phase

Entrance Procedures: All the subjects entered through the southeast doors. The subject, the instructor, and the camera-operator (principal investigator) were the only people in the gymnasium during the entire program. Once inside, the instructor led the subject around the gym pointing out each piece of equipment by name. Then the subject was led to the center of the gym (near the mat) and told that he could play with anything he wanted. The instructor then interacted with the subject only if 1) the subject asked the instructor to play with him, or 2) if the activity chosen naturally required two people for successful participation, e.g., frisbee throw and catch. If the child chose to climb on the wall gym or to jump on the trampoline the instructor remained close to prevent injury, but interacted as little as possible.

Data Collection: The assessment sessions were video-taped. The tapes were transcribed according to a multiple behavior code which included
categories for each piece of equipment in the gymnasium. An interval recording system was employed utilizing a five-second-observe, five-second-record scheme. An audio tape provided the cues for observe and record intervals. The data collection codes, definitions and a sample data collection sheet are included in Appendix A. Codes for instructor interaction and student interaction are also included in the instrument but were not employed during the assessment phase.

The Planning Phase

The purposes of the planning phase were 1) to determine three or four activities that each subject would choose on a purely volitional basis, 2) to choose three or four activities which the subject would not choose volitionally, and 3) to develop an individual education plan to introduce these new activities to each subject.

Selection of High-interest Activities: The data derived from the video tapes of the assessment sessions formed the basis of the selection of high-interest activities. Once the data were tabulated the activities in which each subject participated were ranked from the greatest to the least percent of intervals. The four activities with the largest percent of intervals were designated as the high-interest activities for a special subject.

Selection of Low-interest Activities: Next, the principal investigator selected four activities for each child in which the subject did not participate for more than five percent of the total assessment intervals. These activities were designated as low-interest activities for a particular subject.
Individual Education Plan: At this point an individual education plan was developed for each child in order to teach the low-interest activities. The activities selected were based on two primary considerations: 1) they could very easily involve interaction between the subject and the instructor, and 2) a form (or forms) of all four activities could be easily trained in one or two instructional sessions. Hence, the low-interest activities could involve no perceptual or motor prerequisites which the subjects did not already possess. The plans included the names of the four activities, terminal objectives for each activity, and a sequence to follow when teaching the activity.

Usually, several different ways of playing with each piece of equipment were included in the plans depending on the design and intent of the particular equipment. Bowling, for example, is primarily designed with one behavior in mind, namely, rolling a ball to knock down pins. Hence, when bowling was taught just one behavior was the object of instruction. However, there are many ways of playing with hoops. Hoops can be rolled, thrown and caught, climbed through, and twirled around one's body. Therefore, when hoop activities were taught, a variety of behaviors were the objects of instruction. In general, whenever the design and intent of the equipment permitted, a variety of behaviors were instructed.

It should be noted at this point that this investigator understands that the subjects may have known how to play with a particular piece of equipment even though they did not choose it during the assessment. If this was the case then our instruction may have been superfluous. The purpose of our instructional sessions were not necessarily to train new and different activities, though that may indeed have happened. The purpose was to assure ourselves that each subject could play appropriately with equipment which he did not ordinarily choose.
The Instructional Phase

During the instructional phase only the equipment needed for each child's low-interest activities was in the gymnasium. Each instructor followed his subjects' individual education plan. The instructional phase was terminated when the terminal objectives were completed in all four activities. For each subject the four terminal objectives were reached in one instructional session.

The Leisure Educational Training Phase

The assessment phase determined activities which each subject would choose on a purely volitional basis. The instructional phase assured each subject's ability to play appropriately with equipment not chosen volitionally during the assessment phase. The leisure educational training phase is designed to offer choices between these two groups of activities; the high-interest and the low-interest. It is also designed to experimentally determine under which of three conditions will the subjects choose low-interest activities more often.

General Procedures: Four low-interest and four high-interest activities were associated at this point with each subject. Only the equipment necessary for each activity was available during this phase. In addition, the equipment positions were rotated clockwise every day. Exceptions included the wall gym and rings which were permanent fixtures. The subjects always entered through the south-east doors, were led around the room by the instructor and shown all the equipment, and led to the center of the gymnasium to make the initial choice.

Independent Variable: The independent variable was the contingency condition under which the subjects were to choose between low-interest and
high-interest activities. There were three levels of this variable: Praise Anything, Prompt and Praise, and Tokens. The order of the condition preceded and followed every other condition at least twice. Table 3 indicates the order of the conditions.

Table 3

The Order of the Conditions

<table>
<thead>
<tr>
<th>Session Number</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PP</td>
</tr>
<tr>
<td>2</td>
<td>PA</td>
</tr>
<tr>
<td>3</td>
<td>PP</td>
</tr>
<tr>
<td>4</td>
<td>T</td>
</tr>
<tr>
<td>5</td>
<td>PA</td>
</tr>
<tr>
<td>6</td>
<td>T</td>
</tr>
<tr>
<td>7</td>
<td>PP</td>
</tr>
<tr>
<td>8</td>
<td>PA</td>
</tr>
<tr>
<td>9</td>
<td>T</td>
</tr>
<tr>
<td>10</td>
<td>PA</td>
</tr>
<tr>
<td>11</td>
<td>PP</td>
</tr>
<tr>
<td>12</td>
<td>PA</td>
</tr>
<tr>
<td>13</td>
<td>PP</td>
</tr>
<tr>
<td>14</td>
<td>T</td>
</tr>
<tr>
<td>15</td>
<td>PA</td>
</tr>
<tr>
<td>16</td>
<td>T</td>
</tr>
</tbody>
</table>

PA = Praise Anything
PP = Prompt and Praise
T = Tokens

Praise Anything: In this condition, the subject made an initial choice and the instructor played with the subject regardless of which activity was chosen. A kitchen timer was set for two minutes as soon as the choice was made. When the two minutes were finished the subject was led to the center of the gymnasium and told he could choose something else. Thus, an opportunity to choose a different activity arose every two minutes and the instructor interacted with the subject during the
entire session. It should be noted that the subject was not forced to choose a different activity, merely given the opportunity to do so. He could choose the same activity each time the opportunity arose if he wished.

