THE DIFFERENTIAL EFFECTIVENESS OF TWO METHODS OF TRAINING INSTITUTIONAL ATTENDANTS IN THE TECHNIQUE OF BEHAVIOR MODIFICATION

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Hugh J. McBride

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Charles E. Henley
Major professor

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ABSTRACT

THE DIFFERENTIAL EFFECTIVENESS OF TWO METHODS OF TRAINING INSTITUTIONAL ATTENDANTS IN THE TECHNIQUE OF BEHAVIOR MODIFICATION

By

Hugh John McBride

It is of value for administrators responsible for training institutional attendants in the technique of behavior modification to know which training method yields the greatest amount of competence.

Various methods for training attendants and evaluating that training have been developed. Among these are simulation experiences such as role playing or video tape presentations of critical ward situations. Coupled with these, paper and pencil tests have been used for evaluation. Most frequently used is the traditional method: lectures, demonstrations, and off the ward practice sessions.

This study utilized a method involving the training of the attendant on the ward during his regular assignment with children and evaluation of the outcomes of training in the same setting. The trainers employed behavior

modification to shape the attendants' behavior in learning the skills.

Involved was a comparison of the on-the-ward training (Treatment I) and the traditional lecture method (Treatment II).

Forty institutional attendants were assigned by a quasi-random procedure to the two treatment groups, making two groups of twenty. Each treatment used language development as a training vehicle.

Evaluation on a pre-test, post-test basis was done by recording the incidence of particular behaviors related to behavior modification during representative periods of the work day while the attendant worked on the ward. Analysis was done by multivariate analysis of variance on gain scores.

It was the general hypothesis that pre-test-post-test gain scores for attendants trained in the on-the-ward method (Treatment I) would be equal to or greater than the gains made by those trained in the traditional method (Treatment II). This hypothesis was supported since Treatment I did no worse than Treatment II. No significant main effect for treatment was found although the means were generally higher for both groups with the trend in favor of Treatment I. The failure of either group to show much improvement weakens any conclusions concerning the relative merits of either method.

It was concluded that the rating done by the experimenter was sufficiently sensitive in picking up behavior since rater reliability was found to be very high. Experimenter bias was ruled out since there was little significant improvement in either group. The rater's becoming more stringent in his success criteria was ruled out since it can be assumed that the experimenter, being eager to secure positive results would be more likely to become more lenient in his judgments.

Since other researchers report that attendants are capable of learning these techniques it is of interest that the results of this study were not more favorable. It is suggested that these results are related to the fact that this study did not attempt to measure learning alone but also competence in and tendency to use the techniques during the attendants' daily interactions with children on the ward.

The following are hypothesized as the factors acting in restraint of the attendants' use of these techniques:

1. The attendants' traditional role as a custodian rather than as a habilitative agent is reinforced by the administration through the emphasis it places on custodial-housekeeping activities as opposed to learning activity.

2. The need of the institutional staff to maintain control over their changes promotes a continuance of the institutionalization of both residents and staff.

3. The role set of the attendants is one which excludes teaching activities: traditionally attendants are not seen as teachers or paid teachers' salaries.

4. The attendant has a limited opportunity to display his skills because of conflicting demands on his time.

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By

Hugh John McBride

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DEDICATION

To those who have the courage
to change the things
they can

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TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION AND REVIEW OF RELATED RESEARCH

This study compares the effectiveness of two different instructional programs for the training in behavior modification techniques of attendants in a state residential institution for mentally retarded children.

The need for such training has increased as a result of two relatively recent developments: a change in the role of the residential facility and accumulating evidence pointing to the efficacy of behavior modification techniques in the training of moderately and severely retarded children. There has been over the past two decades a general shift in the emphasis of treatment programs in residential institutions for the mentally retarded. For many years institutions were built some distance from population centers and their emphasis was on long-term custodial care based on sound medical practice (Tarjan, 1966). This medical model was one in which the role perception of the retarded individual was that of a sick person (Wolfensberger, 1969). Characteristic of this

model is an administrative hierarchy of physicians and nurses. In such a setting residential care is thought of as nursing care. Programming is regarded in terms of therapy or treatment.

Currently in favor is a conception of the role of the institution which has been described by Wolfensberger (1969) as the "developmental model." It is one in which the retarded individual is viewed as a developing person. Even the most severely retarded are seen as capable of growth, development, and learning. Institutions committed to this model are characterized by "facilitating interaction between the retarded person and his environment, maximum resident-attendant interaction, and the creation of an atmosphere which is similar to that of the non-handicapped community." This new direction has come about as a normal function of social change, and greatly encouraged through the action of parent groups which are demanding that habilitative services of treatment and training, replace custodial care (Ross, 1966; Tarjan, 1966).

The burden of responsibility for training falls most heavily on those staff members with whom the retarded individuals spend the major portion of their time: namely, the ward attendants. Thus, if the new goals of these changing institutions are to be realized it is imperative that these ward attendants add to their custodial skills

some competencies in training. Historically, despite the fact that attendants have more contact with the residents than do other institution personnel, they typically have had no relevant specialized training as have nurses, teachers, and social workers (Butterfield, 1969). Most attendants come to their positions with little or no training or experience that would prepare them for this occupation (Parker, 1951).

Behavior Modification

Training methods usually applied with the mildly retarded child, are ineffective with severely retarded children as they lack the prerequisite language skills and the relatively complex behavior repertoire that is required by these more conventional techniques (Heber, 1961). Moderately and severely retarded children have been successfully trained using behavior modification principles. Currently, research in behavior modification is one of the major areas of concern within mental retardation (Gardner & Selinger, 1970).

The literature concerned with investigations of the use of operant conditioning techniques with institutionalized retardate is replete with evidence of success. Most of the studies have dealt with the modification of self-help and social skills in institutionalized residents. Language acquisition has been accelerated while other behaviors such as head banging have been

decreased through this method. In his summary of research on the employment of behavior modification techniques with institutionalized mentally retarded individuals, Ashbaugh (1971) found that of the 57 studies reviewed, 47 showed evidence of success.

Training of Attendants in Behavior Modification

There have been several studies dealing specifically with the training of attendants in the use of behavior modification techniques. Ashbaugh (1971) compared the effectiveness of training in behavior modification with training in the content of a traditional attendant training program. Regarding the latter, Ashbaugh states, "The specific areas covered . . . included usual attendant duties that involve attendant-resident interaction." No mention is made of training the control group in behavior modification techniques.

Effectiveness of the training was measured by the subjects' spontaneous use of behavior modification principles in their suggestions for the handling of six instances of patient behavior displayed in two-minute TV-tape presentations. It is hardly surprising that Ashbaugh found that those attendants trained in the use of behavior modification principles verbalized them more in their suggestions than did those attendants not exposed to behavior modification. It should be emphasized also

that the criterion variable was not the behavior that attendants actually demonstrated in handling patients, but their verbal response to the question, "How would you change this resident's behavior?" Thus, the effectiveness of training was measured by what the attendant said should be done in a hypothetical situation. Certainly measurements can be more easily obtained in a structured situation such as that used by Ashbaugh. However, data obtained through simulation reflect only what an attendant might do in the comfort of simulation and may or may not reflect his behavior in a real life ward situation. Gardner and Giampa (1971), for example, indicate that this method is susceptible to faking. Additionally only limited behaviors are being observed and therefore comprehensiveness is diminished. Further, since the attendant knows that he is being observed, and is probably aware of the dimensions of the observations, his behavior is not likely to be representative.

Mattos (1966), like Ashbaugh, compared attendants trained in behavior modification with those given a traditional training program. However, the dependent variable in his study was the degree of "training interaction" as opposed to the "management-interaction" between attendant and institution resident. Using time sampling procedures he observed attendant-resident "interaction units" and recorded (1) whether the attendant initiated

the interaction or merely responded, (2) whether or not the interaction was aversive, and (3) whether or not it was aimed at training. He counted the amount of interaction and found no significant difference between the groups in the total amount of interaction, but, as predicted, "training attendants in the use of behavior modification techniques increased the amount of attendant time devoted to resident training." Although Mattos does focus his attention on the attendant as he works on the ward, the criterion of the degree of "training, interaction" falls short of measuring the important dimension of application of the learned techniques. It is conceivable that training in transaction analysis or sensitivity training could have brought about the same increase in time devoted to resident training.

Gardner (1970) compared two methods of training attendants to use behavior modification principles: a role-playing training procedure and a traditional lecture type of presentation.

Attendants were randomly assigned to one of two treatment groups. Those in role playing were exposed to sessions in which operant conditioning techniques were demonstrated by a behavior modification supervisor. Then, attendants working in pairs, each alternately assuming the role of patient or attendant, practiced the previously demonstrated techniques. The lecture group

attended sessions covering definitions and causes of mental retardation, shaping procedures and reinforcement.

Measurement was done with a paper and pencil Behavior Modification Test and the Training Proficiency Scale, an observational instrument utilized during a role-playing session of a standard and a novel situation.

Significant differences were found between the treatment groups indicating that role playing contributed more to training proficiency. Gains in knowledge of behavior modification were more significant in the lecture group.

It could be expected that the group trained by the lecture method would do better on a paper and pencil test in the same fashion as those trained by Ashbaugh were better able to verbalize these techniques during simulation.

It should be noted that Gardner, like Ashbaugh and Mattos, did not attempt to demonstrate that the attendants applied what they had learned in real life: that is, in interaction with residents on the ward. In fact, role playing was used both to train attendants and to measure the effects of training. Gardner did attempt, however, to demonstrate that generalization had occurred by changing the types of problems that were presented in the role-playing sessions. Thus this study is open to criticism because of Gardner's use of simulation through

role playing as the dependent variable. As noted previously, Gardner himself has criticized simulation for its vulnerability to faking, its "lack of representativeness" and "lack of comprehensiveness."

The Design of the Present Study

The present study was designed with two primary objectives in mind: (1) to determine whether a method of training attendants on the ward is feasible and effective, and (2) to evaluate the effectiveness of training in terms of the attendant's later ward behavior. Regarding the first objective, training on the ward has the following obvious practical advantages:

1. An attendant trained entirely in the setting in which he works is less dependent on transfer of training for success in his subsequent performance.
2. From the point of view of administrative arrangements and service responsibilities there are obvious practical advantages to training on the ward: the attendant need not be replaced while he is attending a class, with the result that staff levels can be maintained and services to the children held at the customary level.

The method of on-the-ward training selected was that developed by Burke and Rowland (1971).

The principle of primary importance in their method is the reinforcement of the attendants during training for their appropriate utilization of behavior modification techniques. A method using the reinforcement of attendants was first employed by Bricker, Morgan, and Grabowski (1968). In their study they used commercial trading stamps as general reinforcers to motivate nine institutional attendants working with low-functioning children. The principle dependent variable was the amount of interaction between attendants and children. Other dependent variables were increased use of tangible reinforcers, reduction in punishment, and fading of motor prompts.

