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ABSTRACT

Research papers on behavior modification, presented at the 94th annual meeting of the American Association on Mental Deficiency, are cited in Volume 2 of a two part series. Presentations by James Gardner, Maurice Dayan, Luke Watson, Robert Wahler, and Robert Conrad are given. Volume 1 (EC 031 272) deals with theoretical papers and complements Volume 2. (CD)

MENTAL RETARDATION 1970

SELECTED PAPERS FROM THE 94TH ANNUAL MEETING OF THE AMERICAN ASSOCIATION ON MENTAL DEFICIENCY

Volume 2: Research Papers

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DIFFERENTIAL EFFECTIVENESS OF TWO METHODS FOR TEACHING BEHAVIOR MODIFICATION TECHNIQUES TO INSTITUTIONAL ATTENDANTS [1] [2]

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Research in behavior modification is one of the major areas of concern within mental retardation (Gardner and Selinger, 1970) and more than 80 percent of the literature has appeared within the last half decade (Gardner & Watson, 1969). Generally, studies have been concerned with the modification of self-help and social skills in institutionalized residents. Specific behaviors have been accelerated (eg., language) while other behaviors have been decelerated or eliminated (eg., self-destructive and aggressive acts). Though most of the attention has been focused on the severely and profoundly retarded, there is considerable literature on higher level retardates also (Gardner, 1970a).

Although much attention has been paid to the residents of schools for the retarded, institutional personnel have been neglected. With a few exceptions (eg., Bricker, Morgan, & Grabowski, 1968) behavioral principles have not been systematically applied to ward attendants who are the primary therapeutic agents. Though training programs in behavioral techniques proliferate, there have been no attempts to determine the most effective teaching methods, nor have there been evaluations of the effectiveness of the programs currently in operation. The present study is an attempt to evaluate the effectiveness of two different instructional methods for teaching behavior modification techniques to institutional personnel. For purposes of this study, effectiveness refers to ability to

train retarded children using behavior modification techniques and knowledge of the principles of the behavior modification method.

METHOD

Subjects: Twenty female attendants enrolled in an inservice education program were randomly assigned to one of two treatment groups. The subjects were matched for age, socio-economic status, attitude toward the retarded, knowledge of mental retardation, and knowledge of nursing skills. They had all been employed for less than three months. In addition, pretest measures on the two dependent variables were used to further equate the two groups. The relevant information is presented in Table 1.

Insert Table 1 Here

Materials: The major dependent variables in this study were measures of behavior modification ability. The Training Proficiency Scale or TPS (Gardner, 1970b) is a 30 item five-point rating scale which measures proficiency in using behavior modification techniques. An example of a scale item is: "Gives rewards quickly." The test is adminstered by observing attendants training other attendants who assume the role of a retarded patient. The rating sessions usually last 15 to 20 minutes. Scores on the TPS have been found to correlate significantly with judgements of overall training ability by expert behavior modification trainers, and training ability when tested in the role-playing situation was found to approximate training ability when tested in training sessions with retarded children. In addition, high reliability (inter-scorer, test-retest, split-half) has been reported for the scale (Gardner, Brust, & Watson, 1970). The purpose of administering this scale was to determine

the effects of the different instructional methods on the ability to train retarded children using behavior modification techniques.

The Behavior Modification Test or BMT is a 229 item true-false test that measures knowledge about operant conditioning principles. An example of a test item is "Extinction means removing reinforcement." Scores on the BMT have been found to correlate highly with scores on the TPS, indicating that knowledge of behavior modification principles and ability to train children using behavior modification techniques are related (Gardner, Brust, & Watson, 1970). The purpose of administering this test was to determine the effects of the different instructional methods on knowledge of behavior modification principles.

Three measures were used to equate the groups. There were! The Attendant Opinion Survey or AOS (Bensberg & Barnett, 1966), the Attendant Information Survey or AIS (Bensberg & Barnett, 1966); and the Test Reservoir for Aide Instructors in Nursing or TRAIN (Gardner, 1967). The AIS and AOS were developed during the Southern Regional Education Board's attendant training project. The AOS is a 115 item four-point scale which measures attitude toward the retarded and the institution in 23 different areas (eg., strictness toward patient; irritability; institutional identification). A total score can be obtained by summing across the areas. The AIS is a 160 item true-false, multiple-choice, and fill-in test which measures knowledge about mental retardation. A total score indicating the number of correct responses can be obtained. The TRAIN is a 30 item multiple-choice measure of general nursing aptitude.

Bensberg and Barnett (1966) employed the AIS and the AOS in studying attendant performance. They found that attendants who scored highly on the AIS and were judged to be the most effective workers had significantly better scores on 17 of the 23 AOS scales. Moreover, AIS scores alone

were highly correlated with overall performance and with high intelligence. In addition, they reported that scores on both measures changed appropriately as the result of inservice education. More recently, this finding was replicated by Johnson and Ferryman (1969). Gardner and Giampa (1970) found that AIS scores were significantly related to scores on the TRAIN, while AOS scores were not. If addition, AIS scores were found to correlate significantly with knowledge of behavior modification principles, while AOS scores were not related. It appears that the AIS is a cognitive measure and correlates highly with other cognitive measures (BMT, TRAIN), while the AOS is primarily an attitudinal measure.

As stated earlier, the purpose of administering these secondary measures was to equate the two groups on both cognitive (knowledge of mental retardation, nursing aptitude) and attitudinal (attitude toward retarded, attitude toward institution) variables.

Procedure: The behavior modification education program at Columbus State Institute consists of two major phases: role playing and lectures. Role playing consists of approximately six one-hour sessions in which various operant conditioning techniques are demonstrated, with trainers working in groups of two, each alternately assuming the role of patient or trainer. The trainers are supervised by experienced behavior modifcation engineers, with supervisor-trainee ratios averaging one to five. Emphasis is placed upon methods of administering rewards, shaping behavior, communicating, and establishing rapport. The behavior modification supervisor begins by demonstrating (with an attendant playing the role of a patient) standard training procedures, such as teaching a child to dress or undress, to obey simply commands (eg., "come to me"), and to eat with a spoon. Following this the attendants break up into pairs and work on these same

skills, with feedback provided by the supervisor.

The lectures consist of eight one-hour sessions designed to present the major principles of operant conditioning in everyday language, and to apply them to a variety of experiences. Some time (approximately 20 percent) is slotted for class participation and group discussion. The lectures cover the following topics: (1) What is mental retardation, (2) Causes of mental retardation, (3) The operant conditioning method, (4) Shaping simple behavior, (5) Shaping complex behavior, (6) Reinforcement. In addition, handout material is given to all the attendants.

The subjects were matched and then randomly assigned to one of two groups, role playing (R) or lecture (L), depending on which phase they entered first. That is, subjects assigned to R entered role playing first while those assigned to L entered the lectures first. Following the completion of the first phase, the subjects entered the remaining phase (either role playing or lectures). Before the start of the first session all the attendants were evaluated with the TPS and BMT (as well as the other instruments). Following the termination of each phase, each subject was re-evaluated with the TPS and BMT.

Since the criterion (performance in a role-playing situation) was identical to the training phase (role-playing), a modification in TPS administration was introduced. If the attendants demonstrated high proficiency under the standard test conditions, this could be construed as an ability to imitate or pantomime rather than an actual ability to train children, since the training and testing conditions were identical. For this reason, following phase one a "novel" testing procedure with the TPS was introduced along with the standard procedure. Standard testing was defined as administering the TPS with the attendant

demonstrating one or more of the tasks which had been illustrated in the role-playing phase of the course, or discussed in the lectures. Thus, the attendants were asked to teach dressing or undressing, and to demonstrate establishing verbal control (i.e., having the resident obey simply verbal commands such as "come to me"). Novel testing was defined as administering the TPS using tasks which had not been previously demonstrated nor discussed. For example, attendants were asked to teach the resident to catch a ball, or how to throw a ball, or how to eat a sandwich. It was felt that proficiency under the novel conditions could be ascribed more clearly to having learned behavior modification skills, eliminating possible objections to the results obtained by standard test conditions.