**Prompt and Praise:** Under this condition the subjects made an initial choice at the center of the gymnasium. The instructor's response depended on the subject's choice. If the subject chose a high-interest activity he was ignored by the instructor for two minutes. At the end of two minutes the instructor indicated verbally and gesturally that he wanted the subject to play with a specific low-interest activity. The instructor chose a different low-interest activity each time the opportunity arose to prompt. The instructor was to prompt just enough to get the child involved in the low-interest activity. In addition, the instructor played and interacted with the subject while participating in the low-interest activity. After two minutes were spent in the low-interest activity the subject was led to the center of the gymnasium once again and offered a free choice. In this manner, every two minutes the subject was either allowed to choose any activity or was prompted into a low-interest activity depending on how he spent the previous two minutes. The subjects were praised and played with for participating in low-interest activities, and ignored for participating in high-interest activities. Subjects did not have to participate exactly the way they were trained in order for the instructor to play with them. They only needed to use the equipment in an appropriate manner.

**Tokens:** The first five or ten minutes of each token session was spent in a role playing situation between the principal investigator, the subject and the instructor. The primary reinforcers (cereal, water, and badges) were given to the subject for participating in low-interest activities. Then the tokens were introduced (animal stickers) and paired
with the primary reinforcers to the point where the subject would work for the stickers. A continuous reinforcement schedule was used at first. The criteria for getting a sticker were faded quickly to one sticker for every two minutes of playing in a low-interest activity, and three stickers yielded the primary reinforcers. At that point the instructor took over, led the child to the center of the gymnasium and gave the subject a free choice. The instructor responded the same way in this condition as in the Praise Anything condition, with the exception that a sticker was given to the subject after two minutes in a low-interest activity, and that primary reinforcers were offered after three stickers were earned.

Table 4 summarizes the instructor's response to the subject's participation in the various conditions.

Table 4

Summary of Instructor's Response
Across Conditions and Subject Participation

<table>
<thead>
<tr>
<th>Condition</th>
<th>Praise Anything</th>
<th>Prompt and Praise</th>
<th>Tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-interest Response</td>
<td>I</td>
<td>IP</td>
<td>IT</td>
</tr>
<tr>
<td>High-interest Response</td>
<td>I</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I = instructor interacts and plays with the child
T = instructor administers tokens
P = instructor prompts the subject into a specific activity

Data Collection and the Independent Variable: Data were collected on the behavior of the instructors as an assessment of their administration of the independent variable. As in the assessment session video tapes
were transcribed onto data collection sheets using an interval recording system (5 second observe, 5 second record), and a multiple behavior code. These data were collected concurrently with data on the subject's behavior. The following instructor behaviors were recorded:

1) **Explanation:** Intervals during which the instructor was showing the equipment to the subject, telling him that he could choose to play with anything, or explaining the token system's contingencies.

2) **Positive Instructor Interaction:** Intervals during which the instructor played with the subject, talked to the subject, verbally or gesturally prompted the subject, or helped the subject learn a skill. This category included positive reinforcement.

3) **Tokens:** Intervals during which the instructor was giving the subject tokens (stickers) or payoffs of primary reinforcers.

**Priority of Intervals:** Intervals during which two or more instructor behaviors were noted were awarded in the following order of priority:

1) Tokens, 2) Positive Instructor Interaction, and 3) Explanation.

**Dependent Variables:** As in the assessment phase, subject behavior was recorded as the participation in specific activities. These data were collected concurrently with the instructor behaviors and in the same manner. The same subject behavior codes were used as in the assessment phase. There was no priority attached to any activity. The observer was required to judge which activity predominated during an interval in which two activities were observed.

These data were tabulated by grouping the activities as either low-interest or high-interest. These two categories, then, served as dependent variables for the purposes of analysis. A multi-element design was used.
to organize and analyze the data on the dependent variables. The sole criterion for significance was whether or not the lines plotted on the graph were intersecting. An a priori arbitrary criterion was stated that a line representing a condition which did not intersect another line representing another condition, was significantly different. Conversely, intersecting lines were said to be non-significant. No statistical analyses were employed with these data.

Concomitant Variables: Other subject behaviors on which data were collected were vocal and non-vocal interaction. Vocal interaction consisted of any vocal sounds made by the subjects directed toward, or in the vicinity of, the instructor. These sounds did not need to be intelligible to be considered vocal. Non-vocal interaction included intervals during which the subject was playing with the instructor but making no sounds. Hence, vocal interaction had priority over non-vocal interaction.

These data were transcribed from video tapes after the independent and dependent variables were transcribed. A ten minute portion of tape near the middle of the session was selected for observation of the concomitant variables. Similar data collection sheets were used but data were recorded every five seconds rather than observing for five seconds and recording for five seconds. These data were graphed and analysed by a multi-element design. The same a priori criterion for significance was also applied to these data.

Agreement Procedures: Interobserver agreement checks were implemented during one assessment phase session and eleven leisure educational training sessions. There was at least one check made for each subject under each condition. The following formula was used to calculate percent of agreement.
Although data on the independent and dependent variables were collected concurrently, agreement for those two categories were calculated independently. Hence, a percent agreement for subject behaviors (dependent variables) and for instructor behaviors (independent variables) is reported. In addition, the tabulated data from the agreement checker were graphed along with the observer's data. Agreement was also calculated once on each subject for the concomitant variables.

**Results of Agreement Checks:** The percent of agreement on subject behaviors (dependent and concomitant variables) ranged from 85% to 99%, with a mean of 96%. The percent of agreement on instructor behaviors (independent variable) ranged from 88% to 99%, with a mean of 92%. Table 5 summarizes the results of the agreement checks across subjects as well as conditions.