The Burke and Rowland (1971) method by contrast uses positive reinforcement in the form of verbal rewards for the acquisition of skills involved in behavior modification techniques. It also requires that the teaching-learning and reinforcement occur on the ward while the attendant is working with the children in his charge.

This training method was compared with what was considered to be a well-designed program having comparable content but utilizing traditional classroom sessions alternating with practical laboratory, but off-the-ward, experiences. In order to maximize the relevance of the findings of this study for decision making regarding in-service training programs the amount of staff time

devoted to the two training procedures was made equal. As a consequence, since each attendant was worked with individually, the amount of time the attendant spent in training by the on-the-ward training group (Treatment I) was considerably less; approximately one-eighth that of the off-the-ward group (Treatment II).

The difference in the two methods can be highlighted by the following comparisons:

Treatment I	Treatment II
1. Trained on-the-ward	1. Trained off-the-ward
2. Trained with children in the Subject's charge	2. Laboratory experience with "new" children
3. Each attendant received approximately 5.0 hours of training	3. Each attendant received approximately 40 hours of training
4. Approximately 120 hours of staff time	4. Approximately 120 hours of staff time

In regard to the second objective, the effectiveness of the training programs was evaluated by observations of the behavior of attendants in their interactions with children during the performance of their normal duties on the ward. The problems inherent in other methodologies previously described are circumvented by this method of evaluation.

In summary, the major issues to which this study is addressed, therefore, are whether an institution can effectively train attendants in behavior modification

techniques without the disruptions created by assembling attendants for class meetings, and whether attendants will apply their learning during the routines of later on-the-job performance.

CHAPTER II

METHODOLOGY

This investigation was conducted in the Growth and Development Cottage at the Coldwater State Home and Training School, Coldwater, Michigan. The resident population of this cottage consisted of approximately 178 severely and profoundly retarded, ambulatory boys and girls with minimal mobility problems. The group I.Q. range was from 0 to 30 and the age range from 9 to 21 years.

The attendants who were the subjects in this study spent approximately eight hours a day with these children, aiding them in such activities as toileting, eating, dressing, free play, as well as structured and unstructured employments.

Selection of Attendants for the Study

Initially it was planned to randomly select attendants from all cottages of the institution. However, as a result of administrative difficulties, as well as logistical considerations in pre-testing, training, and post-testing of attendants located all over a large

institution, a decision was made to utilize the Growth and Development Cottage attendants who are representative of those found throughout the institution.

It was determined that the institution's hiring practices were standard for all units, therefore all attendants met the same basic criteria for employment. Apportionment of attendants to cottages and wards within them is based on availability of open positions. Unionization precludes assignment to particular wards as a means of disciplinary action. The employee turnover rate in this cottage is comparable to that of the institution at large.

The children, previously described and served by these attendants, approximate (with respect to age, degree of mental handicap, emotional overlay, and ambulation) children found in similar type cottages at other institutions.

Thus, it was felt that this attendant sample was representative of attendants throughout the institution and that the children served by them typify the population of severely and profoundly retarded children found in similar institutions. It is, therefore, assumed that generalizations drawn from the results of this study are applicable to personnel in similar state institutions.

Assignment of Attendants to Treatment Groups

Placement of attendants in treatment groups was done by assignment of wards to treatments rather than by the random assignment of individual attendants. This was necessary as it was felt that, if attendants work in close proximity during the same hours or if they work together for a short time on overlapping shifts, it can be assumed that they will communicate with each other or observe each other in their handling of children. For this reason, it was decided that all of the attendants on a ward, in both sections, and on day or afternoon shift, would be assigned to the same treatment. Thus, the only randomization possible to avoid this contamination was the assignment of wards to treatment groups. One side of the building (two wards) serves younger children, the other side, older. Thus in order to secure comparable ages in the two treatment groups it was necessary to pair the two younger wards and the two older wards prior to assignment to a treatment group.

One ward on side one of the building was assigned to Treatment I through the toss of a coin. The other ward on that side was then automatically assigned to Treatment II in order to provide a younger ward for each treatment. The same random procedure was followed in assigning the wards on the other side of the building to treatment groups. The coin-tossing was done by persons other than

the experimenter, who was kept in ignorance of the treatment groups to which the wards were assigned. This was necessary since the experimenter carried out the subsequent pre-test and post-test ratings of attendant behavior.

Characteristics of the Attendants

The attendant population selected for this study consisted of 44 full-time attendants assigned to the day (7:00 a.m. to 3:00 p.m.) and afternoon (3:00 p.m. to 11:00 p.m.) work shifts. Because of the retirement of one employee and 2 cases of illness, only 41 subjects were available during the post-test and one of these was randomly dropped so as to equalize the size of the treatment groups for purposes of data analysis. Of the 40 remaining, 22 were female and 18 male. The subjects' mean age was 36.7 years and the average length of employment was 4.4 years. The average educational level of the 40 subjects was 11.4 years. Table 1 summarizes the average age, length of institution employment, and years of education by treatment groups.

The treatment groups were compared with respect to their age, education, and length of service at the institution, using a *t* test for each comparison. None of the *t* values obtained were statistically significant.

TABLE 1

Attendants' Mean Age, Education, and Length of Employment by Treatment Group

Variables	Treatment I n=20	Treatment II n=20	t
Age	$\bar{x}$ = 39.8	$\bar{x}$ = 33.7	.39
	SD = 14.3	SD = 10.5	
Education	$\bar{x}$ = 11.7	$\bar{x}$ = 12.3	.13
	SD = .93	SD = 1.26	
Length of Employment	$\bar{x}$ = 5.44	$\bar{x}$ = 3.27	.23
	SD = 4.7	SD = 3.7	

Significant at the .05 level.

Training Procedures in Treatment I (On-the-Ward)

The basic assumption underlying this method of training is that effective training can best be accomplished when attendants are involved with a child in their own ward milieu. This treatment, therefore, avoided the use of standardized or simulated experiences as adjuncts to training.

The interaction model (Figure 1) depicts the relationship between the trainer (specialist), the attendant, and the resident.

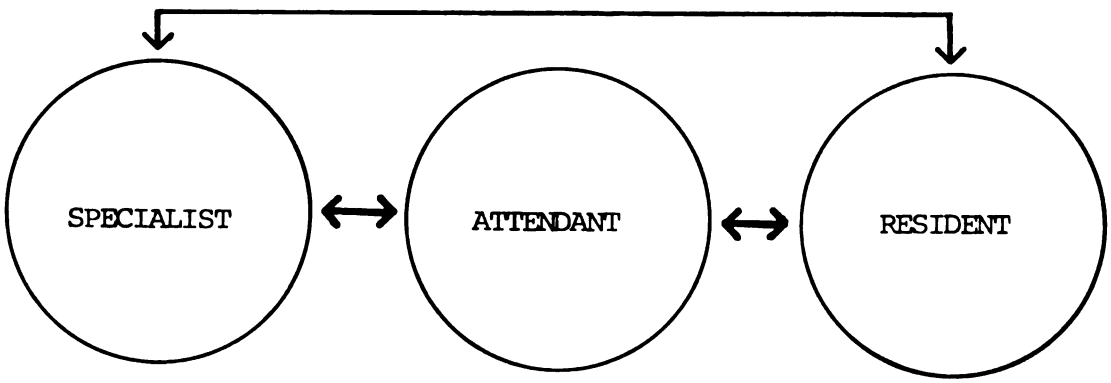

Figure 1

Interaction Model

The area of behavior selected for the teaching of behavior modification techniques was that of language. Language was chosen as it is employed in all areas of life and language training could be accomplished in any setting and without the need for materials other than those readily available on the wards.

The training procedure included involvement of the attendant in an informal assessment of the language behavior of residents in his care and specific instruction in language development training.

Attendants on the day shift were assigned to the same group of 9 or 10 residents while afternoon shift attendants were responsible collectively for all residents on their respective wards. Therefore, the initial informal language assessment of each resident was conducted routinely as a part of the training procedure with

day shift attendants while afternoon shift attendants reviewed the results of the assessments, and added information when possible, prior to the instructional phase of the training.

In general then, within the ward setting, attendants: participated in an informal assessment of the language behavior of residents in their care; were taught, through demonstration by a trainer, techniques to be used in language development training of residents; practiced with residents the techniques demonstrated by the trainer; and had appropriate techniques, as they occurred, subsequently reinforced.

Ten training sessions of 30 minutes duration were conducted with each attendant. Initially, the two trainers worked as a team, alternating responsibilities to insure standardization of assessment, recording, and training procedures. After each attendant had at least one session with the trainers as a team, it was determined that the trainers had reached agreement on all procedures thus enabling them to work independently while still providing equivalent training opportunities to the attendants.

Each attendant on the evening shift, as a result of lower staff to resident ratios, usually was trained with a small group rather than with a single child. The trainers felt that the presence of a small group of children did not interfere with the training.

The trainers walked on the ward, approached an attendant and a child or group of children and explained to the attendant that they were going to provide personalized in-service training consisting of 10 sessions of 30 minutes duration.

The trainer then set a timer for 30 minutes and the assessment began with the trainer asking the attendant, "Does _____ respond to his name?" Regardless of the attendant's answer, a quick informal check was made by having the attendant call the child by name. The result was recorded on the Language Scale Assessment Form (see Appendix D). The assessment continued until the trainer was satisfied that the level of language development at which the child could not perform had been reached. In a rapidly conducted consultation with the attendant, a decision was made concerning the language level at which training would begin. This assessment procedure was usually accomplished in about 15 minutes, allowing the remaining 15 minutes of this first session to be devoted to training of the attendant.

If, as in the case of the afternoon shift attendants, an assessment of the child or children had already been accomplished, the trainer reviewed the results of the previously conducted assessment and moved directly into the instruction phase of the training.

Instruction began with the trainer demonstrating a technique for moving a child from the previously determined level of language functioning. Care was taken to use articles usually found on the ward for both language assessment and training. Included, for example, were the child's own clothing, washcloth, a food tray used at mealtime, soap, and the same play articles with which the child was familiar, thus minimizing the need for transfer of learning during training. During the demonstration the trainer reinforced the child's behavior with one of the categories of positive reinforcement included on the Behavior Analysis Rating Form (BARF). Inherent in the demonstration was a description of shaping procedures and their implementation. Poor training strategies such as delayed reinforcement, reinforcement for non-performance or incompatible behavior were described, as well as their contingencies. Where appropriate to the situation, the technique of ignoring inappropriate behavior, and the contingency of its reinforcement were also described and demonstrated. The necessity for finding the right reinforcer for the individual child was demonstrated together with the requirement for a change in reinforcer at the point of satiation. The use of punitive measures to bring about a cessation of behavior was discouraged.

Subsequently the attendant was given an opportunity to practice the technique just demonstrated. As he

demonstrated the appropriate behavior modification technique in teaching language to a resident, the trainer reinforced him for the appropriateness of his response.