Testing with the BMT was done in groups. The TPS was administered individually by trained raters. High interscorer reliability for the TPS reported in a previous study (Gardner, Brust, & Watson, 1970) obviated the need for a same subject, same judge design, and the attendants were randomly assigned to raters at each evaluation point. Thus, each subject was evaluated with both measures (TPS and BMT) at three different times: pre-treatment, following either role playing or lectures, and post-treatment. In addition, the TPS was administered under both standard and novel test conditions following phase one and post-treatment. This design allowed for: (1) matching the subjects on pre-treatment knowledge and skills, (2) evaluating the effectiveness of both role playing and lectures in isolation, and (3) evaluating the effects of the two different sequences, since upon completion all subjects would have had all treatments, with only the order varied.

Following the last session, each subject was asked to indicate a preference for working on a current or future behavior modification

ward. This was done on a three point scale, from definitely yes to definitely no. They were also requested to respond to an open-ended question: "What value was this course to you?" Identification was not required for the preference or evaluation responses.

RESULTS

Training Proficiency

In terms of training proficiency, it was predicted that role playing would be the more effective method of teaching behavior modification techniques, since role playing has direct bearing upon training skills, while the lectures have only an indirect relevance. In this regard, training is seen as a "performance" skill in distinction from a "verbal" skill. Consequently, it was expected that Group R would have significantly higher TPS scores than Group L following the second evaluation, and that there would be no differences upon completion of the course. The mean scores for both groups under the standard and novel test conditions are presented in Table 2.

Insert Table 2

For the standard test conditions, there were significant differences between the treatment groups ($F=18.48$, $p<.001$), evaluation points ($F=97.61$, $p<.001$), and between the groups over time ($F=14.11$, $p<.001$). Multiple t tests revealed that there were no significant differences between the groups on the pre- or post-treatment tests, however, Group R exceeded Group L following phase one as predicted. The apparent increase in Group R scores from phase one to phase two was not significant ($t=1.607$, N.S.) nor was the increase in Group L from pre-test to phase one ($t=1.545$, N.S.). Thus, role playing contributed more to training proficiency.

skills, however, the sequence effects (ie., whether or not role playing came first) were not significant.

A similar, though somewhat different, picture emerges when the TPS scores under the novel conditions are examined. Again, there are not significant differences between the two groups at pre- or post-treatment testing, and the differences emerge following phase one where Group R exceeds Group L. This replicates the results found for the standard scores. However, within each group, significant gains were made between each evaluation point. For example, not only did Group L's TPS scores increase significantly following role-playing ($t=3.123$, $p<.05$), as predicted, their scores increased significantly following the lectures ($t=4.428$, $p<.01$). In a similar fashion, Group R scores increased significantly following role-playing as predicted ($t=7.920$, $p<.001$), but also increased significantly following the lectures ($t=2.342$ $p<.05$). Thus, it is apparent that in this case both groups were able to gain some measure of training skill from both instructional methods.

The mean TPS scores for Group R following role playing were 94.8 and 95.4 for the standard and the novel conditions respectively. This indicated that the subjects had learned more than a simple pantomime. A surprising result following the lecture series was that the TPS scores under the standard conditions were less than under the novel condition (108.3 to 113.2 respectively). While these differences were not significant, there was a significant increase under the novel testing conditions following the lectures ($t=2.34$, $p<.05$), and there was no corresponding significance in the increase for the standard conditions ($t=1.626$ N.S.). These results indicate that the effects of the lectures may be to increase the attendant's ability to generalize from specific to novel

situations.

For Group L, the mean scores following phase one were 52.4 and 69.5 for the standard and novel conditions respectively. In this case, the trainers were doing significantly better on the novel task than on the standard task. Following role playing, the mean scores for Group L were 96.0 and 94.8 for the standard and the novel conditions respectively. Thus, while both groups increased their scores significantly, there were no differences between performance on the two tasks at this point. It can be noted that Group R exceeded Group L following phase one and the post-training tests ($t=3.549$ and 2.340; $p<.01$ and .05, respectively).

In both groups, then, it can be seen that role playing alone results in a trainer who is asproficient in teaching standard skills as in approaching new skill training situations. For Group R there was no significant difference between standard and novel TPS scores following role playing, and for Group L, who entered the role playing sequence with significantly higher TPS scores under the novel condition, these differents also disappeared following role playing. There is some generalization from standard to novel situations (witness the significant increase in scores for Group R under the novel condition following the lecture), however, further study is needed.

Knowledge of Behavior Modification

In terms of knowledge of behavior modification, it was predicted that the lectures would be more relevant than role playing. In this regard, knowledge of behavior modification was seen as a "verbal" skill. As in the case of the TPS analysis, the differences were expected to emerge at the second evaluation (following the first phase of training).

Means scores for both groups are presented in Table 3.

Insert Table 3

Gains in knowledge of behavior modification proceeded as expected. There were no significant differences between the treatment groups ($F<1$), but there were significant differences over the evaluation trials ($F=60.69$, $p<.001$) and there was a significant interaction between treatment and trials ($F=20.08$, $p<.001$). Multiple t tests revealed that the two groups were not significantly different at the pre- and post-treatment levels, and that Group L exceeded Group R following phase one as predicted. Group R's increase in scores from pre-treatment to phase one was no significant ($t=1.838$), however there was a significant increase following the lectures ($t=2.746$, $p<.05$) as predicted.

Relationship Between Test Scores

The relationship between the TPS and BMT scores was examined. In a previous study, Gardner, Brust, and Watson (1970) reported a correlation of .89 between TPS and BMT scores. With the current sample, the rank order correlations upon completion of training were .30 and .87 for Groups R and L respectively. The rank order correlation based on the two groups combined was .61 ($p<.01$). Since the teaching techniques employed in the previous study were similar to these given to Group L, the present finding corroberates the high correspondence between training skill and knowledge of behavior modification principles when the traditional lecture/role-playing format is followed. The rank order correlation between TPS scores before and after training was .17 for the two groups combined, indicating that pre-training skill is not a good predictor of post-training skill. Scores on the BMT faired better, with

a combined rank order correlation of .50 ($p<.05$) between pre- and post-training scores. In a previous study, Gardner (1970c) reported pre- and post-training BMT scores correlated .83.

Socio-Economic Status

The effects of socio-economic status were examined by comparing the scores of New Careers[3] (NC) employees with those of the regular attendants (A). None of the regular employees were living in the inner city area represented by the New Careers group, and all had obtained positions at the institution through their own volition. Moreover, the percentage of blacks in the NC group (100 percent) was greater than among the regular employees (67 percent). For this analysis 22 (13 NC and 9 A) attendants were compared. The additional subjects were regular attendants who completed the same sequence as their classmates, but were eliminated from the previous analysis since their matched controls dropped out before completing the course.

Pre- and post-treatment were compared for both groups. On the BMT, there were no significant differences between the two groups at either point. The mean scores on the pre-test were 136.6 and 142.3 for NC and A respectively. On the post-test, the mean scores were 164.7 and 169.3 for NC and A respectively. Similar results were found on the TPS: mean pre-test scores for NC and A were 45.0 and 46.5 while mean post-test scores were 101.5 and 97.8 respectively. Again, there were no significant differences.