<table>
<thead>
<tr>
<th></th>
<th>Hal</th>
<th>Kenny</th>
<th>Jerry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Praise Anything</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>.98</td>
<td>.96</td>
<td>.97</td>
</tr>
<tr>
<td>Instructor</td>
<td>.90</td>
<td>.89</td>
<td>.88</td>
</tr>
<tr>
<td>Prompt and Praise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>.98</td>
<td>.94</td>
<td>.96</td>
</tr>
<tr>
<td>Instructor</td>
<td>.93</td>
<td>.97</td>
<td>.99</td>
</tr>
<tr>
<td>Tokens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>.99</td>
<td>.94</td>
<td>.97</td>
</tr>
<tr>
<td>Instructor</td>
<td>.90</td>
<td>.91</td>
<td>.93</td>
</tr>
<tr>
<td>Subject Interaction</td>
<td>.85</td>
<td>.93</td>
<td>.91</td>
</tr>
</tbody>
</table>
Reliability Procedures: Reliability was assessed for the dependent variable data by transcribing an assessment phase tape immediately after the session and again three weeks later. A linear correlation coefficient was calculated between the two transcriptions to determine the reliability of the instrument over time. The following formula was used to calculate $r$:

\[ r = \sqrt{\frac{N\sum xy - (\sum x)(\sum xy)}{\left[N\sum x^2 - (\sum x)^2\right]\left[N\sum y^2 - (\sum y)^2\right]}} \]

The reliability for the data collection instrument was .98
RESULTS AND DATA ANALYSIS

Assessment Data

The assessment and planning phases were undertaken with the following objectives: 1) to determine activities which the subjects would choose volitionally, 2) to choose four of these activities (high-interest activities) based on the rank order derived from percent of intervals spent in each activity, 3) to choose four other activities in which the subjects were engaged less than 5 percent of the total intervals (low-interest activities), and 4) to develop an individual education plan for the low-interest activities.

Selection of High-interest Activities

Table 6 contains the rank-order and percent of intervals during which each subject participated in the various activities during the assessment phase.

The category "other" was defined as any behavior which could not be classified into an activity category. For the most part "other" behaviors included walking around the gym, looking at equipment or at the video tape equipment. The first four activities for each subject in this rank order were designated as high-interest activities and appear as such in Table 7.
Table 6

Rank Order of High Interest Activities for Each Subject

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hal %</th>
<th>Kenny</th>
<th>Jerry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swinging</td>
<td>37.00</td>
<td>Balls</td>
<td>Swinging</td>
</tr>
<tr>
<td>Tumbling</td>
<td>15.00</td>
<td>Trampoline</td>
<td>Balls</td>
</tr>
<tr>
<td>Climbing</td>
<td>7.25</td>
<td>Bowling</td>
<td>Balancing</td>
</tr>
<tr>
<td>Other</td>
<td>40.75</td>
<td>Swinging</td>
<td>Tumbling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Climbing</td>
<td>Bean Bags</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>Balloons</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tricycle</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hoops</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>

Selection of Low-interest Activities

Also in Table 7 are the four low-interest activities selected for each subject by the principal investigator. Individual education plans were formulated for the low-interest activities and were implemented during the instructional phase. The plans appear in Appendix B.

Table 7

Low-interest and High-interest Activities Selected for Each Subject

<table>
<thead>
<tr>
<th>Low-interest</th>
<th>High-interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hal</td>
<td></td>
</tr>
<tr>
<td>Bowling</td>
<td>Swinging</td>
</tr>
<tr>
<td>Balloon Play</td>
<td>Tumbling</td>
</tr>
<tr>
<td>Scooter Board Activities</td>
<td>Climbing</td>
</tr>
<tr>
<td>Frisbee</td>
<td></td>
</tr>
<tr>
<td>Kenny</td>
<td></td>
</tr>
<tr>
<td>Balloon Play</td>
<td>Ball Activities</td>
</tr>
<tr>
<td>Scooter Board Activities</td>
<td>Trampoline</td>
</tr>
<tr>
<td>Hoop Activities</td>
<td>Bowling</td>
</tr>
<tr>
<td>Frisbee</td>
<td>Swinging</td>
</tr>
<tr>
<td>Jerry</td>
<td></td>
</tr>
<tr>
<td>Hoop Activities</td>
<td>Swinging</td>
</tr>
<tr>
<td>Bowling</td>
<td>Ball Activities</td>
</tr>
<tr>
<td>Scooter Board Activities</td>
<td>Balancing Activities</td>
</tr>
<tr>
<td>Balloon Play</td>
<td>Tumbling</td>
</tr>
</tbody>
</table>
Dependent Variable Data

Low-interest Activities

Figure 2 graphically depicts the percent of intervals during which the subjects participated in low-interest activities. Table 8, Appendix C, displays the means and standard deviations of these data by condition and subject. The total number of intervals during each session ranged from 119 to 175.

In all three cases the line representing the prompt and praise condition does not intersect the lines representing the other two conditions. In addition, in all cases the lines representing the praise anything and token conditions do intersect. Hence, significant differences exist among all subjects between the prompt and praise and the praise anything conditions, and between the prompt and praise and token conditions. No significant difference exists between the praise anything and token conditions.

In Hal's case one is tempted to ascribe significant differences between the praise anything and token conditions. However, session 10 provides a data point troublesome to this conclusion since, according to the a priori criterion for rejecting the null hypothesis, significance cannot be ascribed if lines cross.

Also evident from graphical observation is the greater variability in the behavior under the praise anything and token conditions than in the prompt and praise condition.
Figure 2: Subject participation in low-interest activities.

- Tokens
- Praise anything
- Prompt and praise
- Agreement checks

Jerry

Ken

Hal

Percent of Intervals During Which Subjects Participated in Low-Interest Activities

0 10 20 30 40 50 60 70 80 90 100
High-interest Activities

Figure 3 graphically represents the percent of intervals during which the subjects participated in high-interest activities. Table 9, Appendix C, displays the means and standard deviations of these data by condition and subject.

In all cases the line representing the prompt and praise condition does not intersect with the lines representing the other two conditions. Further, in all three cases the lines representing the praise anything and token conditions do intersect. Therefore, among all subjects significant differences exist between the prompt and praise condition and the praise anything condition, as well as between the prompt and praise and token conditions. Also, no significant differences exist between the praise anything and token conditions.