For the most part, attendants worked with different children in each of their training sessions so as to provide the attendant with a more representative sample of behaviors and responses as well as to demonstrate the applicability of his newly-learned techniques with a variety of children. The settings for training were also changed for the same reason, thus allowing for training in language using behavior modification in the dining area, the ward room, and the bathroom. Even in those instances where all situations were not covered, it was felt that the attendant could easily generalize a language training technique learned during free activity to a dining room situation.

Training Procedures in Treatment II (Off-the-Ward)

Treatment II was more conventional in its structure than Treatment I in that it consisted of formal class sessions, with lecture and discussion, as well as practicum experiences. Attendants on wards assigned to this treatment were relieved of regular duties for a one-week period. The attendants each morning attended class, and each afternoon worked on the ward, applying the content material discussed in the morning session to

practical situations with children. The morning sessions included lectures dealing with behavior modification principles, audio-visual presentations, and group discussions, including discussion of the previous day's problems in the practicum experience.

The content for this program included:

1. Observation and Analysis of Behavior (1 hour)
   a) specifying behavior
   b) counting behavior
   c) utilizing data

2. Management of Behavior Problems (6 hours)
   a) behavior modification techniques
   b) restructuring the environment
   c) teaching appropriate behavior modeling
   d) watching for blowups or other inappropriate behavior

3. Techniques for Developing Self-Help Skills (6 hours)
   a) Areas:
      (1) feeding
      (2) dressing
      (3) toileting training
   b) Methods:
      (1) appropriate sequencing of needed sub-skills
      (2) small-step approach

(3) proper techniques (repetition, scheduling)

(4) utilization of behavior modification

4. Language Development

a) What is language? Why is it important?

b) How does it develop?

c) Why does it not appear to develop in severely retarded children?

d) Fostering language development

The first four afternoons of the week the attendants worked with small groups of children in rooms not regularly used for ward activity. On Friday afternoon they returned to their regular wards to apply the principles learned during the week.

It should be noted that the behavior modification portion of the treatment was designed and carried out by regular employees of the institution who have had extensive background and experience in the use of the techniques. The language portion was instructed by an experienced language therapist.

The following training procedures and practices were directly extracted from the training materials used in this treatment to provide the reader with a better grasp of the treatment methodology.

Throughout the week of in-service training for each group of attendants, a series of problems were devised so as to give experience with behavioral observations, data collecting, graphing, and a viable exposure to basic concepts of behavior modification under structured, supervised conditions.

Below are the problems which were given to each attendant:

Monday:

Problem I: Observe 1 child for 5 minutes. Choose a behavior. Observe and measure its frequency, and duration for 5 minutes. Now do the same for 3 other children. The behavior should be overt, observable, and measurable.

Problem II: Using the same children and behavior in Problem I, hold two or more observation periods on each child, lasting 5 minutes, with the 5-minute break in between each observation period. Now, determine a base rate for the observed behavior.

Problem III: By use of positive primary and secondary reinforcements, modify the behavior of a resident observed in Problems I and II. The treatment program should last 5 minutes. Now, do the same for the 2 other residents observed in Problems I and II.

Problem IV: At the end of the day, using the graphing format described in class, and the data collecting during the observation and treatment periods, construct a graph for each child observed to display its base rate behavior and the effects of the treatment program.

Tuesday:

Problem I: Using a reversal design, do the following:

1. Observe a resident for 1 10-minute observation period and report the frequency or duration of his behavior. Rest for 5 minutes.

2. Modify the frequency or the duration of the behavior by the pairing of primary and secondary reinforcements during a 10-minute treatment period. Rest for 5 minutes.

3. Observe and reward the child's behavior again for 10 minutes, but do not reinforce the child for his behavior by either primary or secondary reinforcers. This is the reversal phase.

4. Record the data for all 3 sessions and graph them at the end of the day, using the format described in class.

Problem II: Using a different resident, repeat Problem I as outlined above, but add a post-treatment phase after the reversal phase. The post-treatment phase should last 10 minutes and should be carried out in a manner identical to the treatment phase. Record the data for all 4 sessions and graph them at the end of the day, using the method demonstrated in class.

Wednesday:

Problem I: Using the Language Observation Form (see Appendix C) given by the Speech Therapist, observe a child and rate his development in each area.

Problem II: Using the basic behavior modification techniques described in class, as well as primary and secondary reinforcers, develop and carry out a miniature language training problem to be used with a specific child. Include 2 observation periods, a treatment period, a reversal period and a post-treatment period with 10 trials for each child.

Problem III: Using a different child, repeat Problem II.

Problem IV: Graph your results using the class format.

Thursday:

Problem I: This problem is designed to illustrate the concept of straining the ratio.

1. Pick a child; observe and record a specific behavior for 10 minutes.

2. Determine a reinforcement schedule which you feel will effectively modify the observed behavior; e.g. reinforcement after 3 appropriate responses or at the end of every 30 seconds interval, providing the child is behaving appropriately. Take a 5 minute break.

3. Initiate a 10 minute treatment schedule utilizing your reinforcement schedule.

4. Take a 5 minute break.

5. By at least 5-fold, increase the number of required appropriate responses or elapsed time interval before reinforcement is given. Using this modified reinforcement schedule, initiate another 10 minute treatment phase.

6. Take another 5 minute break.

7. Do a reversal, removing all reinforcers, both primary and secondary.

Problem II: Using another child and a different behavior, repeat Problem I.

Problem III: Graph your data from Problem I and Problem II, according to the class format.

Throughout the week, questions and issues raised by the lectures and practicum were clarified by:

1. Four quizzes and 1 final exam, which were not graded, but were carefully discussed in class. In this manner, each attendant got feedback as to how well he understood certain basic concepts from the accuracy of his answers and any questions he had were answered by the discussion.

2. A discussion period during the first hour of each morning class, with the exception of Monday morning. At this time, the instructor explained why the children acted as they did during the practicum and gave feedbacks as to what the attendant did right or wrong during their little experiments. It also gave the instructor a chance to bring the previous day's class lecture down from a theoretical level to the ward level.

Additionally, all graphing exercises at the end of each daily practicum were carefully supervised so that data would be displayed in a manner consistent with the professional literature. This approach was used so that they would learn to display their results in an effective manner to interested professionals or para-professionals and also be able to better interpret professional literature dealing with behavior modification.

Last, each afternoon before the supervised practium began, each problem for the day was discussed so as to clearly explain the rational and procedure.

The Behavior Analysis Rating Form

Since this study dealt with the measurement of the utilization of behavior modification techniques by

institutional attendants in their day-to-day involvement with their mentally retarded charges, an observational instrument specific to this end needed to be designed.

Ashbaugh (1971) utilized an observation checklist for gathering data. This was not suitable in this study since the items of interest to him were not entirely compatible with the specific skills being taught in the two training methods in this evaluation. Ashbaugh observed only for the presence or absence of a behavior. The instrument developed for this study has provision for the recording of the presence of behaviors, their quality, as well as frequency.

A scale described by Gardner et al. (1970), and developed to assess the proficiency of individuals using behavior modification techniques was also considered. Although the authors cite it as having validity and reliability, at least in simulated situations (Gardner), its desirability for use in this study was hampered by its vagueness and by the sophisticated level of reinforcement skill being striven for. Again, as was the case with Ashbaugh, consideration was not given to frequency of behavior or its inappropriateness, these being factors which this study took into account on its measures.

A Behavior Analysis Rating Form (see Appendix B) was, therefore, developed to record behaviors that reflected on the success of the attendant in applying

behavior modification principles. The items to be observed were derived primarily from an examination of both training programs, as well as through field-testing of a prototype instrument at day-care centers serving children similar to those in this study. During these field-tests the experimenter recorded on audio-tape, descriptions of the precise behaviors initiated by the day-care workers as they worked in the classroom milieu with children during an observation period. The tape was subsequently played back and the experimenter attempted to rate the worker on the prototype instrument. During this playback it was observed that its method made for a loss of information since verbal recording could not be made as fast as action occurred. Room noise from the active classroom also rendered some of the tape unintelligible. However, the recording revealed two variables not previously covered, these being reinforcement for incompatible behavior, and use of a reinforcer which was too satiating.

The definitions of the items, their scope, and limitations were conjointly determined by the experimenter and a professional staff member of the institution who subsequently served as the second rater for reliability and consistency checks during the course of the evaluation.

Description of Rating Form Items

The Behavior Analysis Rating Form is divided into quadrants. The upper left quadrant contains appropriate

means of reinforcing behavior. The lower left quadrant contains nine appropriate behavior modification techniques. The lower right-hand quadrant consists of nine inappropriate strategies in the application of behavior modification techniques. The bottom segment comprises three lines. The first is a time line of 0 to 10 minutes. Its purpose was to enable the experimenter to record, using a code, what it was that the attendant was doing during the 10 minutes observation period.

This scale provided background information which, it was felt, could be helpful in explaining the presence or absence of the training behaviors recorded on the remainder of the form.

The line marked "Intent" provided for a rating of the strength of the attendants' intent to engage in teaching behavior with children during the observation period.

The line marked "Beh. Mod." was used to rate the attendants' overall level of competence in the application of behavior modification principles.

Following are the definitions of the behaviors categorized for use in the Behavior Analysis Rating Form:

Failure to Use Opportunity to Reinforce

1. Unused Opportunity: Failure to reinforce an appropriate behavior during an interaction sequence. This latter being a time when there is interaction between the attendant and residents and precludes the counting of unreinforced behaviors occurring outside the focus of the interaction.

Appropriate Reinforcement Administered

2. Appropriate Verbal: Enthusiastic verbal response to an appropriate behavior. Includes such responses as: "good girl," "good boy," "thank you," "very good," etc. It does not include the use of social amenities such as: "hello," "good morning," etc.

3. Appropriate Gestural: Waving or nodding or otherwise signaling approval through some physical manifestation other than touching.

4. Appropriate Physical: Enthusiastic response employing physical contact with the child. Includes such responses as patting the child's head or hand or hugging the child.

5. Appropriate Tangible: Presentation of food, a toy, a token or anything material to a child as a reward for a particular behavior.

6. Appropriate Physical-Verbal: Response to a child which simultaneously employs the use of physical reward with a verbal response: for example, patting the child's shoulder while saying "that's a good girl."

7. Appropriate Verbal-Tangible: Response to a child which simultaneously employs the use of a verbal response with a tangible reward; for example, saying "good boy" while giving the child a raisin.

8. Appropriate Physical-Tangible: Response to a child which simultaneously employs the use of a physical response with a tangible reward; for example, patting the child's shoulder while handing him a raisin or an M&M.

Inappropriate Reinforcement Administered

9. Reinforcement for Non-Performance: Rewarding the child as described previously but at those times when behavioral criteria are not met; for example, giving the child an M&M for making his bed when, in fact, it is left unmade.