Attitude

A measure of attitude toward behavior modification was obtained following the last phase of training using an open-ended question on the value of the course. In addition, the subjects were asked whether or not they wanted to work on a behavior modification ward. In the

open ended question, all the subjects from Group R mentioned that the course helped them to better understand how to teach the retarded, while only five in Group L mentioned this. Group L subjects mentioned more general reasons why they valued the course, such as "I liked it" and "I learned a great deal." On the forced choice preference question, eight of the subjects from Group R expressed a preference to work on a behavior modification ward, while only four in Group L did so. While Group R's preference rate was twice that of Group L, the difference was not statistically significant (χ^2=1.875, df=1).

DISCUSSION

The primary purpose of this study was to examine the differential effects of role playing and lectures on training proficiency and knowledge of behavior modification principles. As predicted, role playing was more relevant to training proficiency while the lectures were more relevant to knowledge. Perhaps the most parsimonious explanation is that performance skills are best taught within a teaching framework that emphasizes performance skills, while verbal skills are best taught in a framework emphasizing verbal skills. The high correlation between final scores on the TPS and the BMT can be seen as an indicator of the correspondence between verbal and performance skills; generally, individuals competent in one area are competent in the other (eg., correlation between verbal and performance IQ), though there may be individual differences. The consistency in pre- to post-training BMT scores is also an expected finding. People who begin the course with a good store of knowledge end up with greater knowledge than those who entered with less knowledge. To the extent that the lectures closely correspond to the regular academic field, these results are not surprising. What is surprising, though, is the fact that pre-training TPS scores are not

related to post-training TPS scores. It may be that this type of training (in behavior modification techniques) is such a novel approach for these individuals that the initial level of competence is not a predictor of the rate of advancement.

Some interesting findings emerge on the interaction between verbal and performance abilities in regard to the generalization data. It appears that the result of role playing alone is to produce an adequate behavioral engineer who can train children in specific skills that she has been trained to teach, and generalize as well to novel situations. The addition of the lecture series, however, results in increased training skills as well as an ability to transfer the learning of specific tasks to novel tasks at a higher level. Thus, from phase one to the post-treatment evaluation, there was a significant increase in the scores under the novel TPS condition for Group R. While their performance under the standard condition also did increase, the difference was not significant ($.05 < p < .10$).

Comparisons between different socioeconomic groups provides some information which is potentially useful for selection purposes. In this study there were no differences in initial or final performance on either measure (BMT or TPS) between a high unemployment exclusively black inner city group and the regular attendants hired by the institution. In a previous study (Gardner, 1970c) it was found that experienced trainers did not differ significantly from inexperienced trainers in terms of knowledge (BMT score) or attitude following the training program. These two findings suggest that the prescriptive nature of education under this system combined with the novelty of the subject matter eliminate differences between different socioeconomic and experienced groups in regard to the dependent variable. The lack of variability in the system

channels responses within a narrow range. The lack of difference between different sequences (the major finding in this study) can also be explained in these terms. This point is clearly highlighted in the performance of Group L (refer to Table 2). Following phase one, their performance under the novel TPS condition was significantly better than under the standard condition. Within the framework of the hypothesis developed here, this can be seen as the initial creativity or individual variability. After the role playing series, however, there were no significant differences between novel and standard scores.

It is clear that the current system of training in behavior modification generates trainers that are knowledgable in behavioral principles and skillful in applying behavior modification techniques, however, other implications of this process need to be examined. The prescriptive nature of this particular education program, combined with the somewhat mechanistic nature of the training itself, may result in various undesirable side-effects. For example, it was found (Gardner, 1970c) that brighter students chose not to become involved in behavior modification wards, even though their test scores indicated that they would be the most successful in terms of training the children.

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FOOTNOTES

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2. This paper was presented at the 93rd annual meeting of the American Association on Mental Deficiency, Washington, D.C., 1970.

3. New Careers is a program for low income, high unemployment, inner city residents sponsored by the Office of Economic Opportunity.

TABLE 1

POPULATION CHARACTERISTICS

	R	L	t	P
NUMBER OF NEW CAREERS EMPLOYEES*	7	6		
ATTENDANT OPINION SURVEY	255.3	261.0	0.345	N.S.
ATTENDANT INFORMATION SURVEY	72.5	73.0	0.075	N.S.
TEST RESERVOIR FOR AIDE INSTRUCTORS IN NURSING	11.3	14.3	1.071	N.S.
TRAINING PROFICIENCY SCALE	45.5	45.6	0.025	N.S.
BEHAVIOR MODIFICATION TEST	138.7	139.0	0.625	N.S.

*New Careers is a program sponsored by the Office of economic Opportunity and is designed for low-income, high unemployment inner-city residents.

TABLE 2

MEAN TPS SCORES UNDER STANDARD AND NOVEL TEST CONDITIONS FOR GROUPS R AND L

	STANDARD CONDITIONS			NOVEL CONDITIONS		
	R	L	t	R	L	t
Pre-Treatment	45.5	45.6	0.025	45.5	45.6	0.025
Phase One	94.8	52.4	6.235**	95.4	69.5	3.597*
Post-Treatment	108.3	96.0	1.618	113.2	94.8	2.190

* .01

** .001

TABLE 3

MEAN SCORES ON BIT FOR GROUP R AND L

	GROUP		
	R	L	t(df=18)
Pre-Treatment	138.7	139.1	0.625
Phase One	150.1	163.7	2.193*
Post-Treatment	168.5	162.9	0.718

* .05

ISSUES FOR AN EARLY LANGUAGE STIMULATION PROGRAM FOR SEVERELY AND PROFOUNDLY RETARDED[1]

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Historically, residential institutions for the mentally retarded have limited their programs for the profoundly retarded to custodial care. Within the last few years, with the renaissance of operant conditioning or behavior modification, self-help training programs using reward training techniques have been implemented for the profoundly and severely retarded. These programs have emphasized toilet training, self feeding, dressing and work activities such as bed making.

There has been a hesitancy to attempt training in intellectual activities using reward training techniques especially in the area of communication or language development. The typical speech pathologist employed within the residential institution (Leach, 1964) emphasizes activities within the trainable and educable residents and with retardates with recognizable language disorders. There is a dearth of information related to early language stimulation and development for the profoundly retarded. Schlangler states that "the concept that defective communication results from mental retardation is typical of the negative attitudes of many examiners, particularly those in the speech and hearing profession.....In a given

[1]This study was partially supported by: HIP Grant No. R20 MR 02032-05 IST Grant No. 2 T10 MR 05021-06 and ESEA Grant No. 5-28-70019-200-40-1

communication training program, the attitude of the therapists may be as much in need of reorganization as are the communication habits of the subjects".

Matthew (1960) states that "The role of the speech pathologist in the area of mental deficiency is certainly not limited to that of diagnostician, interpreter, and referring agent...." With the increased attention currently being given to mental retardation will come more and more pressures on the profession of speech pathology to devote greater attention to speech problems associated with mental retardation. He points out some of the problems encountered in evaluating the intelligence of speech and hearing handicapped. The responses required in many tests are verbal. Matthew and Birch suggest that an adequate intelligence test should not require verbal response.

Kastein (1963) reports that from observation and from specific research studies that the label of gross impairment of a child such as "the retarded", "the deaf", "the blind" does not necessarily indicate the cause for his language and speech deficiency. The child is primarily a child, regardless of his obvious condition and, therefore, apt to suffer interference with his language and speech development as any other child not so impaired. Kastein suggests a differential diagnostic evaluation of a child's language and speech development as any other child not so impaired. Kastein suggests a differential diagnostic evaluation of a child's language and speech function can be made with great accuracy at an early age - when these functions should develop because the differentiation in fuction can be observed in isolation before compensatory mechanism and abnormal patterns develop and obscure the basic impairment. He states "that there is a better chance to help the child overcome his dysfunction when training

is introduced early before emotional consequence of poor perception, anxiety frustration and retardation, due to lack of language, develop and form, or deform his patterns of copying with the world around him and further retard his development".