Also evident from these data is the greater variability in the behavior under the praise anything and token conditions than under the prompt and praise condition.
Figure 3: Subject participation in high-interest activities
Independent Variable Data

The purpose of collecting data on the independent variable was to assess the extent to which the study was correctly implemented. The analysis of the following categories of data provide information relevant to this question: 1) positive instructor interaction contingent on low-interest activities, 2) positive instructor interaction contingent upon high-interest activities, and 3) token administration.

Positive Instructor Interaction Contingent on Low-interest Activities

The data considered here involves positive instructor interaction which has occurred in the same interval during which the subject was participating in a low-interest activity. Figure 4 graphically represents these data and Table 10, Appendix C, contains the means and standard deviations across subjects and conditions.

A retrospective glance at Table 4 of Chapter Three reveals that when the subject is participating in a low-interest activity the instructor is to interact with him under all conditions. Therefore, if this procedure has been implemented correctly the graph of these data should correspond very closely to the data on subject participation in low-interest activities. A comparison of Figure 4 with Figure 2 reveals that this is indeed the case. The data represented by Figure 4 are always slightly lower than the data in Figure 2, but the graphs follow the same course to a remarkable degree.
Figure 4: Positive instructor interaction contingent on low-interest activities.
Positive Instructor Interaction Contingent on High-interest Activities

The data considered here involves positive instructor interaction which occurred in the same interval during which the subject was participating in a high-interest activity. Figure 5 graphically displays these data and Table 4, Appendix C, contains means and standard deviations across subjects and conditions.

Looking back to Table 4 again we see that when the subject is participating in high-interest activities the instructor should interact with the subject under the praise anything and token conditions but not under the prompt and praise condition. Therefore, if this procedure has been implemented correctly we would expect these data to correspond with the data on the subject's participation in high-interest activities (Figure 3) with one exception. The exception is that during the prompt and praise condition there should be almost no interaction contingent on high-interest activities. Comparing Figure 5 with Figure 3 reveals that this is true. The data for the praise anything and token conditions in Figure 5 are lower than the same conditions in Figure 3, but they generally follow the same course. In addition the data for the prompt and praise condition in Figure 5 reveal almost no instructor interaction contingent on high-interest activities.
Figure 5: Positive instructor interaction contingent on high-interest activities
Token Administration

Figure 6 graphically depicts data on the percent of intervals during which tokens were administered, and Table 2, Appendix C, contains the means and standard deviations across subjects and conditions.

Table 4 shows that the only time tokens should be administered is when the subject is participating in low-interest activities during the token condition. Figure 6 reveals that this was the case. Tokens were never given during conditions other than the token condition.
Percent of Intervals During which Tokens Were Administered

Hal

Kenny

Jerry

Figure 6: Token Administration.
Concomitant Variable Data

The data on the concomitant variables were collected to determine whether the independent variable affected the amount and kind of subject interaction. These data will be analyzed in the following order:
1) total interaction, 2) vocal interaction, and 3) non-vocal interaction.

Total Interaction

Figure 7 graphically displays the percent of intervals during which non-vocal interaction plus vocal interaction was observed. Table 3, Appendix C, contains the means and standard deviations of these data. For Hal's and Kenny's data the line representing the prompt and praise condition is lower than, and does not intersect, the lines representing the other two conditions. These graphs clearly show that significantly less interaction took place during the prompt and praise condition than during the other two conditions. Jerry's data reveal no such differences since all lines intersect. In addition, Jerry's data are clearly more variable than either Hal's or Kenny's. It is also interesting to note that with Kenny's data a steady slope exists in the prompt and praise condition showing more total interaction each session.
Figure 7: Total Interaction.
Vocal Interaction

Figure 8 graphically displays data on the percent of intervals during which vocal interaction was observed. Table 14, Appendix C, contains means and standard deviations for these data. Hal's data show a significantly lower prompt and praise condition as compared with the other two conditions. Kenny's and Jerry's data reveal no significant differences. It is interesting to note on Kenny's data that vocal interaction drastically increased on session 5 after having remained extremely low during the first four sessions. Also from Figure 8 one can observe that Jerry's data are again more variable than Hal's or Kenny's.
Figure 8: Vocal Interaction

- Tokens
- Praise Anything
- Prompt and Praise

Percent of Intervals During Which Subjects Interacted Vocally With Instructors
Non-Vocal Interaction

Figure 9 graphically displays data on the percent of intervals during which subject interaction took place not involving vocalizations. Table 15, Appendix C, contains means and standard deviations of these data. Hal's and Kenny's data show clearly significant differences between the prompt and praise conditions and the other two conditions. Jerry's data do not reveal these differences.
Figure 9: Non-Vocal interaction.
Discussion of Results

Independent Variable Data

The analysis of independent variable data was presented in detail in the preceding section. The investigator need only reiterate that the data, when compared with dependent variable data and with Table 4 in Chapter Three, followed patterns expected if the independent variable was implemented according to plan.

The reader may have noticed that Figure 6: Token Administration contains a different scale than the other graphs. In reality, token administration occurred very rarely, even during the token condition sessions. Two things can explain the low token award. First, the token economy was relatively ineffective in increasing participation in low-interest activities. It tended to produce the same behavior patterns as did the praise anything sessions. Hence, the subjects did not participate in low-interest activities enough to earn many tokens. Second, the subjects were required to play for two minutes before receiving tokens and the actual administration could be accomplished in under 20 seconds. Therefore, even when the subject participated a great deal in trained activities, the administration of tokens could not be expected to consume much time. The primary information to be gained from Figure 6 with respect to the administration of the independent variable is that no token administrations occurred during the prompt and praise and praise anything conditions, while some time was utilized for token administration during the token condition.
Dependent Variable Data

The major result of the study involves the relative efficiency of the prompt and praise condition in encouraging participation in low-interest activities as compared with the praise anything and token conditions. All subjects, especially Hal and Kenny, were cooperative in attempting to play with activities the instructor chose for them. However when given a free choice they usually returned to their favorite activities.