10. Reinforcement Too Delayed: Reinforcing a behavior after another behavior has intervened leads to confusion as the child doesn't know which behavior he's being reinforced for performing. Strength of the reinforcer is reduced as the time between reinforcement and the behavior occurrence increases.

11. Reinforcement for Incompatible Behavior: Reinforcement of a response which is opposite to that which is to be elicited. For example, in training a child to stay seated, reinforcement for standing would be reinforcing an incompatible behavior.

Acquired Skills

12. Ignores Behavior: Non-reinforcement either positively or negatively of behaviors outside the target behavior. For example, an attendant might ignore a child flapping his hand in front of his face during toileting.

13. Conscious Change of Reinforcer: Realizing that a reinforcer such as cereal is not eliciting the desired behavior, the attendant switches to something else such as raisins, M&M, etc.

14. Time Out, Appropriate: Finding that a child at a certain point in time cannot cope with a particular task and is being disruptive, the attendant removes the child from the task until he is back in control. Also refers to the interruption of the task, such as removing a child's food plate when he becomes disruptive during a mealtime.

15. Time In, Appropriate: Restores child to task before the end of the period so that he understands that the removal was not punishment but really a means of his regaining control of himself. Credit would be given if the attendant deliberately let a child remain in a time out state because his disruptiveness persisted.

16. Fading: Gradual reduction in the physical assistance given by the attendant. For example, initially it may be necessary to put both arms on a child's shoulders to get him to sit down, subsequently one arm, then just a touch.

17. Prompts: Physical assistance necessary to aid a child in learning a task. For example, enclosing the child's hand with that of the attendants while holding a spoon, and gradually lifting hand and spoon to the mouth.

18. Modeling: Physical gesturing to show a child how to perform a task and requiring that he mirror that gesture.

19. Successive Approximations: Reinforcement of the child for the performance of one step in a complex task which approximates the behavior itself.

20. Cues: Use of a verbal prompt; for example, if it is desired that the child respond with "thank you," we might say "thank" hoping to elicit a completed "thank you."

Counter-Productive Behaviors

21. Verbal, Punitive Derogatory: Harsh, caustic or shouted verbal responses to the children.

22. Physical Punitive: Slapping, pulling, hitting, or any physical contact seen as aversive in the general population.

23. Inappropriate Target: Establishing a target behavior which is not consistent with established or normally accepted goals for children of a similar functioning level.

24. Non-Recognition of an Inefficient Reinforcer: Attendant fails to realize that the child is not being reinforced by the response given for a behavior, and therefore fails to change the reinforcer.

25. Reinforcer too Satiating: Attendant gives too many of the same reinforcers in a given period, or gives too much of the reinforcer at one time (for example; a bag of raisins instead of one raisin).

26. Non-Recognition of an Opportunity to Change Behavior: The attendant does something for a child which the child is capable of doing himself. Also includes doing work which appropriately could be done by the cottage-working boys or girls (higher functioning residents who work in cottages as an aid to the attendants).

27. Non-Recognition of the Difficulty of a Task: Requiring a child to do something for which he doesn't have the requisite skills. Would include: requiring a child to pull up his pants when he doesn't understand the concept of up, pull, or possibly even pants.

28. Not Breaking Task Down: In a shaping situation, attendant doesn't break task down into its component parts. If task has been broken down, the element or components are not sufficiently simple for the child to be successful.

29. Too Many Expectations per Unit of Behavior: Requiring that a child perform several unrelated non-sequential tasks during a training sequence in which the child does not have mastery of any of the units and is still in the shaping stage.

Following are the definitions for the numerical ratings found on the Behavior Modification Rating Scale (Global Rating) and the Intent to Teach Rating Scale.

Behavior Modification Rating Scale (Global Rating)

The scale was intended to rate the skill or accuracy with which the attendant applied behavior modification. It was rated on a six-point scale from 0-5 with 5 representing excellent use of behavior modification. The steps on the scale are defined below:

0 (Absent) No visible evidence of any behavior modification skills and/or evidence of inappropriate techniques such as Verbal Punitive Derogatory or any other counterproductive behavior found in that quadrant of the BARF.

1 (Very Poor) Very meager attempts at the use of behavior modification evidenced by the use of few reinforcements during an observation session as well as the

possible use of inappropriate techniques such as are found in that quadrant of the BARF.

2 (Marginal) Some evidence of acquisition of behavior modification skills as shown by the use of reinforcements, but negated by some instances of inappropriate administration coupled with some incidence of inappropriate techniques.

3 (Fair) Evidence of the acquisition of behavior modification skills shown in the use of a number of reinforcements with few being inappropriately administered as well as a low incidence of inappropriate techniques.

4 (Good) Evidence of acquisition of behavior modification skills shown in the use of a number of reinforcements with some variety and with few instances of inappropriate administration together with the use of appropriate techniques with few inappropriate techniques being in evidence.

5 (Excellent) Evidence of the acquisition of behavior modification skills by the use of numerous reinforcers with considerable variety and no instances of inappropriate administration coupled with the use of several appropriate techniques with no inappropriate techniques being in evidence.

Intent to Teach Rating Scale

This scale was intended to rate the strength of the attendants' intent to engage in teaching behavior with the children during an observation period. It was rated on a six-point scale from 0 to 5 with 5 representing excellent productive involvement in teaching. The steps of the scale are defined below:

0 (Absent)	No visible evidence of any intention to engage in teaching; for example, interacting with a child by rolling a ball to him with only playful intent.
1 (Very Poor)	Minor attempt to engage the child, but no follow-through teaching interaction; for example, attendant shows a child a book and says "see the doggie" but does nothing more. This represents an ineffective try at teaching.
2 (Marginal)	Some evidence of teaching intent; for example, showing a child a ball and asking "What is this?" without following up with continued interactions. The intent seems stronger than for rating 2, but he still fails to maintain the teaching contact for a sufficient length of time.
3 (Fair)	Definitely appears to start a teaching sequence, and uses some strategem to influence the child such as modeling, but the attendant is not persistent or varied in his approach. For example, demonstrating the stacking of blocks and having the child do likewise.
4 (Good)	Considerable evidence of intention to teach. Shows some variety and persistence in his teaching approach.
5 (Excellent)	High level of teaching involvement; for example, if using ward materials such as dishes, demonstrates their use, encourages modeling by the child, uses the naming process while promoting the child's verbal response through some form of reinforcement.

Definitions of the Derived Scores

These items were not used singly in testing the hypotheses of the study. Rather, the frequency of response to the various items within an item sub-group were summed and combined with other scores in some manner to

create new scores that seemed logically to best represent proficiency in the use of behavior modification principles. These derived scores are the dependent variables in this study. Descriptions of these derived scores are given below.

1. Reinforcement Difference (Reinf. Diff.)

This variable represents the sum of the subjects inappropriate uses of reinforcement subtracted from the sum of the times S is recorded as having used an appropriate reinforcer. Thus, in terms of the original items, it is the sum of items 2-8, minus the sum of items 9-11 (see Appendix B).

In this measure, it is assumed that S's understanding of behavior modification principles will be highlighted, since it penalizes promiscuous and mindless reinforcement.

2. Reinforcement/Opportunities Ratio (Rein/Oppor Ratio)

The score represents the total number of times S is recorded as having used an appropriate reinforcer divided by the number of times S is judged to have been presented with an "opportunity" to provide an appropriate reinforcement.

An "opportunity" is derived by adding the total number of times S is recorded as having used an appropriate reinforcer to the total number of unused

opportunities. Thus it represents the proportion of opportunities to reinforce a child on which the attendant capitalized. If, for example, S reinforced a child five times, but missed five opportunities, he responded effectively 50% of the time.

3. Appropriate Technique (Approp. Tech.)

This variable is defined by the number of behavior modification techniques of which S gives evidence in his behavior; it is a simple count of the number of different techniques used, and not of the frequency of their use. It is assumed that by demonstrating a technique at least once (e.g., "fading," or "successive approximation) S shows a grasp of the principle. Thus, this measure indicates demonstration of the presence or absence of a skill, or an understanding, and not the repetitiveness of its use. It measures the breadth of his understanding and not the intensity of his application of one or more single techniques.

4. Inappropriate Technique (Inapprop. Tech.)

This score represents the number of categories of behavior displayed by S that represent violations of behavior modification principles or indicate their inappropriate application.

The rationale for the scoring of this measure is the same as that for variable 3 above.

5. Global Rating

This measure is a rating by the experimenter as to the attendant's competence in the application of behavior modification principles.

6. Teaching Intention (Teach. Intent.)

This measure is a rating by the experimenter as to the strength of the attendant's intent to engage in teaching behavior with children during the observation period.

Rater Agreement

The experimenter carried out all of the observations that provided the data for this study. However, in order to determine the reliability of these observations and of the ratings, a measure of rater agreement was obtained. A clinical psychologist well-versed in behavior modification, and the experimenter simultaneously observed 10 attendants during the pre-test period and the same 10 attendants during the post-test period. Prior to the pre-test observations, the two raters had discussed the definitions of the items, pre-tested the form on attendants not in the study, and revised the definitions until agreement had been reached.

The inter-rater reliability for the six variables and for the pre-test and post-test observations on the 10 subjects were determined by the use of Pearson product

moment correlations. These correlation coefficients are presented in Table 2.

TABLE 2

Correlation Coefficients of
Inter Rater Reliability
n=10

Variable		r	r^2
1. Reinf. Diff.	Pre	.95	90
	Post	.97	94
2. Rein/Oppor. Ratio	Pre	.99	98
	Post	.98	96
3. Approp. Tech.	Pre	.96	92
	Post	.90	81
4. Inapprop. Tech.	Pre	1.00	100
	Post	1.00	100
5. Global Rating	Pre	1.00	100
	Post	.99	98
6. Teach. Intent	Pre	1.00	100
	Post	1.00	100

These high reliabilities confirm the raters' judgement following their experience that they had reasonably unambiguously defined the behaviors to be recorded. The high coefficients also are in part attributable to the fact that there were a large number of zero scores, a fact which, of course, does not detract from the level of rater agreement.

Reliability of the Derived Scores and Ratings

To determine whether the derived scores and the ratings, the dependent variables, were reliable measures of attendant behavior, it would have been desirable to have utilized a test-retest procedure. However, this was not feasible given the time pressure under which the experimenter operated. As an admittedly poor alternative, it was decided to use the pre-test and post-test scores and ratings in a test-retest design. This procedure would be valid if it could be assumed that all attendants would gain equally as a result of training. This assumption, of course, is not likely to be tenable for the entire group. Nevertheless, the pre-test, post-test correlations were determined as the only estimate of reliability available. They are presented in Table 3.