Kastein reports that intelligence is not directly related to language development. A child must be helped to become ready at a time when speech should develop.

Kolstoe (1958) reports that a minimum mental age of two was necessary for language instruction to be profitable for mentally retarded mongoloid children.

Simon (1957) states that "maturation probably sets the pace for speech-learning". Maturation, which may be defined as "the growth and development which is necessary before any unlearned behavior can take place" is the evolvement from conception till death of the genetic factors which are present at the time of conception. Maturation, thus, seems to determine not only when a behavior may be learned, but even more important for the teacher, the most efficient time for that learning to take place. In other words, maturation apparently established various periods in the life of the organism when it is most open to certain kinds of stimulation from the environment, and when it will profit most from that stimulation, that is, a readiness to learn a given activity. Speech as a relatively complex function obviously depends on maturation for its development.

Simon (1957) reports that Schlanger, Irwin, Karlin and Strazzula (and others) agree that mental deficiency may delay or prevent speech. Irwin found that the speech performance of three year old imbeciles and idiots was the equivalent of normal children in their first year.

Speech learning is a continuous process, moving slowly for approximately a year and a half after the birth cry; then at an accelelerated pace, for about a year; to continue at a slower rate to some unpredictable, and probably unrecognized terminal plateau.

Kirk (1964) reports that "like speech, language development appears related to mental age; the higher the mental age, the better the language". Karlin and Strazzulia (1952) working in a medical clinic, surveyed fifty retarded children, ranging in age from three to fourteen. The histories of these children indicated that the lower the IQ, the later the children began to talk. The greatest retardation in growth was in the speech and language area.

Previous studies of speech and language production have not always agreed. Eisenson (1963) reports that "Metraux observed that by 30 months, the vowel production of children was 90 percent or more correct and that consonant production was 90 percent correct by 54 months in average or above average intelligent children. She states that average children reach speech sound proficiency earlier than do children who are below average in intelligence". Mathew (1960) reports that profoundly retarded IQ 15-20 begin to babble at 25 months, word use at 54 months, sentence use at 153 months, while severely retarded babble at 20 months, word use 43 months, and sentence use at 93 months.

In terms of onset of first word, the following has been reported:

Karlin & Strazzulla (1952)	IQ 15-20	54 months
Karlin & Strazzulla (1952)	IQ 26-30	43 months
Lapane (1911)	Low Grade Defect	41 months
Karlin & Strazzulla (1952)	51-70	34 months
Mead (1913)	Feebleminded	18 months
Wallin (1949)	Morons	11 months
Terman	Gifted 140+ IQ	10 months
Buhler	Upper Socio Econ.	15.3
McCarthy	Normal Children	

Analyzing this information available, we will utilize Eisenson's steps in development of speech.

1. Crying: The first oral response is the birth cry, which is an accompaniment of a motor-reflexive, totally a bodily response to a new environment. This is an undifferentiated cry, that cannot be discerned from cries which are reactions to pain, hunger or thirst. This author has found no data to show that any level of retardation has a delayed birth cry.

   Differentiated crying, which can be recognized as indicative of specific need or want, does not occur for two or three weeks. Again, this author knows of no research data reporting retarded having delayed development in differentiated crying. This author has been amazed at the ability of Nurses Aides on a Pediatric Wing for the profoundly and severely retarded to interpret these children's differentiated crying.

2. Babbling is first heard by normal children about the end of the second month. Babbling is a type of vocal play in which a great variety of sounds may be heard. Vowels appear first in babbling, followed in order by back and then front consonants. This babbling usually continues through 24 months.

   Although it has been reported by some researchers that onset of babbling for profoundly retarded does not occur un-

til 25 months, there have been no extensive studies relating etiology with onset of babbling. There are no studies to determine if the delayed babbling is related to a culturally deprived environment.

3. Lallation or sound imitation, usually begins in the sixth month. The child imitates his own sounds. Again, stuides in the area of expressive language have not dealt with the onset of lallation with the profoundly and severely retarded.

4. Echolalia, the imitation of sounds made by others, but not understood by the child, is the next step. This begins about the ninth month and lasts in a modified form, throughout life of the individual. This author knows of no research concerned with the onset and development of echolalia among the profoundly and severely retarded.

5. Verbal utterances bring the child to the stage where he is engaged in acquiring language. In this stage, the child is establishing a repertoire of conventionalized speech reactions as specific responses to socially presented stimulus patterns. This stage usually starts at about the beginning of the second year or 18 months.

BASIS OF SPEECH

Social Basis of Speech

Language develops partially as an avenue of self-expression and throughout life it retains its usefulness in the expression of his feelings as well as of his ideas. Even for the severely and profoundly

retarded, language develops the individual as the medium by which he fits himself into his social environment, incorporates his thinking and activities into the thinking and activities of those about him and lets other people know what he wants.

The profoundly retarded as well as normal children from the time of birth are striving to develop a communication system to inform the world of his immediate bodily needs. If he is unsuccessful, he dies! There have been numerous studies on the effect of isolation. Gary (1959) states that where communication is severely curtailed or restricted, social and personal isolation is the result.

The satisfaction of immediate bodily needs is required from the time of birth; therefore, even with the profoundly retarded individuals, language training and stimulation must begin at birth.

Physiological Basis of Speech

For production of sounds, only two things are necessary: a source of energy and a vibration. In the profoundly retarded, there is no reason to believe that source of energy, that is respiration, is any different than in the normal individual. Effective breathing may be a concern; therefore, the earlier correct breathing is developed and trained, the least likelihood of breathing affecting the adequate development of language skills.

Similarily, we should not expect the profoundly retarded to have any different types of vibrator or phonation mechanisms. Therefore, unless there are actual defects such as in Downes Syndrome, we should expect normal maturation in the sound production ability.

In the process of hearing, unless we find definite defects of the auditory mechanism, we should then expect the hearing process of the profoundly retardate to be no different than the normal individual.

Neurological Basis of Speech

In discussing the social and physiological basis of speech, we primarily focused on basic biological functions of eating, hearing, and breathing. There is no doubt that scores of muscles in the lips, tongue, pharynx, larynx, thorax, and abdomen are involved in the production of even a simple phrase and that they must be highly coordinated and syndchronized. This muscular coordination thus needs the guidance of an exceedingly complex control system.

It is in the area of this control system, that profoundly retarded have the greatest difficulties. The ability to speak is based upon incredibly nice adjustments of the nervous system. With such close tolerances, any sort of neural disturbance may throw them out of order. The problem is thus that we find suggestions among the profoundly retarded of neurological deficit and/or damage. For the profoundly retarded, the learning of speech still requires the same process of normals. The neural focus of learning is wherever neural impulses travel a pathway repeatedly and leave a memory trace. Forgetting is the fading of these memory traces, by reason of the disuse of the particular pathways. For the profoundly retarded, then, the problem is to find usable pathways, and techniques to provide repetition over the same specific pathways.

Lenneberg (1960) states: "Three linguistic phenomena, phonematization, concatenation and grammatization have all the characteristics of inherited, innate traits and one of the learned type behavior."

Speech is learned in this sense; a child does not develop full-fledged language in the absence of an appropriate speech environment but even so, there will be some rudiments of communication by means

of symbolic representation. Under normal conditions, there is a continuous interaction between innate mechanism and the stimulating effects of the child's environment. By processes of maturation, the child makes progressive use of environmental stimulating or releasing mechanism, not because the child's "long range purpose is to speak like the neighbor", but because he is endowed with a complex series of innate, interacting behavior patterns that are elicited in a more or less automatic manner by the speaking environment that surrounds him.