This difference may partly be explained by the nature of activities chosen by the subjects and the instructor. In all cases the favorite activities of the subjects involved activities inherently providing a large degree of vestibular stimulation. According to Table 6 the favorite activity for Hal and Jerry was swinging and two of the four preferred activities for Kenny were swinging and trampoline jumping. However, none of the low-interest activities involved vestibular stimulation to as large a degree as swinging and trampoline activities. Hence, the subjects may have enjoyed the low-interest activities but when given a choice the intense stimulation derived from the vestibular activities encouraged them to choose high-interest activities.

Another explanation for the subject's tendency to return to their most-preferred activities may involve their prior experience with those activities. The nature of the subject's recreational participation outside our contrived setting was not taken into consideration when planning the activity choices. Hence, a history of successful participation in an activity at home may have encouraged the selection of a similar activity in our gymnasium.
The ineffectiveness of the token economy is also noteworthy. The patterns of behavior produced under the token condition is generally the same as under the praise anything condition. This would indicate that the token economy held little or no value for the subjects since the token condition without the tokens is the same as the praise anything condition (Table 4). Three explanations are possible. First, the non-sweet primary reinforcers may not have been valued by the subjects. Second, the administration of a token after two full minutes of participation in low interest activities may have required more delay of gratification than our subjects were capable of providing. And third, the subjects may not have been able to discriminate that they were being reinforced for some activities and not for others. Hence, the token economy may have acted like an intermittent reinforcer for participating in anything. An interesting study would attempt to determine the requirements of a token economy which would be effective for elementary age autistic-like children.

The praise anything condition was similar to non-contingent reinforcement in basic applied behavior analysis research. However, in our case praise refers to any interaction initiated by the instructor. It included both specific and non-specific praise, as well as physical and verbal praise and participation in cooperative play.

If the praise anything condition had been more effective in encouraging low-interest activities we would have concluded that simply spending a day or two introducing new recreational activities to autistic-like children would increase their repertoire of recreational behavior. This
study provides no evidence to support this conclusion. Rather it seems that instruction-only is an inefficient means of expanding recreational behavior. A more directive approach, as in the prompt and praise condition, is more effective according to the results of our investigation.

A goal of all recreationists is that the new activities they introduce will become intrinsically reinforcing to their clients. In other words, the clients should volitionally select these newer activities more and more as they become intrinsically reinforcing. This study provides no evidence that this kind of process took place with our subjects. Two explanations are possible. First, the data for the praise anything condition are too variable to discern a trend (see Figure 2). Second, the time period over which the study was conducted was too short for such a trend to become evident. Duplicating the study over a period of several months with elementary-age autistic-like children may provide more evidence of some kind of internalization process.

Concomitant Variable Data

The primary result from these data involved lower total and non-vocal interaction under the prompt and praise condition than under the other two conditions for Hal and Kenny. In addition, Hal's data reveal less vocal interaction as well under the prompt and praise condition. These results are more easily explained with reference to the instructor than to the subject. The extent to which the subject chose high-interest activities during the prompt and praise condition determined the extent to which he was ignored by the instructor. It seems, therefore, that for Hal and Kenny the instructor was the initiator of their interaction. When ignored they were usually content to play by themselves. This is not to say that Hal
and Kenny shunned interaction. On the contrary, Figure 7 reveals high levels of total interaction during the praise anything and token conditions. This simply means they interacted primarily when the instructor initiated the interaction.

Figures 7, 8, and 9 reveal that Jerry's data are unlike Hal's and Kenny's. Actually, Jerry's data for the prompt and praise condition are not unusually different. However, his data for the praise anything and token conditions are much more variable. Much of this variability can be explained by his non-compliance. During the highly structured prompt and praise sessions Jerry participated a great deal in low-interest activities. In addition, he interacted with the instructor during his participation. Hence, his data are similar to Hal's and Kenny's for that phase. During the other two conditions Jerry had to be playing with something in order for the instructor to interact with him. Some days he chose not to play with anything for at least part of the time. Hence less interaction took place. Some days he chose to participate in many activities. Hence, greater interaction took place. Therefore, Jerry's data for the praise anything and token conditions reveal much variability. To some extent this non-compliance and unwillingness to choose activities accounts for generally lower data in participation in both low-interest (Figure 2) and high-interest (Figure 3) activities.

It is interesting to note the sudden onset of vocal interaction on Kenny's part on session 5 (Figure 8). No evidence exists that this resulted from any experience within the study. His mother reported the same phenomenon at home and attributed the change to his success in learning to ride a bicycle with all the concomitant social rewards and self-esteem that accompany such a feat. However, we will probably never understand why that behavior changed so drastically.
In conclusion, several statements can be made summarizing the results of the study. First, independent variable data shows that the instructors implemented the study appropriately. Second, dependent variable data indicate that prompts are necessary, at least during the first few weeks of leisure education, in order to encourage participation in new, or least preferred activities. And third, with two of the subjects, vocal and non-vocal interaction seems to depend on the initiation of the instructor.
CHAPTER FIVE

SUMMARY AND RECOMMENDATIONS

Restatement of the Problem

Select phases of a leisure education program were implemented with three autistic-like children. The following phases were included in the program: 1) an assessment phase to determine activities which the subjects would freely choose, 2) a planning phase to select activities not chosen by the subjects to train as novel activities, 3) an instructional phase to introduce and train novel activities to a minimum criterion of performance, and 4) a leisure educational training phase during which the subjects made choices between the newly trained low-interest activities and those selected volitionally during the assessment phase (high-interest activities).

During the leisure educational training phase an experimental analysis was undertaken to determine under what contingency conditions subjects would prefer to choose the low-interest activities. The following contingency conditions were implemented: 1) prompt and praise into low-interest activities, 2) tokens contingent on low-interest activities, and 3) praise for choosing any activities.
Pertinent Literature

The general structure of the program was a microscopic adaptation of the leisure education system developed by Auxter and Tano (1976). The potential recreational activities offered during the program were derived from Dewey's (1973) survey research of parents of autistic children. Her research delineated indoor gross motor recreational activities suggested by parents as activities preferred by their autistic offspring. The general design of the experimental portion of the program was similar to the "design of living environments" implemented with geriatric patients in a nursing home by McClannahan and Risley (1973).