TABLE 3

Reliability of Scores as Estimated by Pre-Test, Post-Test Correlations (n=40)

Variable	r
Rein. Diff.	.71
Rein/Oppor. Ratio	.46
Approp. Tech.	.43
Inapprop. Tech.	-0.11
Global Rating	.57
Teach. Intent	.44

These coefficients are hardly satisfactory as reliabilities, but it is of importance that all but one show significant correlation. It can be assumed that they would be appreciably higher if the differential effects of training could be partialled out. In any case, the original decision to measure behavior in the non-structured, natural setting of the ward made it unlikely that every attendant's capacity for the application of behavior modification principles would be reliably measured. Instead, it was assumed that, if training was more successful for one group, the probability of observing the improved performance would be greater for this group as a whole than for the other group.

The fact that rater agreement was excellent argues against the conclusion that the rater failed to perceive behavior accurately. It is more likely that low reliability would be produced by uncontrolled variation in the type of child the attendant happened to be working with during the observation period, ward conditions as affected by illness of the children, or absenteeism, etc.

Observational Procedures

As stated previously, the effectiveness of the training programs was evaluated by observing the behavior of attendants in their interactions with children during the performance of their normal duties on the ward. Each

attendant was observed during those periods of the day when interaction with children was assumed to be greatest.

Observations were made on each attendant during each of three intervals, pre-test and post-test. These intervals were eating (E), toileting (T) and free activity time (A). Although there is a scheduled activity time on the day shift which would have provided a period of potentially higher interaction it was determined as unacceptable since a comparable observation time was not available during the afternoon shift. This method then, provided that each attendant be observed for a total of 30 minutes on both the pre-test and post-test.

Prior to the pre-test period, the director of the Growth and Development Cottage scheduled three staff meetings to provide the experimenter with an opportunity to informally meet with the attendants. During this meeting, it was explained that during the week of November 8, the experimenter would be visiting on the wards recording information. It was stressed that the purpose of the observations was to determine the effectiveness of the forthcoming in-service training and that observations would need to be taken prior and subsequent to the training in order to evaluate the training program. It was also pointed out that the experimenter was not in any way associated with the institution and that his only affiliation was with Michigan State University. It was emphasized

that the information obtained on individual attendants was the property of E and would not be shared with the institution's administration. The use of the stop watch was explained as being a means of keeping track of the observation time, as well as for recording time which the attendant was unable to devote to interaction with the children.

The pre-test took place during the week prior to the first session of Treatment II, the classroom-oriented method. This treatment covered three consecutive weeks, one week for each of three groups of attendants. Treatment I was begun one week after the beginning of Treatment II and ran several weeks after the conclusion of Treatment II because of the individual nature of instruction involved. Concurrent training was possible because attendants from the two treatments were drawn from different wards.

Post-testing was begun one week after the completion of Treatment I causing a delay of up to five weeks between training and post-testing for some attendants trained in Treatment II. This lag was necessary since the experimenter was kept blind as to which wards were assigned to a particular treatment group and could not, therefore, be on the wards during any part of the training.

The experimenter stationed himself unobtrusively in a ward location which gave him auditory and visual access to the attendant as he related to a child.

Responses made by the attendant which were covered on the Behavior Analysis Rating Form were recorded by means of a stroke on the line adjacent to the response. At the end of the 10-minute observation period, as determined by a stop watch, the experimenter recorded ratings of the attendant on the scales which evaluated "Intent to Teach" and "Utilization of Behavior Modification Techniques."

By observing during different periods of the day a more exhaustive view of the attendants' interaction was available, thus mitigating the criticisms of Gardner and Giampa (1971) regarding "lack of comprehensiveness" and "lack of representativeness" found in simulation type studies.

Observation Times

7:45 A.M. - 8:30 A.M.	Eating
8:30 A.M. - 9:30 A.M.	Toileting
11:00 A.M. - 11:45 A.M.	Free Activity
11:45 A.M. - 12:30 P.M.	Eating
12:30 P.M. - 1:30 P.M.	Toileting
2:00 P.M. - 4:00 P.M.	Free Activity
4:00 P.M. - 4:45 P.M.	Toileting
4:45 P.M. - 6:00 P.M.	Eating
6:00 P.M. - 6:30 P.M.	Toileting
6:30 P.M. - 7:30 P.M.	Free Activity

Hypotheses

It was the general hypothesis of this study that subjects trained in behavior modification principles by the personal interaction training method (Treatment I) would show equal or greater competence in their application of behavior modification techniques while working with children during their participation in ward routines than would subjects trained in behavior modification by a more conventional method (Treatment II).

This general hypothesis was tested by a comparison of the two groups on gain scores derived from measures obtained from the Behavior Analysis Rating Form (BARF).

For each variable the following hypotheses were formed:

Variable	Predictions for Treatment Group Mean Gain Scores
1. Reinf. Diff.	Treatment I $\geq$ Treatment II
2. Rein/Oppor Ratio	Treatment I $\geq$ Treatment II
3. Approp. Tech.	Treatment I $\geq$ Treatment II
4. Inapprop. Tech.	Treatment I $\leq$ Treatment II
5. Global Rating	Treatment I $\geq$ Treatment II
6. Teach. Intent	Treatment I $\geq$ Treatment II

Treatment of the Data

Comparison of Pre-Test, Post-Test Gain Scores

The data were analyzed by means of multivariate analysis of variance (MANOVA) of pre-test and post-test

gain scores for five of the six variables previously described. Variable 5 (Global Rating) was not included since it was a subjective judgment and not a score based directly on the incidence of behaviors. Its treatment is discussed below. Table 4 describes the design.

TABLE 4

Number of Cases by Kind, Shift, and Treatment (n-40)

Kind	Shift	Treatment I	Treatment II
Younger	Day	6	6
	Afternoon	4	4
Older	Day	6	6
	Afternoon	4	4

The individual attendant was the unit of analysis. "Shift" refers to the time of day when the attendant was working while "kind" indicates whether the children worked with were older or younger. Shift and kind are blocking variables that were introduced to add precision to the analysis. No predictions were made as to their interaction with treatment.

Relationship of Scores and Global Rating

Multiple and partial correlations were calculated for the relationship of variables 1, 2, 3, and 4 and the Global Rating. The Global Rating was originally included

in the study on the assumption that it might reflect behavioral changes not captured by the separate scores. This analysis permits an evaluation of the extent to which the scores and the global impressions are related.

Subsequent to the MANOVA, a post hoc univariate test was done in those instances where the multivariate test revealed significance.

CHAPTER III

FINDINGS

The general hypothesis of this study was that subjects trained in behavior modification principles by the personal interaction method (Treatment I) would show equal or greater competence in their application of behavior modification techniques while working with children during their participation in ward routines than would subjects trained in behavior modification by a more conventional classroom procedure (Treatment II).

Specific hypotheses on each of the dependent variables were:

1. The group mean gain score on the Reinforcement Difference variable for Treatment I will be equal to or greater than that for Treatment II.

2. The group mean gain score on the Reinforcement/ Opportunities Ratio variable for Treatment I will be equal to or greater than that for Treatment II.

3. The group mean gain score on the Appropriate Reinforcer variable for Treatment I will be equal to or greater than that for Treatment II.

4. The group mean gain score on the Inappropriate Technique variable for Treatment I will be equal to or less than that for Treatment II.

5. The group mean gain score on the Global Rating variable for Treatment I will be equal to or greater than that for Treatment II.

6. The group mean gain score on the Intent to Teach variable for Treatment I will be equal to or greater than that for Treatment II.

The significance of the group differences in mean gains was determined through a multivariate analysis of variance. It will be recalled that five of the six variables have been included. The results of this analysis are presented in Table 5.

It is apparent in Table 5 that there is no significant treatment effect. Therefore, it can be concluded that the mean gains for the two groups on the five variables are not significantly different. The hypotheses for these five variables are confirmed in the sense that the Treatment I mean gains are "equal to" those for Treatment II. The hypotheses were couched in these

TABLE 5

Multivariate Anova Table (Includes Variables 1, 2, 3, 4, and 6)

Sources of Variance	df	Multiple f	P less than
Treatment Effect	5	.2296	.9464
Kind Effect	5	1.4835	.2268
Treatment x Kind Interaction	5	2.6120	.0464*
Shift Effect	5	1.4378	.2417
Treatment x Shift Interaction	5	1.0307	.4190
Kind x Shift Interaction	5	1.3502	.2728
Treatment x Kind x Shift Interaction	5	3.0700	.0248*

*Significant at the .05 level.

conservative terms since the Treatment I group received only one-eighth as many hours of instruction as the Treatment II group. It is obvious, at the same time, that all of the hypotheses would be confirmed if no instruction had occurred at all. Therefore, it is of concern to note whether there was equal improvement or equal failure to improve. To determine whether each of the groups had shown significant amounts of gain, in terms of significant increase in mean scores, a univariate analysis of variance was performed to evaluate the gain for each of the six variables. These pre-test and post-test means, and the significance of the difference between means are presented in Table 6.

TABLE 6

Pre-Test and Post-Test Measures for Treatment Groups I and II on the Six Variables

Variables		Treatment I				Treatment II				Total Gain
		Pre	Post	Gain	Sig.	Pre	Post	Gain	Sig.	
Reinf. Diff.	$\bar{x}$	8.60	12.85	4.25	.009*	4.15	6.20	2.05	.349	3.15
	SD	6.08	8.41			6.60	5.73			
Reinf./Oppor. Ratio	$\bar{x}$	.48	.56	.07	.207	.36	.41	.05	.583	.06
	SD	.32	.16			.33	.22			
Appro. Tech.	$\bar{x}$	1.10	1.00	- .10	.772	.75	.55	- .20	.330	- .15
	SD	1.07	1.21			.85	1.27			
Inappro. Tech.	$\bar{x}$	1.30	1.15	- .15	.707	1.20	1.25	.05	.853	- .05
	SD	.86	1.18			1.00	1.02			
Global Rating	$\bar{x}$	1.10	1.85	.75	.238	.15	.35	.20	.494	.48
	SD	1.74	2.60			.49	1.14			
Teach Intent	$\bar{x}$	2.05	2.25	.20	.780	.70	.95	.25	.514	.23
	SD	2.21	2.71			1.08	1.73			

*Significant at the .05 level.

As indicated in Table 6, only one post-test mean was significantly higher than its pre-test mean: Reinforcement Difference for Treatment I, which was significant at the .009 level. The post-test means for Appropriate Technique were lower for both treatment groups, the pre-test mean for Inappropriate Technique for Treatment II was higher, which indicates poorer performance following treatment. The remainder of changes were in the direction of improvement, but the differences are negligible. Therefore, on the basis of these data, it must be concluded that with the one exception, this study failed to detect appreciable improvements in the attendants' use of behavior modification on the ward following either method of instruction.

It should be noted that the Reinforcement Difference variable is the difference of two components, the total number of times an attendant is recorded as having used an appropriate reinforcer and the number of times a reinforcer was administered inappropriately. Table 7 shows means, standard deviations, and ranges for the sums of these two items. These data make it possible to determine whether the gain was brought about by increased use of reinforcement or a reduction in its inappropriate administration. For example, in Treatment II there was an increased use of reinforcement but this is reduced in the composite measure (Variable 1) because of the increase in inappropriate reinforcement.