Webb (1963) states: "(1) Speech is not a markedly high level function in humans. (2) Speech is a skill learned by imitation of others. (3) In the retarded child, age and size are poor indicators of learning readiness.

"Readiness to learn to understand speech may be indicated by the child's attention to your voice....echo a few sounds. Speech is something the child controls.

"It is not that mentally retarded children cannot learn, but that they may learn at a slower rate!"

We find that Mongoloid children elicit their first word about the same time as normal children. There are no intensive studies that investigate use of first word, level of retardation and etiology.

Although McCarthy (1964) stated that Kolstoe's view (1958) that an IQ of 25 might represent the limit below which training is not useful, it deserves further exploration. There have been limited investigations into this area.

We have discussed briefly the status of language development in profoundly retarded, maturation concepts of language development and a summary of studies related to onset of expressive language among retardates.

This author agrees with Schlanger and Gottsleben (1957) and McCarthy (1960) that it would be superficial to diagnose delayed speech as caused by mental retardation. It seems reasonable to suppose that the genetic or environmental agents responsible for retardation are also responsible for linguistic defects. Similarly speaking, where there are no indications of genetic agents responsible for retardation, we should expect linguistic maturation to be no different than for the normal individual. In other words, except in cases of genetic agents causing mental retardation, the mentally retarded individual should be most open to certain kinds of stimulation at the usual time for normal individuals. To clarify this rationale, if we have no reason to believe that the usual time of onset of puberty or menstruation should be affected in a mentally retarded individual, there is no reason to believe that other maturation factors should be affected.

Furthermore, there is indication that if adequate stimulation is not presented at the appropriate maturational time, then it becomes more difficult to learn a behavior or impede the development permanently.

Penwill (1958) states: "Thus speech deprivation may not only restrict communication and experience, but depending upon its degree, may even limit the development of the thought processes and hence intelligence. McCarthy further reasons that if the induced linguistic-intellectual defect existed from an early age and were of sufficient severity and duration, then its effects might prove permanent.

One could then explain reported delayed language development among retarded in terms of inadequate reinforcers at the appropriate time. Linguistic behavior is learned and is subject to the same rules of learning that govern other behaviors. Therefore, the rationale presented

in this paper suggests that if detailed linguistic program activities are presented at the correct maturation time with sufficiently strong reinforcers over adequate pathways, then mentally retarded should learn linguistic behavior as normals, but at a slower rate!

There have been some suggested language programs for infants and very young children. The University of Washington School of Nursing (Hedrick - 1969) have produced a guide to promoting development in the young child. In this guide the authors list expected tasks and suggested activities beginning at one month of age. The tasks and activities are broken into receptive and expressive language.

Gollin (1967) reports some very interesting research trends in infant learning. He reports training of infants with a median age of three months using a smile as a reinforcer to increase vocalization.

Another area of research in early language stimulation is the relationship of left-right discrimination and language development. Kemuria (1963) (1964) (1961) found that the left hemisphere is dominant for speech by age 4, that there may be different roles for the right and left hemispheres of the brain in verbal and non-verbal perception. Kemuria further found in studying brain damage and auditory perception that the left temporal lobes are particularly important in the perception of verbal material, at least in the auditory modality.

Pilot Project - Phase I

Ignoring Kolstoe's statement that a minimum mental age of two was necessary for language instruction to be profitable and following the early stimulation rationale, a pilot project was implemented with a group of profoundly and severely retarded individuals. In order to measure the affects of an early language stimulation, we revised the

North Jersey Training School Nursery Language Modalities test which was a test based on the Parson's Language Sample.

For the purpose of this report, we will call the measure used as the Pinecrest Language Nursery Test.

Sample: Two hundred seventy-eight (278) mentally retarded housed on five cottages with IQs ranging from 4 to 65 and C/A from 5 to 31 were utilized. They were all ambulatory. Mental ages ranged from .6 to 5.5.

For another group of pediatric and nonambulatory, mental ages 0 - 4.2 and life age 1 to 23, we utilized a language evaluation chart of language development to find highest language level.

Measuring Instrument

The Pinecrest Language Nursery test was designed to measure both receptive and expressive language. Part I measured both receptive and expressive language as it relates to body image and self-awareness. Part II measured auditory vocal presentations for identification and auditory visual presentation for vocal response. Part III measured visual decoding or matching. Part IV, motor encoding, "Show me what you do with this." Part V, comprehension of commands and VI, echoic gesture or imitation.

The language evaluation chart lists characteristics of language development at each month level from one month of age to 5½ years, combining the language items from child development scales of Berry (1956), Carmichael (1954), Gessell (1943) and Schrieber (1956).

Method

Phase I consisted of administering the Pinecrest Language Nursery Test or the Language Evaluation Chart to all the residents. Phase II

was to implement a detailed language stimulation program using reward training techniques. A training manual was developed for the Cottage Parents and Nurses Aides by the Speech Pathologist with consultation with Julia Molloy, Orchard School; Byrn Witt, Clearbrook Center for the Retarded; and Alice Sims, Louisiana State Board of Health. Phase III will be a retesting of the group after a year of intensive training.

Results: Phase I

The Pinecrest Language Nursery Test (PLNT) was administered to 278 mentally retarded youngsters. Table I presents in detail the raw score norms. This data does not readily show the wide variation of life age and IQ. Table II presents the same detail of the raw score norms by life age categories. Table III presents in detail the mean percentage items passed in each category and at each MA level. Ourfindings prior to the intensive stimulation program (this does not mean that langauge activities were not conducted prior to this) suggests that receptive language development can be expected as early as .6 MA and well developed by a MA of 1.5. By mental age 1.5, these mentally retarded residents could identify 50 percent of presented body parts. Matching, motor encoding, comprehension of command and echoic gesturing are all well established by mental age 1.5. Success at matching does not occur until mental age of approximately 1.0, and the same mental age is required for beginning imitation. Motor encoding and comprehension of command was for as early as .6 MA.

In the area of expressive language, we found some retarded e of naming and echoing body parts as early as MA 1.5 and with su success at MA 3.0. The ability to name and echo the things in environment occurred slightly later than did naming parts of b

Naming items depicted in colored photographs seemed to be no easier than naming large real objects, or small real objects. They performed poorest in naming the miniatures.

These findings suggest that even without intensive training activities, language instruction might be profitable before MA 2.0.

The language evaluation chart was administered to a group of profoundly retarded on the Pediatric and Infirmary Units of our Institution. These areas house retardates who are either nonambulatory due to a variety of motor involvements or cerebral palsied conditions in extremely young who have not yet learned to ambulate.

In a pilot sample of 30 of these residents, we found a negative correlation, Pearson r x y = - .18, between life age and highest level of language development as rated on the language evaluation chart. We found a correlation, r x y = .43, between IQ and highest language level which is not very high. We further found a correlation of r x y = .15 between MA and HLL which suggests no relationship between these two for this group. We compared HLL with etiology using the AAMD classification system. In the 30 cases, we found 13 different etiologies. We have found that this approach might provide additional information when we secure a larger sample.

Phase II

The residents were involved in an intensive detailed language stimulation program using reward training techniques. The language manual used provided specific body images, tongue and lip exercises, receptive and expressive language activities. Approximately a year later, 143 residents were retested on the language nursery scale.

In body image, naming and echoing, there was 6 - 7 percent improvement and 6 percent became poorer, but 17 percent improved in body image identification. In motor response identification of items, there was a 20 percent improvement of identifying miniatures, 14 percent in colored photos, 12 percent in small real objects and only 8 percent in the area in which they were already fairly successful.

For vocal response to an auditory visual presentation, there was an 8 percent improvement in both naming and echoing and 3 - 4 percent became poorer.