Procedures

During the assessment phase each student was allowed to choose and play with any of sixteen pieces of equipment. Data were collected on the percent of intervals spent by each subject participating in each activity. No contingencies were applied in this phase.

During the planning phase the results of the assessment were rank ordered from the most preferred to the least preferred activity. The first four were designated as high-interest activities for each subject. Then four other activities were selected by the investigator in which the subject participated less than 5% of the intervals. An individual education plan was developed for these activities which included a terminal objective (very easy to master), and a sequence for introducing the activity to the subject. These activities were designated as low-interest activities. During the instructional phase the individual education plan was implemented with each subject.
The leisure educational training phase provided each subject with the opportunity to choose between low-interest and high-interest activities. Three contingency conditions were alternated daily. The order of the conditions was changed such that every condition both preceded and followed every other condition at least once and usually twice through the course of this phase.

In the praise anything condition, the subjects were given opportunities to choose different activities every two minutes. The instructors interacted and reinforced the subjects socially for choosing either low-interest or high-interest activities.

The token condition was identical to the praise anything condition with the exception that tokens were administered for participating in low-interest activities for two minutes. Animal stickers served as tokens, and whole grain cereal, water, and badges served as primary reinforcers.

Under the prompt and praise condition the subject was either prompted into a low-interest activity or allowed to make a free choice every two minutes. If he was playing with a low-interest activity during the previous two minutes he was given a free choice. The instructor played with the child during participation in low-interest activities and ignored the subject during participation in high-interest activities.

Data were collected on the following behaviors during this phase:

1) instructor interaction and token administration as an assessment of the appropriateness of the independent variable implementation;

2) subject participation in low-interest and high-interest activities (dependent variables);

3) vocal and non-vocal subject interaction (concomitant variables).
The data were collected by transcribing video tapes of the sessions through an interval recording system and a multiple behavior code. The length of the interval was five seconds. Reliability of the measuring instrument was assessed once and the percent of agreement was assessed fourteen times. Both were satisfactory.

Results

The data were analysed by graphical interpretation of a multi-element design. These findings emerged:

1) The independent variable was administered appropriately.

2) For all three subjects the prompt and praise condition resulted in significantly more participation in low-interest activities than did the praise anything and token conditions.

3) There were no significant differences in participation in low-interest activities between the praise anything and token conditions.

4) For all three subjects the prompt and praise condition resulted in significantly less participation in high-interest activities than did the other two conditions.

5) There were no significant differences between the praise anything and token conditions in participation in high-interest activities.

6) The prompt and praise condition resulted in significantly less total interaction and non-vocal interaction for Hal and Kenny than did the other two conditions.

7) The prompt and praise condition resulted in significantly less vocal interaction for Hal than did the other two conditions.

8) There were no significant differences in the interaction data for Jerry, but the praise anything and token conditions produced highly variable interaction patterns.
9. There were no significant differences in vocal interaction data for Kenny, but he drastically increased his babbling on session 5 and continued regardless of the condition.

Conclusions

The following conclusions were reached after the analysis of data:

1) Simple instruction was inadequate in encouraging participation in newly trained low-interest activities with these autistic-like subjects. A more structured approach in which verbal and gestural prompts are utilized to encourage participation in certain activities seemed to be necessary to broaden the recreational participation of our subjects.

2) The token economy was virtually ineffective in encouraging participation in low-interest activities. Either the primary reinforcers held no value for the subjects, too much delay of gratification was involved in the token system, or the subjects failed to discriminate that they were being differentially reinforced for some activities rather than for other activities.

3) The vestibular stimulation inherent in some of the high-interest activities may have influenced the subject's preference for high-interest activities under the praise anything and token conditions.

4) No evidence was found that the low-interest activities were becoming intrinsically reinforcing to the subjects. Either not enough time was involved in the study for such a trend to begin, or the data for the praise anything and token conditions were too variable to recognize the trend by inspection.
5) Our subjects seemed largely dependent upon the instructor for their own interaction behaviors. Two subjects interacted a great deal when initiated by the instructor, but when left to initiate the interaction by themselves they were usually content to play alone. This conclusion does not apply to Jerry's data which was highly variable due to intermittent non-compliant behaviors.

Recommendations

Every answer in a research investigation usually raises another question. Hence, the following recommendations for further research are in order:

1) A similar study should be carried out over a longer period of time in order to determine the extent to which trained activities become intrinsically reinforcing.

2) A similar study should be implemented precluding the choice of activities which involve a high degree of vestibular stimulation.

3) Research should be carried out analyzing different characteristics of token economies which may be effective with autistic-like children. Research may center on the degree that gratification can be delayed, the immediacy of token administration, and the relative values of various primary reinforcers.

4) Similar studies should be undertaken in group settings where subjects may interact with other subjects.

5) Research should be undertaken in which different conditions are applied during the leisure educational training phase. Purpose of this research would be to separate the effects of contingent attention from the effects of prompts, both of which were active during the prompt and praise condition.
BIBLIOGRAPHY


APPENDIX A

DATA COLLECTION INSTRUMENT
Behavior Codes

Subject Codes

Recreation

BL  Balancing activities
BS  Ball activities - simple
BP  Ballon play
BB  Bean bag activities
BO  Bowling
C   Climbing
F   Frisbee
H   Hoop activities
R   Rope jumping
SW  Swinging
SC  Scooter board activities
TR  Trampoline
TU  Tumbling
TC  Tricycle
Y.  Yarnball activities
-   Inappropriate equipment use

Interaction

V   Vocal
N   Non-vocal

Instructor Codes

E   Explanation
P   Positive instructor interaction
TO  Token administration
Behavior Code Definitions

Recreation

Balancing activities: walking or standing on a balance beam.