TABLE 7

Means, Standard Deviations, and Range for the Sums for Appropriate and Inappropriate Reinforcement

Item		Treatment I			Treatment II		
		$\bar{x}$	SD	Range	$\bar{x}$	SD	Range
Total number of times S is recorded having used an appropriate reinforcer	Pre	10.30	8.69	0-22	5.05	6.53	0-29
	Post	15.30	8.74	0-35	7.7	6.96	0-24
	Gain	5.00			2.02		
Total number of times S is recorded having used a reinforcer inappropriately	Pre	1.7	3.02	0-6	1.0	1.71	0-6
	Post	1.0	1.296	0-8	1.25	1.77	0-5
	Gain	- .7			.25		

It is apparent that the improvements on the Reinforcement Difference variable were primarily due to increased use of appropriate reinforcers.

The multivariate analysis previously presented in Table 5 revealed interactions other than treatment which yield significance. These will now be examined. The first of these was treatment by kind effect. Table 8 shows the univariate test of treatment by kind which indicates the measure responsible for significance.

The variable Inappropriate Technique yields significance. Table 9 shows the means on this variable for the four sub-groups.

This interaction is graphically portrayed in Figure 2.

TABLE 8

Treatment x Kind Interaction Post Hoc Test on Univariates

Measures	MS	F	P less than
Reinf. Diff.	16.9	.310	.5816
Reinf./Oppor. Ratio	.018	.185	.669
Approp. Tech.	1.60	.986	.328
Inapprop. Tech.	16.90	9.284	.005*

*Significant at the .05 level.

TABLE 9

Means on Inappropriate Technique for Treatment by Kind Interaction

	Treatment I	Treatment II
Kind: Younger	.50	-.60
Kind: Older	-.70	+.70

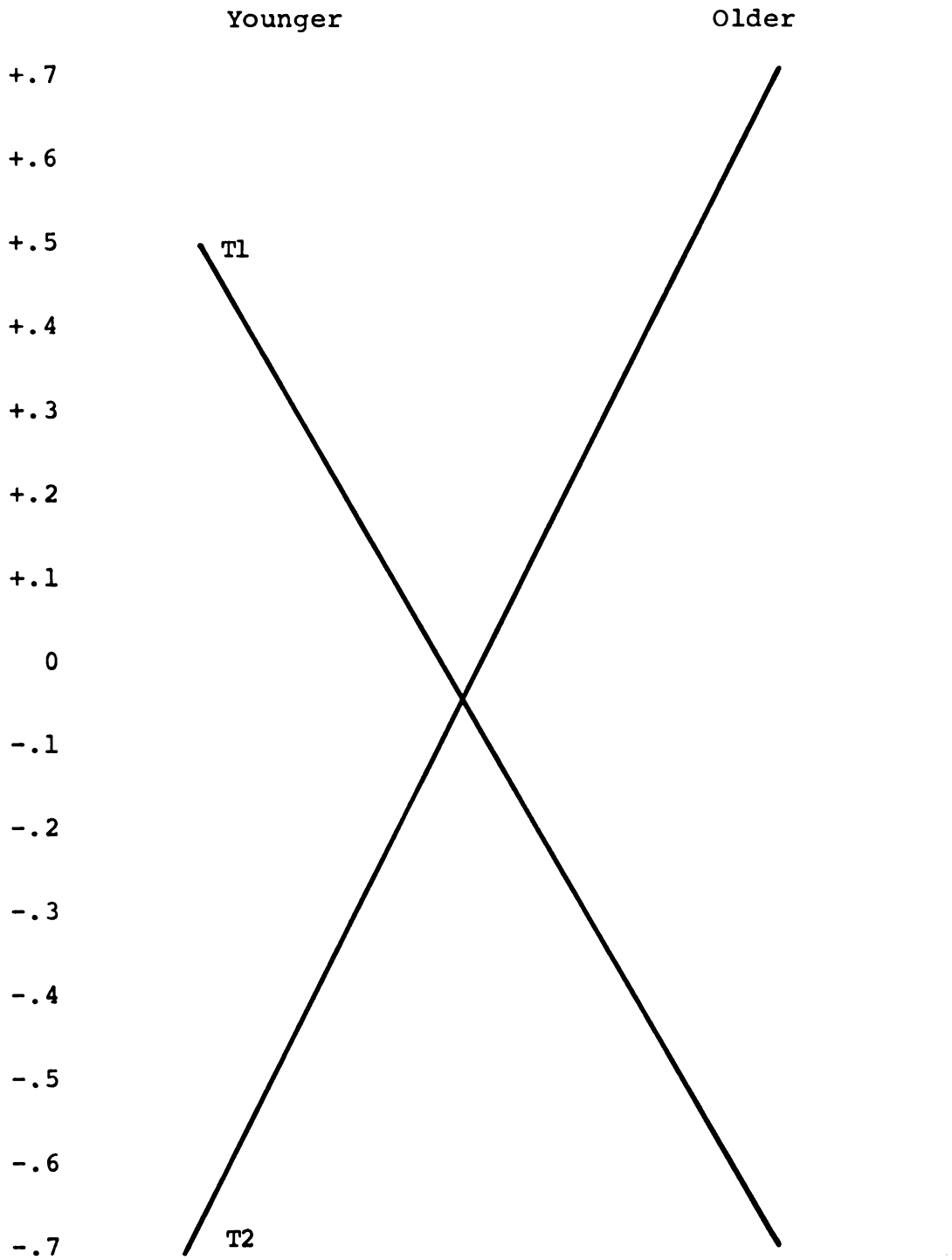

Figure 2

Treatment x Kind Interaction for Variable:
Inappropriate Technique

As this figure shows, attendants working with older children, and trained by Treatment I used fewer Inappropriate Techniques than when working with younger children, while Treatment II attendants working with younger children used fewer Inappropriate Techniques than when working with older children. No predictions were made as to this contrast and the writer can offer no reasonable hypothesis for this finding.

The other interaction showing significance is that of Treatment x Kind x Shift. Table 10 shows the univariate test results revealing the measure generating this significance. The variable Reinforcement Difference yields significance. Table 11 shows the mean gain by cells for this variable.

TABLE 10

Treatment x Kind x Shift Interaction
Post Hoc on Univariates

Measures	MS	F	P less than
Reinf. Diff.	445.537	8.1707	.0075*
Reinf./Oppor. Ratio	.0107	0.1093	.7431
Approp. Tech.	1.8375	1.133	.2952
Inapprop. Tech.	4.5375	2.493	.1243

*Significant at the .05 level.

TABLE 11

Variable: Reinforcement Difference

Shift	Age	Treatment I				Treatment II			
		n	$\bar{x}$ Pre	$\bar{x}$ Post	$\bar{x}$ Gain	n	$\bar{x}$ Pre	$\bar{x}$ Post	$\bar{x}$ Gain
Day	Young	6	10.83	14.50	3.67	6	9.00	4.00	-5.00
	Old	6	9.00	11.50	2.50	6	2.33	9.66	7.33
Afternoon	Young	4	3.00	3.50	0.50	4	2.75	7.50	4.75
	Old	4	10.25	21.75	11.50	4	1.00	3.00	2.00
Totals		20	8.60	12.85	4.25	20	4.15	6.20	2.05

There is a mean increase in the number of reinforcements given in a correct manner by attendants in both treatment groups. This increase is significantly greater for Treatment I. The table also shows that attendants trained by Treatment I and working on the day shift do better than those working with older children. Attendants trained by the same treatment but working on the afternoon shift tend to do considerably better with older children. With attendants trained by Treatment II an opposite effect is observed. Figure 3 displays this interaction. No predictions were made as to the occurrence of this contrast and, again, no hypothesis is offered for the finding.

The use of prime activity time as an additional observation period was discussed previously. In order to determine whether this time provided an opportunity for increased interaction by attendants from both treatment

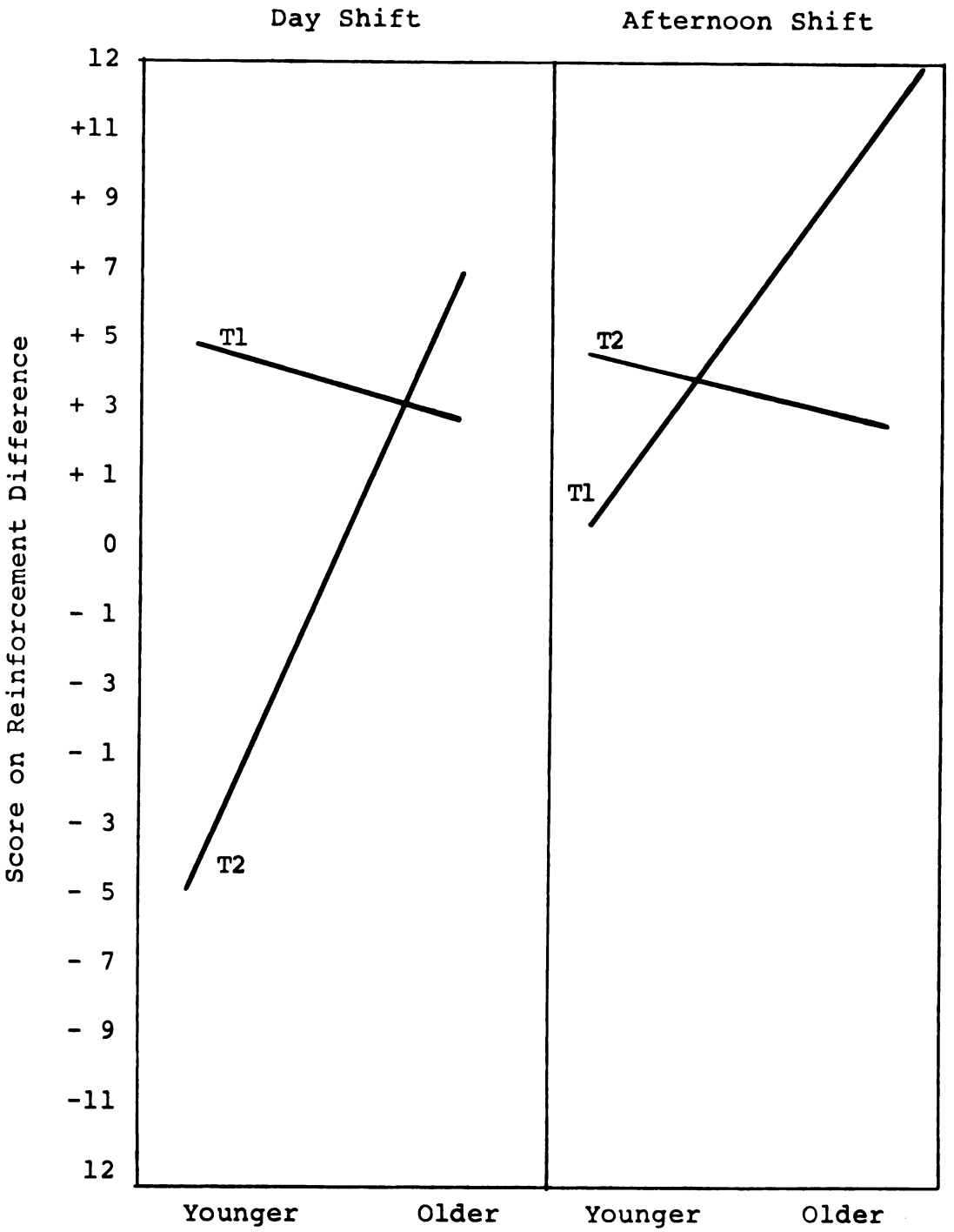

Figure 3

Treatment x Kind x Shift Interaction for the Variable: Reinforcement Difference

groups, a comparison of the post-test mean measures used in the other analysis was made with post-test means using only the "prime" activity time as one of the three observation periods. Table 12 shows these comparisons.