In visual decoding (matching activities), there was a 14 percent improvement but 8 percent became poorer.

For motor encoding ("Show me what to do with this."), there was a 21 percent improvement which can be interpreted as an early sign of cognitive development.

There was a 17 percent improvement in comprehension of commands. This is a group who had already demonstrated ability to become under behavior control using reward training techniques.

In echoic gesturing ("Do this."), 17 percent became poorer, and 10 percent improved. This might be another sign of cognitive development where a profoundly retarded might be saying - "Hey, what's wrong with you? You are teaching me to do for myself, but now you want me to play that childish copy-cat game again!"

Summary

A rationale for early language stimulation was presented. The rationale suggests that the time for language stimulation and instruction should be the same for mentally retarded and normals alike except for

those mentally retarded whose genetic etiology affect maturation. The rationale further suggests the use of reinforcers in a systematic manner at the appropriate time to develop language. A pilot program of early language stimulation was described and results reported. It was found that profoundly retarded IQs less than 25 showed signed of receptive languages as early as MA .6 and expressive language at MA 1.5.

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TABLE I
LANGUAGE NURSERY TEST

Mean Number of Items Passed by Mental Age

MA	N	CA	IQ	I. BODY IMAGE ECHO	NAMING	IDENT.	II. AUDITORY VOCAL PRESENTATION MOTOR RESPONSE IDENT. LRO	SRO	M	CP
0.6-0.9	71	11.94	8.89	.24	.38	1.58	1.75	2.55	1.38	3.03
1.0-1.4	70	14.91	11.59	.60	1.13	2.91	3.36	4.56	3.13	6.51
1.5-1.9	39	14.00	15.85	2.26	4.97	5.15	7.03	7.56	6.23	13.31
2.0-2.4	28	12.64	21.25	5.36	7.79	6.79	9.14	8.57	7.75	17.61
2.5-2.9	22	14.14	24.41	5.41	6.91	6.64	7.50	7.73	8.09	17.91
3.0-3.4	11	16.91	22.36	7.36	5.45	7.36	8.91	8.18	8.55	20.45
3.5-3.9	15	14.60	31.87	6.27	4.73	6.80	8.80	8.47	8.33	18.00
4.0-	22	15.27	44.86	9.32	8.45	8.95	9.86	9.00	9.00	19.91
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				AUDITORY VISUAL PRESENTATION - RESPONSE Naming				Echo			
MA	N	CA	IQ	LRO	SRO	M	CP	LRO	SRO	M	CP
0.6-0.9	71	11.94	8.89	.17	.14	.13	.31	.32	.27	.25	.66
1.0-1.4	70	14.91	11.59	.64	.46	.30	1.23	.79	.73	.29	1.14
1.5-1.9	39	14.00	15.85	1.90	1.90	1.44	3.69	2.79	2.56	1.90	4.21
2.0-2.4	28	12.64	21.25	5.32	4.86	3.75	10.11	5.75	5.18	5.89	11.68
2.5-2.9	22	14.14	24.41	5.00	5.14	3.95	11.23	5.36	5.36	4.23	12.59
3.0-3.4	11	16.91	22.36	5.45	5.00	4.09	10.00	5.55	5.09	4.27	10.55
3.5-3.9	15	14.60	31.87	4.67	4.27	3.53	12.27	5.60	4.73	4.33	13.67
4.0-	22	15.27	44.86	8.18	7.82	8.14	17.23	8.18	7.50	7.73	17.91
	278										

MA	N	CA	IQ	III. VISUAL DECODING	IV. MOTOR ENCODING	V. COMPREHENSION OF COMMANDS	VI. ENCODING GESTURE
0.6-0.9	71	11.94	8.89	.61	2.44	3.17	.54
1.0-1.4	70	14.91	11.59	1.70	4.00	5.50	1.27
1.5-1.9	39	14.00	15.85	3.08	4.74	8.08	3.72
2.0-2.4	28	12.64	21.25	3.96	5.96	9.00	11.68
2.5-2.9	22	14.14	24.41	3.45	6.27	8.05	2.27
3.0-3.4	11	16.91	22.36	4.09	7.36	9.82	4.73
3.5-3.9	15	14.60	31.87	4.13	7.13	9.00	3.80
4.0-	22	15.27	44.86	4.73	7.73	9.82	1.68
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LRO - Large Real Objects M - Miniatures
SRO - Small Real Objects CP - Colored Photos

TABLE II
LANGUAGE NURSERY TEST

Mean Number of Items Passed By Life Age

CA	N	MA	IQ	I. BODY IMAGE ECHO	NAMING	IDENT.	II. AUDITORY VOCAL PRESENTATION MOTOR RESPONSE IDENT. LRO	SRO	M	CP
4-5	13	1.16	23.77	0	0	3.38	2.23	3.62	2.23	6.77
6-7	31	1.59	23.71	2.52	2.19	5.23	5.13	7.55	4.00	7.68
8-9	30	1.58	19.43	2.97	1.67	4.17	4.10	4.90	3.83	8.10
10-11	37	2.07	20.19	2.11	1.84	5.14	5.27	5.49	4.57	9.84
12-13	38	1.73	14.86	4.02	1.84	3.55	5.28	5.36	4.92	10.68
14-15	36	2.35	19.61	5.97	4.30	5.05	7.00	6.77	6.50	14.66
16-17	22	2.26	16.86	6.09	5.18	5.59	7.18	7.18	7.09	16.77
18-20	36	1.82	12.27	5.72	2.50	2.47	6.25	6.88	5.58	13.00
21-24	23	2.23	14.69	6.60	3.86	2.95	5.91	6.86	5.39	11.86
25-	12	1.99	13.66	5.08	3.00	2.91	4.00	4.33	5.08	6.25
	278									

CA	N	MA	IQ	II. AUDITORY VISUAL PRESENTATION - VOCAL RESPONSE Naming LRO	SRO	M	CP	Echo LRO	SRO	M	CP
4-5	13	1.16	23.77	.85	.01	.01	1.00	.85	.01	.01	1.31
6-7	31	1.59	23.71	2.19	2.26	2.03	4.35	2.74	2.32	2.23	5.03
8-9	30	1.58	19.43	2.17	1.57	.87	3.20	1.77	1.03	.93	3.57
10-11	37	2.07	20.19	1.89	1.73	1.62	3.46	2.22	2.11	1.54	4.30
12-13	38	1.73	14.86	1.81	1.73	1.44	4.21	1.89	1.94	1.57	4.36
14-15	36	2.35	19.61	4.02	3.75	3.38	8.77	4.16	3.91	3.38	9.66
16-17	22	2.26	16.86	4.90	4.50	3.36	9.81	9.81	4.36	3.27	10.04
18-20	36	1.82	12.27	1.94	2.50	1.94	4.27	2.27	2.72	2.36	5.13
21-24	23	2.23	14.69	2.78	2.69	2.52	5.69	3.08	3.26	3.04	7.39
25-	12	1.99	13.66	1.75	1.16	1.16	5.33	3.33	2.82	3.00	4.08
	278										

CA	N	MA	IQ	III. VISUAL DECODING	IV. MOTOR ENCODING	V. COMPREHENSION OF COMMANDS	VI. ENCODING GESTURE
4-5	13	1.16	23.77	1.54	3.77	4.00	1.77
6-7	31	1.59	23.71	2.06	3.94	6.26	3.00
8-9	30	1.58	19.43	2.03	4.00	5.57	2.57
10-11	37	2.07	20.19	2.54	3.81	5.67	2.32
12-13	38	1.73	14.86	1.97	4.10	6.31	1.24
14-15	36	2.35	19.61	2.80	5.77	7.77	1.41
16-17	22	2.26	16.86	2.63	5.50	8.04	1.04
18-20	36	1.82	12.27	2.88	5.27	7.41	2.75
21-24	23	2.23	14.69	3.43	8.69	7.21	2.69
25-	12	1.99	13.66	1.41	3.66	5.50	1.33
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TABLE III
LANGUAGE NURSERY TEST