Ball activities - simple: any ball manipulation.

Ballon activities: any manipulations of a ballon, including tossing, catching, tapping, batting, etc.

Bean bag activities: any manipulation of bean bags, including throwing, catching, kicking, etc.

Bowling: rolling a ball toward bowling pins in an effort to knock them down.

Climbing: any time the subject leaves the floor by mounting the wall gym.

Frisbee: any manipulation of a frisbee, including but not limited to throwing and catching.

Hoop activities: any manipulation of a hula hoop, including swinging it around a body part, rolling it on the ground, crawling through it, etc.

Rope jumping: any attempts to jump over a swinging rope.

Swinging: using the rings or ropes as a swing with or without a board suspended between the rings.

Scooter board activities: riding on a scooter board in any position, including sitting, lying, sitting, kneeling or stepping.

Trampoline: any time the subject is on top of the trampoline.

Tumbling: any activity on mats including logrolling, forward and backward rolls, or any other stunt.

Tricycle: any time the subject sits on a tricycle.

Yarnball activities: any manipulation of a yarnball, including throwing, catching or kicking, etc.

Inappropriate equipment use: any use of the above equipment which is potentially destructive to either the subject or equipment.
Interaction

Vocal: any audible vocalization directed at another person. Vocal interaction has priority over non-vocal when both are emitted during the same interval.

Non-vocal: any gesture, including but not limited to signs, and directed toward another person. Also - any social play.

Instructor Codes

Explanation: any verbal interaction by the instructor toward the subject regarding what the subject can play with or what contingencies will be applied.

Positive instructor interaction: any physical or verbal prompts used by the instructor in an effort to encourage participation in specific activities; or any positive gesture or comment following a behavior and directed toward the subject.

Token administration: giving the subject a token following a behavior. Token administration has priority over positive instructor interaction if both occur during the same interval.
Data Collection Sheet

Date ____________________________  Comments ____________________________

Subject __________________________

Condition _________________________

Instructor _________________________

Subject  Instructor

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APPENDIX B

INDIVIDUAL EDUCATION PROGRAMS
Individual Education Plan

Name: Hal

Skill: Bowling
Terminal Objective: Hal will knock down 6 pins, place them upright again, and repeat the procedure using a 6" ball.
Baseline:
Sequence:
1. Hal will knock down 6 pins with the ball and the instructor will set them up.
2. The instructor will knock down 6 pins and Hal will set them up.
3. Hal will knock down 6 pins, set them up, and repeat.

Skill: Balloon Volleyball
Terminal Objective: Hal will strike a balloon with both hands back and forth across a bench with the instructor, 8 consecutive times.
Baseline:
Sequence:
1. Throw the balloon up and catch it.
2. Throw it up, tap it once, and catch it.
3. Instructor throws balloon, Hal taps it back to instructor.
4. Strike balloon back and forth across bench, increase the number of successive strikes.

Skill: Scooter Board
Terminal Objective: Hal will manipulate the scooter board the following ways: sitting, kneeling, lying on stomach, and with one foot on it.
Baseline:
Sequence:
1. Push scooter with hands a distance of 20'.
2. Sit on scooter and move it a distance of 20'.
3. With one knee on scooter, move it a distance of 20'.
4. Lying on scooter in prone position, move scooter 20'.
5. With one foot on scooter, move it a distance of 20'.

Skill: Frisbee
Terminal Objective: Hal will play throw and catch with the frisbee for 2 minutes.
Baseline:
Individual Education Plan (cont'd)

Name: Hal

Sequence:
1. Hal will throw the frisbee against the wall from a distance of 10'.
2. Hal will catch the frisbee when thrown by the instructor from a distance of 10'.
3. Play throw and catch for 1 minute.
4. Gradually increase the length of times.
Individual Education Plan

Name: Kenny

Skill: Modified Balloon Volleyball

Terminal Objective: To strike balloon with hands across an object forth and back to teacher, 8 successive times without losing it for a distance of 6'.

Baseline:

Sequence:
1. Throw balloon up and catch it.
2. Throw balloon up, then tap it easily up once and catch it.
3. Teacher throws balloon to Kenny, who will strike it back to teacher.
4. Strike balloon back and forth successively and gradually increase distance and number of strikes across an object.

Skill: Scooter Board

Terminal Objective: Kenny will be able to manipulate scooter in a variety of ways including: pushing forth and back, kneeling, lying on stomach, and standing while interacting with teacher.

Baseline:

Sequence:
1. Sitting on floor distance of 5' face to face pushing scooter forth and back.
2. Lying on stomach Kenny holds 1 of teacher's hands and will be moving.
3. #2, will move from wall to wall and back.
4. Sitting on scooter, teacher will push and then change places.
5. Kneeling will move around from wall to wall.
6. Teacher and Kenny will hold hands and try to stand on scooter-then try to sit down, then stand up and push with 1 leg-other foot on scooter.

Skill: Hula Hoop

Terminal Objective: Kenny will manipulate the hula hoop in different ways including: throwing, rolling, jumping with, running with and placing around body.

Baseline:
Individual Education Plan (cont'd)

Name: Kenny

Sequence:
1. Will throw hula hoop from one to each other.
2. Roll hula hoop from one to the other.
4. Run inside of hula hoop with eacher.
5. Run with hula hoop with teacher while one is leading-then change in sitting position, teacher and Kenny facing each other and holding hula hoop while one is sitting-other lying on back and change positions.
6. Put hula hoop around body and then take it off.

Skill: Frisbee

Terminal Objective: Kenny will be able to throw frisbee accurately to teacher from 18' distance and catch it four times.

Baseline:

Sequence:
1. Kenny and teacher sitting on floor 6' apart.
2. Slide frisbee on floor and exchange one side to another.
3. Gradually increase distance.
4. Standing position.
5. Teacher demonstrates and physically guides Kenny to target.
6. Throw frisbee to teacher from standing position and teacher throws it back.
7. Gradually increase distance to 18'.
Individual Education Plan

Name: Jerry

Skill: Hoop Games

Terminal Objective: Jerry will perform at least 2 out of 3 hoop games for at least 1 minute.