TABLE 12

Comparison of Post-Test Means for the Combined Groups Using Different Activity Intervals

Variables	$\bar{x}$ ETA	$\bar{x}$ ETA[1]
Reinf. Diff.	9.53	11.47
Reinf./Oppor. Ratio	.48	.50
Appro. Tech.	.78	1.38
Inappro. Tech.	1.20	1.07
Global Rating	1.10	1.65
Teach. Intent	2.00	1.50

With the exception of the variable, Intent to Teach, the means which include only prime activity time as the activity segment of the observation period are higher than those that do not uniformly include prime activity time. An exception to this is on the variable Inappropriate Technique where a lower score is indicative of Success. Accepting these differences as reliable, this means that the ward situation in which the attendant was observed played a part in determining whether or not his learning would be applied.

Distribution of Global and Intent to Teach Ratings

A finer analysis of the results for the two rating scales, Global Rating and Intent to Teach, provides

another estimate of the change in attendant behavior. The means for these two scales do not provide meaningful information for this purpose since the scores utilized in the other analyses are sums of the ratings for the three periods rather than averages. While this approach was appropriate for the statistical operations, the resulting means do not correspond to the original rating scale values.

For a clearer picture, a distribution of the actual ratings is provided in Table 13.

The striking fact to be observed in this table is that the modal rating is consistently zero. Appreciable use of behavior modification techniques, and appreciable evidence of intent to teach are evident for only a very few individuals.

The scores on all of the measures for each individual in the study are presented in Appendix A.

Correlation of the Observation Variables and the Global Rating

To what extent did the experimenter's global impression of the attendants' facility in the use of behavior modification techniques correspond to the more objective measures of this behavior? This question was answered by a determination of the multiple and partial correlations for these relationships. The partial correlations for each of the variables and the Global Rating are as follows: Reinforcement Difference .30; Reinforcement/Opportunities

TABLE 13

Distribution of Pre-Test and Post-Test Ratings for Global Rating and Intent to Teach by Treatment Group

Rating	Global Rating												Intent to Teach											
	Treatment I						Treatment II						Treatment I						Treatment II					
	Pre			Post			Pre			Post			Pre			Post			Pre			Post		
	E	T	A	E	T	A	E	T	A	E	T	A	E	T	A	E	T	A	E	T	A	E	T	A
0	17	19	14	15	15	15	19	19	18	18	20	19	14	19	9	13	13	11	16	18	17	18	20	14
1	2	1	4	3	3	1	1	1	1	2			4		6	4	5	4	3	2		1		2
2			1		2				1				1		1	1	2	1	1		2	1		2
3	1		1										1	1	3	1		1			1			
4				2		3						1			2			1						2
5						1										1		2						

Ratio -.16; Appropriate Reinforcement .37; and Inappropriate Technique -.48. The multiple R was determined to be .71. It is apparent that there is a significant and appreciable relationship between the Global Rating and the objective measures, although there is also a sizable amount of variance in the Global Rating unaccounted for. In spite of the latter fact, the Global Rating did not prove to have greater power than the other variable to discriminate between the treatment groups, as demonstrated earlier.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Because of the change in emphasis of treatment programs in facilities for the mentally retarded from custodial to habilitative, new methods of training the institutional attendants charged with the care of these children need to be developed.

One mode of treatment with the severely mentally retarded which has demonstrated results in bringing about needed behavioral change is that of behavior modification.

Administrators whose responsibility it is to train these attendants have need to know what method of training will bring about the greatest amount of competence in the use of these behavior modification techniques.

Gardner (1970) in training attendants in behavior modification has used an attendant simulating the role of a retarded individual while another attendant is directed by a trainer in the use of behavior modification technique. He evaluated the acquisition of behavior modification skills through the use of another simulation experience

plus a paper and pencil test. However, the most frequently used format is that which utilizes a classroom or traditional program of lectures, demonstrations, and paper and pencil assignments. This method has been evaluated by the use of another form of simulation: video tape presentations of patient behavior for which the attendant is required to supply a treatment strategy.

This study utilized still another method involving the training of the attendant on the ward while he pursues his regular assignment with children. The trainers in this method employ behavior modification to shape the attendant's learning of the skills.

Two important considerations evolve from this discussion: Do the methods of evaluation used in the past effectively measure how competent the attendant will be in the use of these techniques on the ward during his interactions with children? Which method will best provide him with behavior modification skills?

A study was undertaken which sought to determine which of two methods provided greater application of learning when on-the-ward evaluation was used as the criterion. An experimental training program, Treatment I, was compared with a more traditional lecture-discussion-laboratory approach. The experimental method involved on-the-ward training.

Two groups of 20 institutional attendants were trained with one or the other method, each using language development as a training vehicle.

The effectiveness of training was evaluated by the recording of the incidence of behaviors on an observational recording and rating form during three periods when attendants were performing their ward duties with children. Measurement was taken both before and after training.

It was hypothesized that attendants trained in the personal interaction method would show equal or greater competence in the use of behavior modification than those trained with the traditional method.

The hypotheses were tested by the use of multivariate analysis of variance on the pre-test and post-test gain scores. The correlation between the experimenter's Global Rating of the attendants' facility in the use of behavior modification techniques and the more objective measures on the instrument was also determined.

Results of the multivariate analysis revealed no significant main effect for treatment. The obtained means were generally higher for the post-test than for the pre-test scores, although the gains were small. Thus, the hypotheses of the study are supported, in that the attendants trained on the ward did no worse than those trained by the traditional method. In fact, the trend, although not significant, was for the Treatment I group to show

greater gains. However, the failure of either group to show much improvement in their use of behavior modification weakens any conclusions concerning the relative merits of the two training methods.

Conclusions and Implications for Current Institutional Practice and Research

The finding that there was little improvement for either treatment group as evidenced by both the low numerical scores as well as the preponderance of ratings of zero on the Intent to Teach and Behavior Global Rating scales was unexpected. Based on these results, one might be prone to criticize the rating as not being sensitive in picking up the behaviors which did occur. It was the experimenter's impression that the instrument did discriminate over a wide range of behaviors. The fact that rater agreement is very high substantiates that feeling. The presence of experimenter bias seems to have played a minimal role since there was no significant improvement shown by either group as a result of treatment. One possible explanation for the failure to find improvement would be that the experimenter, who did all of the rating, may have become more stringent in his criteria for success. This seems an unlikely possibility, since it is more logical to assume that the experimenter, eager to secure positive results, would be inclined to become more lenient in his criteria and subjective judgments.

The question arises then, since other researchers have found that attendants are capable of learning behavior modification, why the results of training in this study are not obvious.

The most obvious answer is that this study did not attempt to measure learning only, but also competence in, and the tendency to use, the learned technique during everyday interaction with children on the ward.

If it is assumed, on the basis of previous studies, that the attendants were able to learn, and did learn behavior modification skills, then the results of this study indicate that the learned skills were not applied. These assumptions were supported also by the trainers, all of whom were impressed by the success of their methods of instruction as reflected in the feedback they received from the attendants.

What then might be the forces which militate against or act in constraint of the attendants' utilization of these newly acquired techniques?

The traditional role of the attendant has been that of custodian or caretaker. Therefore, in the institution's reward system he has been positively or negatively reinforced not for what a child has learned, or the degree to which his behavior has been changed, but rather for how well the ward and the child are kept clean and safe from hazard.

In other institutions it has been found that even after successful training programs, attendants' behavior

does not change as the newly-acquired skills are not reinforced by the administration.

Keith (1971) and Goffman (1961) describe the institutionalization of staff in residential facilities. One factor which promotes the continuance of this process is the power which the attendant has over the resident and his desire to maintain that controlling position. Bateman and Dunham (1949) cite an excerpt from an early community study of a mental hospital which substantiates the findings of Goffman. "The chief aim of the attendant culture is to bring about the control of the patients." If the dependency needs of the resident are reinforced by the succorance needs of the attendants, he will have great difficulty assuming the role of teacher or habilitator especially when it means a loss of his own power.

Another reason behind the attendants' not assuming this role is related to his role expectation: He is not a teacher, his colleagues do not look on him as a teacher and he is not paid as a teacher. The institution's culture serves to maintain this view.

Other factors militating against the attendants' displaying their skills might be lack of opportunity due to conflicting demands on their time and effort. This is borne out by the fact that the post-test scores containing prime activity time were higher on five of the six variables for both treatment groups indicating that time free

of encumbrances such as housekeeping details could be used effectively with the children. It is reasonable to hypothesize, therefore, that observation times more conducive to training interactions would have yielded greater opportunities for attendants to apply their new learning. The scheduled activity time in both the morning and early afternoon is a high interaction time. As the reader will recall, it was not used since a comparable observation period was not available on the afternoon shift.

Implications for Research

One obvious implication for research is that since the observation times chosen for the study were seriously impinged upon by activities other than changing the child's behavior, the observation time in future studies should be changed so as to provide an opportunity for the attendant to display his skills. Admittedly, the afternoon shift would then be excluded since it is highly probable that the situation during the late hours of the day is similar in most institutions. The staff ratio is much lower, the children are exhausted by 6:00 P.M., and lastly, no child in this society is expected to be in a structured learning situation for 12 hours per day. The children in institutions, like children everywhere, need time out.

In order to bring about changes in the attendants' ward behavior, the environment in which he works and the philosophy which underlies his relationship to the children

must be based on one in which learning is the fulcrum of ward activities. It is somewhat irrelevant to carry out elaborate studies to evaluate alternate methods of training attendants to teach and modify behavior, if the opportunity to apply what is learned is continually subverted by the environment.

Gardner (1971) in his in-service programs assumes that the skills of the attendant are developed in proportion to the "accurate and relevant feedback" which they generate. If a reinforcement system following training is not incorporated in the managerial function, training efforts may be largely wasted. They are wasted also if the attendants' duties, patient load, and personal attitudes are not conducive to an environment other than custodial.