Percentage Items Passed Language Nursery Scale by M.A. Level

				I			II			
				BODY IMAGE			AUDITORY VOCAL PRESENTATION MOTOR RESPONSE IDENT.			
MA	N	CA	IQ	ECHO	NAMING	IDENT.	LRO	SRO	M	CP
0.6-0.9	71	11.94	8.89	15.8	2.4	3.8	17.5	28.3	15.3	13.8
1.0-1.4	70	14.91	11.59	29.1	6.0	11.3	33.6	50.7	34.8	29.6
1.5-1.9	39	14.00	15.85	51.5	22.6	49.7	70.3	84.1	69.2	60.5
2.0-2.4	28	12.64	21.25	67.9	53.6	77.9	91.4	95.2	86.1	80.0
2.5-2.9	22	14.14	24.41	66.4	54.1	69.1	75.0	85.9	89.9	81.4
3.0-3.4	11	16.91	22.36	73.6	73.6	54.5	89.1	90.9	95.0	92.9
3.5-3.9	15	14.6	31.87	68.0	62.7	47.3	88.0	94.1	92.6	81.8
4.0-	22	15.27	44.86	89.5	93.2	84.5	98.6	100.0	100.0	90.5
	278									

				II							
				AUDITORY VISUAL PRESENTATION - RESPONSE							
				Naming				Echo			
MA	N.	CA	IQ	LRO	SRO	M.	CP	LRO	SRO	M.	CP
0.6-0.9	71	11.94	8.89	1.7	1.5	1.4	1.41	3.2	3.0	2.8	3.0
1.0-1.4	70	14.91	11.59	6.4	5.1	3.3	5.5	7.9	8.1	3.2	5.2
1.5-1.9	39	14.0	15.85	19.0	21.1	16.0	16.8	27.9	28.4	21.1	19.1
2.0-2.4	28	12.64	21.25	53.2	54.0	41.7	45.9	57.5	57.6	65.4	53.1
2.5-2.9	22	14.14	24.41	50.0	57.1	43.9	51.0	53.6	59.6	47.0	57.2
3.0-3.4	11	16.91	22.36	54.5	55.5	45.4	45.5	55.5	56.5	47.4	47.9
3.5-3.9	15	14.6	31.87	46.7	47.4	39.2	55.8	56.0	52.5	48.1	62.1
4.0-	22	15.27	44.86	81.8	86.8	90.4	78.3	81.8	83.3	85.9	81.4
	278										

MA	N.	CA	IQ	III. VISUAL DECODING	IV. MOTOR ENCODING	V. COMPREHENSION OF COMMANDS	VI. ENCODING GESTURE
0.6-0.9	71	11.94	8.89	12.2	30.5	31.7	9.0
1.0-1.4	70	14.91	11.59	34.0	50.0	55.0	21.2
1.5-1.9	39	14.0	15.85	61.6	59.3	80.8	62.0
2.0-2.4	28	12.64	21.25	79.2	74.5	90.0	28.0
2.5-2.9	22	14.14	24.41	69.0	78.4	80.5	37.8
3.0-3.4	11	16.91	22.36	81.8	92.0	92.2	78.8
3.5-3.9	15	14.6	31.87	82.6	89.1	90.0	63.3
4.0-	22	15.27	44.86	94.6	96.6	92.8	28.0
	278						

LRO - Large Real Objects
SRO - Small Real Objects
M - Miniatures
CP - Colored Photos

TABLE IV

LANGUAGE NURSERY TEST RESULTS
POST TESTING RESULTS
N=143

	IMPROVED	POORER	SAME
I. BODY IMAGE			
A. Echo	8 (6%)	8 (6%)	127
B. Naming	10 (7%)	9 (6%)	124
C. Identification	24 (17%)	10 (7%)	109
II. AUDITORY VOCAL PRESENTATION - MOTOR RESPONSE IDENTIFICATION			
A. Large Real Objects	12 (8%)	7 (5%)	124
B. Small Real Objects	17 (12%)	10 (7%)	116
C. Miniatures	29 (20%)	10 (7%)	104
D. Colored Photos	20 (14%)	8 (6%)	115
AUDITORY VISUAL PRESENTATION - VOCAL RESPONSE			
Naming:			
A. L.R.O	11 (8%)	4 (3%)	128
B. S.R.O.	10 (7%)	6 (4%)	127
C. M.	10 (7%)	6 (4%)	127
D. C.P.	11 (8%)	5 (3%)	127
Echo:			
A. L.R.O.	10 (7%)	5 (3%)	128
B. S.R.O.	10 (7%)	5 (3%)	128
C. M.	11 (8%)	6 (4%)	126
D. C.P.	12 (8%)	4 (3%)	127
III. VISUAL DECODING	20 (14%)	11 (8%)	112
IV. MOTOR ENCODING	30 (21%)	15 (10%)	98
V. COMPREHENSION OF COMMANDS	25 (17%)	7 (5%)	120
VI. ENCODING GESTURE	15 (10%)	24 (17%)	104

CONTINGENT REINFORCEMENT FOR TRAINING ATTENDANTS IN BEHAVIOR MODIFICATION SKILLS[1]

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In a combination institutional-community behavior modification program, established at Columbus State Institute to train severely and profoundly mentally retarded[2] residents, a major thesis is that in order to ensure the success of the project, it is necessary to utilize contingent reinforcement with the staff as well as the residents. Many problems that develop in these kinds of projects are due to personnel problems as opposed to resident problems. Most existing behavior modification programs have given little or no attention to the use of contingent reinforcement with their staff.

In keeping with this thesis, reinforcement contingencies are established for the superintendent, the clinical director, the director of nursing, nursing supervisors, ward attendant supervisors, attendants and community workers as well as for residents. The rule of thumb is that you determine the behavior you want to shape in your staff and residents and make this behavior contingent upon reinforcement. The contingencies established for the superintendent, clinical director and director of nursing are, of course, not as stringent as those set up for ward supervisors, attendants and community program staff.

The primary goal of this program is to habilitate all of the severely and profoundly retarded children at Columbus State Institute.

This component of the institutional population constitutes approximately 500 persons who occupy 15 wards. The strategy used to realize this goal is to deal with the wards, one at a time; to train both the residents and the attendants working on the ward, and after training is completed, move to another ward. Residents are taught self-help and social skills while attendants are taught how to use contingent reinforcement procedures to shape and maintain these skills in such retardates. This procedure is scheduled to continue until all attendants and residents on all 15 wards are trained.

In order to provide additional staff for the institutional program, community workers, Youth Corps workers and Ohio State University students receive supervised behavior modification training on the ward. While they are acquiring behavior modification skills, they are also providing badly needed clinical service to the institutional program. Two secondary goals then, are to provide a training facility for persons who will be involved in behavior modification programs elsewhere; and more specifically, to train workers who will provide the necessary manpower for a community behavior modification program. The community program is designed to teach self-help and social skills to emotionally disturbed mentally retarded and autistic children living at home.