Baseline:

Sequence:
1. Jerry will throw a hoop over a cone, retrieve it and repeat the game.
2. Jerry will roll the hoop to and receive the hoop from the instructor.
3. Jerry will roll the hoop around the cone.

Skill: Bowling

Terminal Objective: Jerry will bowl down 3 pins, place them upright again and repeat the procedure using a 6" ball.

Baseline:

Sequence:
1. Jerry will knock down 3 pins with the ball and the instructor will upright the pins.
2. The instructor will bowl down 3 pins and Jerry will upright them.
3. Jerry will bowl 3 pins down, upright them and repeat the procedure.

Skill: Scooter Board

Terminal Objective: Jerry will let the instructor pull him from 1 cone to a second cone, then he will pull the instructor back to the first cone.

Baseline:

Sequence:
1. The instructor will pull Jerry from the first cone to the second cone and then back to the first.
2. The instructor will pull Jerry from the first cone to the second and Jerry will pull the instructor to the first cone.
3. Jerry will repeat #2, 3 times.

Skill: Balloon Volleyball

Terminal Objective: Jerry will volley a balloon with the instructor across a 1 foot wide board for approximately 20 seconds.

Baseline:
Individual Education Plan (cont'd)

Name Jerry

Sequence:
1. Jerry will volley the balloon with the instructor in the absence of a barrier.
2. Jerry will volley the balloon with the instructor across a rope.
3. Jerry will repeat #2 from across a 1 foot wide board.
4. Jerry will repeat #3 for approximately 20 seconds.
Table 8
Means and Standard Deviations of Participation in Low-interest Activities

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Table 9
Means and Standard Deviations of Participation in High-interest Activities

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Means and Standard Deviations of Positive Instructor Interaction Contingent on Low-interest Activities

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<td>43.86</td>
<td>5.73</td>
<td>35.02</td>
<td>7.68</td>
</tr>
<tr>
<td>Tokens</td>
<td>9.08</td>
<td>7.48</td>
<td>27.12</td>
<td>14.36</td>
<td>13.70</td>
<td>5.27</td>
</tr>
</tbody>
</table>

Table 11

Means and Standard Deviations of Positive Instructor Interaction Contingent on High-interest Activities

<table>
<thead>
<tr>
<th>Condition</th>
<th>Hal M</th>
<th>S.D.</th>
<th>Kenny M</th>
<th>S.D.</th>
<th>Jerry M</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt and Praise</td>
<td>2.14</td>
<td>.67</td>
<td>.76</td>
<td>1.07</td>
<td>.72</td>
<td>.77</td>
</tr>
<tr>
<td>Praise Anything</td>
<td>46.75</td>
<td>10.60</td>
<td>56.47</td>
<td>8.82</td>
<td>29.17</td>
<td>8.51</td>
</tr>
<tr>
<td>Tokens</td>
<td>47.00</td>
<td>4.00</td>
<td>48.66</td>
<td>10.18</td>
<td>23.28</td>
<td>4.82</td>
</tr>
</tbody>
</table>
### Table 12

**Means and Standard Deviations of Percent of Token Administration**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Hal M</th>
<th>S.D.</th>
<th>Kenny M</th>
<th>S.D.</th>
<th>Jerry M</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt and Praise</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Praise Anything</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tokens</td>
<td>1.23</td>
<td>1.18</td>
<td>4.82</td>
<td>2.53</td>
<td>2.38</td>
<td>1.73</td>
</tr>
</tbody>
</table>

### Table 13

**Means and Standard Deviations of Total Subject Interaction**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Hal M</th>
<th>S.D.</th>
<th>Kenny M</th>
<th>S.D.</th>
<th>Jerry M</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt and Praise</td>
<td>63.23</td>
<td>6.53</td>
<td>64.56</td>
<td>17.24</td>
<td>59.98</td>
<td>5.89</td>
</tr>
<tr>
<td>Praise Anything</td>
<td>94.28</td>
<td>4.31</td>
<td>97.68</td>
<td>3.69</td>
<td>68.78</td>
<td>16.94</td>
</tr>
<tr>
<td>Tokens</td>
<td>93.13</td>
<td>4.47</td>
<td>98.50</td>
<td>3.35</td>
<td>66.98</td>
<td>27.31</td>
</tr>
</tbody>
</table>
### Table 14

Means and Standard Deviations for Subject Vocal Interaction

<table>
<thead>
<tr>
<th>Condition</th>
<th>Hal</th>
<th>Kenny</th>
<th>Jerry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  S.D.</td>
<td>M  S.D.</td>
<td>M  S.D.</td>
</tr>
<tr>
<td>Prompt and Praise</td>
<td>1.48 2.00</td>
<td>23.06 21.41</td>
<td>24.58 8.30</td>
</tr>
<tr>
<td>Praise</td>
<td>7.77 4.15</td>
<td>30.83 16.40</td>
<td>27.15 15.45</td>
</tr>
<tr>
<td>Tokens</td>
<td>11.05 6.56</td>
<td>23.50 14.40</td>
<td>25.15 14.36</td>
</tr>
</tbody>
</table>

### Table 15

Means and Standard Deviations for Subject Non-Vocal Interaction

<table>
<thead>
<tr>
<th>Condition</th>
<th>Hal</th>
<th>Kenny</th>
<th>Jerry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  S.D.</td>
<td>M  S.D.</td>
<td>M  S.D.</td>
</tr>
<tr>
<td>Prompt and Praise</td>
<td>61.84 7.39</td>
<td>4.15 6.56</td>
<td>3.54 10.41</td>
</tr>
<tr>
<td>Praise Anything</td>
<td>86.52 6.71</td>
<td>66.85 13.08</td>
<td>41.63 14.08</td>
</tr>
<tr>
<td>Tokens</td>
<td>82.08 3.49</td>
<td>75.00 11.43</td>
<td>41.83 13.66</td>
</tr>
</tbody>
</table>