There are no pat solutions for breaking the chain of institutionalization which binds many attendants. Wolfensberger (1971) describes factors which maintain the institutionalization of any facility. Among these are low expectation levels, large groupings of individuals, reduced autonomy of the residents and high regimentation of schedules, rules and practices. With a reduction in these factors thereby bringing about a change in the total environment, it may be possible for a teaching environment to emerge.

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APPENDICES

APPENDIX A

RAW SCORES ON SIX VARIABLES

TABLE 14

Raw Scores on Six Variables

	1		2		3		4		5		6	
	Pre ΣETA	Post ΣETA	Pre ΣETA	Post ΣETA	Pre ΣETA	Post ΣETA	Pre ΣETA	Post ΣETA	Pre ΣETA	Post ΣETA	Pre ΣETA	Post ΣETA
Treatment II												
Attendant												
1	12	3	0	0	1	0	3	1	0	0	2	0
2	8	15	6	2	1	1	4	4	0	1	2	2
3	0	1	0	1	1	0	2	2	0	0	0	0
4	8	5	0	0	1	1	2	0	0	0	0	0
5	29	3	0	3	2	0	1	2	1	0	3	0
6	6	3	3	0	0	0	1	1	0	0	0	0
7	6	19	1	4	2	3	2	1	2	0	2	2
8	0	3	0	0	1	0	1	0	0	0	0	0
9	4	7	1	2	1	0	1	1	0	0	0	0
10	3	11	0	4	1	0	1	0	0	0	0	1
11	5	21	0	5	0	1	1	1	0	1	0	5
12	3	5	0	0	0	0	1	1	0	0	1	0
13	4	24	4	4	3	5	1	1	0	5	3	6
14	3	7	0	0	0	0	0	3	0	0	0	2
15	6	9	3	0	0	0	0	1	0	0	0	0
16	0	1	0	0	0	0	0	1	0	0	0	0
17	4	8	0	0	0	0	1	2	0	0	0	1
18	0	2	0	0	0	0	0	1	0	0	0	0
19	0	7	0	0	0	0	1	0	0	0	0	0
20	0	0	0	0	1	0	1	0	0	0	1	0
Treatment I												
Attendant												
21	15	22	0	0	0	1	2	1	0	4	7	5
22	4	8	1	4	2	2	1	1	0	1	1	1
23	7	9	0	0	1	1	1	0	0	0	0	0
24	22	28	12	6	3	3	1	2	5	6	5	7
25	19	8	3	0	2	0	1	2	0	0	3	1
26	14	25	0	3	2	2	2	1	1	4	1	6
27	0	6	0	0	0	1	2	1	3	0	1	0
28	0	9	0	8	1	0	0	3	1	0	2	1
29	1	3	0	0	0	1	2	1	0	0	4	0
30	14	8	3	4	1	1	0	5	6	0	5	0
31	10	18	0	1	2	0	2	1	0	0	1	0
32	0	13	0	6	0	1	1	0	0	0	0	1
33	19	22	2	4	0	0	1	1	2	2	0	6
34	11	7	0	0	0	2	0	1	0	0	0	0
35	18	13	2	0	3	0	3	1	1	1	6	1
36	0	9	0	2	0	0	0	1	0	0	0	0
37	7	18	0	2	2	0	1	0	0	1	0	1
38	8	21	0	3	2	0	2	0	0	3	1	4
39	20	35	5	3	1	3	2	0	1	7	2	7
40	17	24	6	3	0	4	2	1	2	8	2	5

LEGEND:

1. Total number of times S is recorded as having used an appropriate reinforcer.
2. Total number of times S is recorded as having used an inappropriate reinforcer.
3. Number of behavior modification techniques of which S gives evidence in his behavior.
4. Number of categories of behavior displayed by S representing violations of behavior modification principles or their inappropriate use.
5. Average rating for S on his competence in the use of behavior modification principles.
6. Average for each S on the strength of his intention to engage in teaching.

APPENDIX B

BARF

BEHAVIOR ANALYSIS RATING FORM

APPENDIX B

BARF

BEHAVIOR ANALYSIS RATING FORM

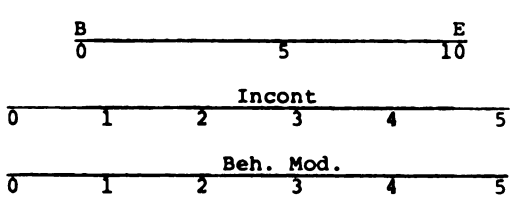
1. Unused opportunity

Observation Number 1 2 3 4

Date_____
Time_____
Activity E T A Al
Observer_____

Name_____ Ward_____

	Appropriate	T	12. Ignores Behavior_____
2.	Verbal_____		13. Conscious Change of Reinforcer_____
3.	Gestural_____		14. Time Out Appropriate_____
4.	Physical_____		15. Time In Appropriate_____
5.	Tangible Reward_____		16. Fading_____
6.	Physical-Verbal_____		17. Prompt_____
7.	Verbal-Tangible_____		18. Modeling_____
8.	Physical-Tangible_____		19. Successive Approximations_____
			20. Cues_____
9.	For Non-Performance_____		21. Verbal Punitive, Derogatory_____
10.	Too Delayed_____		22. Physical Punitive_____
11.	For Incompatible_____		23. Inappropriate Target_____
			24. Non-Recognition of Inefficient Reinforcer_____
			25. Reinforcer too Satiating_____
			26. Non-Recognition of Opportunity to Change Behavior_____
			27. Non-Recognition Difficult of a Task_____
			28. Not Breaking Task Down_____
			29. Too Many Expectations/Unit_____



Intent: Intent to Teach Rating Scale
Beh. Mod.: Behavior Modification Rating Scale (Global Rating)

APPENDIX C

LANGUAGE OBSERVATION FORM

APPENDIX C

LANGUAGE OBSERVATION FORM

This scale provides criteria for the assessment of the functioning level of communication and a sequence for teaching	Needs Much Help	Needs Some Help	Satisfactory: Part of Routine
1. Listens, and reacts with large muscles: patty-cake, bye-bye, rocks a doll to music, rolls balls to music, marching, running, tapping, hand clapping.			
2. Listens, and reacts with large muscle activity on verbal command stop, wait, look, sit down, come here, don't touch			
3. Listens, shakes head "yes" or "no," responds to own name (not verbal)			
4. Listens, identifies source of sound			
5. Listens, identifies source of sound and locates it			
6. Listens, and responds by indicating: parts of body, own possessions, boys and girls			
7. Listens, and responds to simple directions "show me" (common object) or "put your finger on__, give me ___, the ball is in the box"			
8. Listens, to familiar animal or mechanical sounds and vocalizes in repetition			
9. Listens, and mimics words to name common objects (not pictures)			
10. Names objects without opportunity to mimic			
11. Rhythmic responses to percussions or music			
12. Says words appropriately and spontaneously (uses words)			
13. Qualifies nouns (little box, red ball)			
14. Uses overt verbs			
15. Combines words to convey idea or need; frames a good question			

APPENDIX D

LANGUAGE SCALE ASSESSMENT FORM

LANGUAGE SCALE ASSESSMENT FORM

Resident's Name _____ Ward _____ Attendant's Name _____ Date _____

Training Level: _____

2. _____ Name _____ Date

3. _____ Name _____ Date

4. _____ Name _____ Date

SENSORI-MOTOR BEHAVIOR

1. Sense Development Exercises

A.

	Stimulus - Attendant		
	Looking (Visual)	Listening (Auditory)	Feeling (Tactual)
Increased Motor Activity			
Increased Vocalization			

Attendant Response

B.

	Stimulus - Object		
	Looking (Visual)	Listening (Auditory)	Feeling (Tactual)
Increased Motor Activity			
Increased Vocalization			

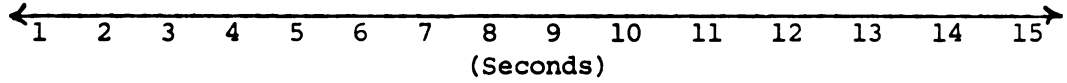
MAND BEHAVIOR

Attendant Response

		Stimulus - Internal					
		Hunger - Thirst		Physical		Secondary Wants	
		Dislikes	Likes	Dislikes	Likes	Dislikes	Likes
2. First Level Need Expression	Increased Motor Activity						
	Increased Vocalization						
3. Second Level Need Expression	Gestural Motor Activity						
	Vocalization: Words						

ATTENDING BEHAVIOR

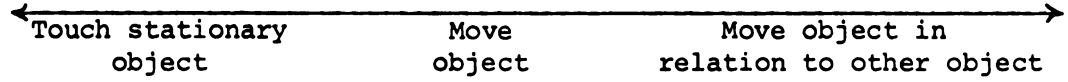
4. Attention Giving Ability (under control of attendant)



Attendant Response

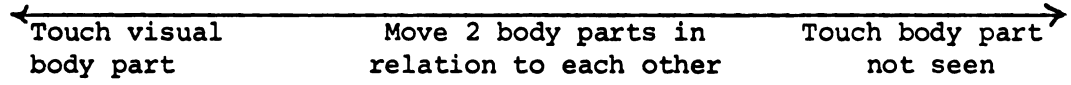
ECOHIC BEHAVIOR

5. Imitation of Motor Movements
   A. With Objects

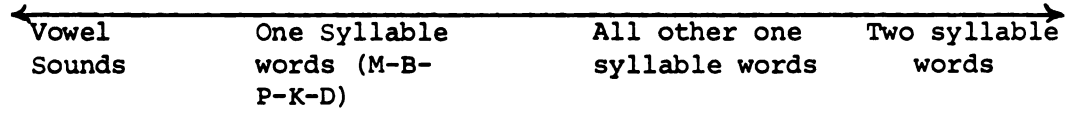


Attendant Response

   B. With Body Parts



6. Imitation of Sounds



STEREOTYPIC PHRASES (Record Verbatim)

Attendant Response

TACT BEHAVIOR

7. Labeling

			Stimulus--People, Objects, Events			Attendant Response
			Attendant	Object	Event	
Receptive	A. Understanding gestures that label	Indicates what is Labeled				
Receptive	B. Understanding words that label	Indicates what is Labeled				
Expressive	C. Using gestures to label	Gestural Motor Response				
Expressive	D. Using words to label	Vocalization: Words				

INTRAVERBAL BEHAVIOR

8. Providing In
8. Providing Information

			Stimulus--Verbal					Attendant Response
			Where	What	How	When	Why	
Receptive	A. Understanding gestures that give information	Indicates Understanding						
Receptive	B. Understanding words that give information	Indicates Understanding						
Expressive	C. Using gestures to give information	Gestural Motor Response						
Expressive	D. Using words to give information	Vocalization: Words						