STAFF AND FUNCTIONS THEY SERVE

Institution

Ward Staff. There are two groups of ward staff working in the institutional program. One group is the Itinerant Training Team, consisting of 13 attendant level technicians and one RN program director. The second group is the regular ward staff. The Itinerant Training Team comprise the nucleus of the ward training team. They move onto

a ward, relieve the regular ward attendants of their child care and nursing duties, and begin teaching the residents self-help and social skills. Meanwhile, the regular ward attendants and the ward matron become fulltime trainees and attend both an academic behavior modification program and serve an internship. They serve the internship on the same ward occupied by the Itinerant Training Team--their home ward. During their internship, they teach residents self-help and social skills under supervision of the Itinerant Training Team. Thus, they provide additional manpower for training residents. When the residents and regular ward attendants complete training, the Itinerant Training Team moves onto another ward leaving the now trained attendants to maintain the newly acquired self-help and social skills in residents.

The following <u>self-help skills</u> are taught to residents by the Itinerant Training Team and the attendant trainees serving their internship: proper use of the toilet to eliminate, dressing, undressing, going into the lunchroom cafeteria fashion and eating with a spoon without stealing from one's neighbor, bathing, toothbrushing, and combing their hair. <u>Social skills</u> taught are: receptive or functional language and speech, social and normal play behavior, emotional behavior control, educational skills, and simple work skills.

<u>Extraward Staff</u>. A group of seven professional staff, five psychologists, one speech therapist and a program administrator, either provide direct training to residents or act as consultants to the ward program. A psychologist and the speech therapist provide residents with daily speech training. One psychologist operates an advanced preschool for residents. This group has helped set up and act as consultants

for three ward programs: the social behavior development program, the receptive language and concept development program, and the pre-school program. In addition they train and consult with Youth Corps workers, community program trainees and undergraduate and graduate students from Ohio State University receiving training.

Youth Corps workers and university students also receive behavior modification training and participate in various phases of the ward program, usually the educational or language programs. Youth Corps workers are enrolled in the program for the purpose of learning an occupational skill. University students, majoring in psychology, special education and speech correction, are taking behavior modification training for course credit. There are ordinarily four Youth Corps workers and 15 university students participating in the program.

Community

The extrainstitutional behavior modification program provides treatment for autistic and emotionally disturbed mentally retarded children living in the community. The purpose of this program is to habilitate children at home: teach them sufficient self-help and social skills to allow them to adapt to life in the community, teach their mothers how to maintain these skills after they have been acquired, and prevent them from being committed to an institution. The program is designed to eventually care for 64 children. They may range from profoundly retarded to educable retarded. The one characteristic they have in common is that they are severe behavior problems. A secondary goal is to provide manpower to operate the social skill development programs on wards vacated by the Itinerant Training Team.

The program staff consists of the same seven professional persons involved in the institutional program, the mothers of the children in the community program and volunteers. The professional staff train the mothers and volunteers and supervise them as they train the children in the home setting. The mothers and the volunteer force attend the institutional academic behavior modification program, the volunteers serve a four-month ward internship and the mothers serve a more abbreviated internship since most cannot leave their children for such an extended period of time. During their internship, the volunteers learn to use these behavior modification skills and provide a badly needed source of manpower for maintaining the ward social skill program after the Itinerant Training Team vacate. Mothers learn behavior modification skills that not only allow them to help train their own children, but also make it possible for them to maintain this behavior once it is learned. After the internship, mothers and volunteers work with a child in his home, teaching him self-help and social skills similar to the ones taught on the ward. Since some of the children in the community program are of a higher level than those in the institutional program, the social skills taught are more similar to those taught to normal children, e.g., the educational program includes reading and mathematics phases.

TRAINING

The Behavior Modification Training Program is set up in two phases: classroom training and ward internship. The classroom phase is designed to develop two types of skills: behavior modification-verbal behavior and actual behavior modification skills. The purpose of the verbal behavior component is to provide the trainee with a set of principles

or a conceptual system that will enable her to analyze the multitude of behavioral problems she will encounter in terms of behavior modification principles. She is taught behavior modification skills so that she will know how to translate behavior modification principles into action. The ward internship phase of training allows the trainee to develop the skills acquired in the classroom to a high level of proficiency and learn to apply them to retarded residents in a ward situation. Attendants, Youth Corps workers, community volunteers and mothers of children in the community program go through this program as it is described. University students go through a truncated form of this program.

Classroom Training

Trainees learn both principles of behavior modification and how to apply them to real life behavioral problems in the classroom phase of training. The classroom program lasts approximately three weeks. Teaching is accomplished through a contingent textbook-lecture-discussion series. There are nine such units. The trainee starts by receiving her first textbook assignment. In order to be admitted to the corresponding lecture, she must make a passing grade (90 percent correct) on an examination that evaluates her understanding of the textbook assignment. If she passes, she can proceed to the lecture: if she fails, she must repeat the textbook assignment and take a second examination. If she fails the exam a second time, she is required to repeat the reading-text procedure, and if she fails it a third time she is tutored until she understands the material, and then progresses to the lecture. The textbook is written so that few persons ever repeat an exam more than once. Designed by the senior author, it is written in layman's language using common everyday examples to illustrate the different principles. No

attempt is made to teach trainees to talk and act like more traditional academically trained psychologists.

Lecture material is presented by tape recorder along with 35mm. slides that illustrate the recorded subject matter. The lecture is an extension and further illustration of the material presented in the text. It is designed to clarify and amplify the text. The same contingencies required for progressing from the textbook assignment to the lecture are also required for moving on to the corresponding discussion. The trainee must pass a lecture examination at the 90 percent level. The purpose of contingent examinations is to prevent trainees from progressing to subsequent steps of the program until they have satisfactorily understood previous steps. A 90 percent test criterion is used in order that she understands each program component well. The discussion is designed to clarify any material that was not understood in the lecture. Lecture examinations are evaluated to determine areas of ambiguity, and these areas are then covered in the discussion. After the trainee completes the discussion, she receives her next textbook assignment on noncontingent basis. There is no discussion examination.

Three principles are taught in the course: contingent reinforcement, shaping, and stimulus control. The basic notion about reinforcement, as it is presented, is that reinforcement is something people like or are willing to work to obtain. It is emphasized that contingent reinforcement is the concept that accounts for behavior being shaped and maintained. A person is required to do something to get the reinforcement. Reinforcement is considered further in terms of accelerating and decelerating behavior. The shaping principle constitutes the programming concept. Shaping techniques are characterized as procedures used to mold or develop complex behavior. Two subprinciples, successive

approximation and chaining, are presented as the basic shaping principles. Stimulus control is presented as a principle that explains why behavior occurs appropriately or inappropriately. Illustrations such as rape and robbery are used as examples of people in society being under inappropriate stimulus control. Stopping one's car when an approaching traffic light turns red or accelerating after it turns green are illustrations of behavior that is under appropriate stimulus control.

After all nine textbook-lecture-discussion units are successfully completed, the trainee progresses to actual behavior shaping training. She begins by seeing a movie and a demonstration of teaching self-help skills to severely and profoundly retarded children. Next she attempts to apply behavior modification skills herself with a fellow trainee in a role playing situation. One trainee plays the role of a behavior modifier while the other plays the role of a retardate; then their roles are reversed. When the trainee can pass a behavioral test that assesses how well she can actually apply behavior modification techniques (at a 90 percent level), she is assigned a severely or profoundly retarded child and attempts to teach him self-help skills. When she passes a second behavioral test in the one-child situation, (again at a 90 percent level), she has completed classroom training, receives her ward assignment, and begins an internship that lasts for approximately five months.

Ward Internship

The ward internship serves two functions. First, it provides trainees with an opportunity to develop and improve the behavior modification skills learned in the classroom; and second, it provides the

ward with a mass of manpower. The Itinerant Training Team comprises the primary teaching force supported by the professional staff. The Itinerant Training Team provides six persons each on the day and the afternoon shifts. In addition, the four regular ward staff serve their internship on the ward while it is occupied by the Itinerant Training Team. Four Itinerant Training Team members serve a resident training function while two act as program administrators. Three of the regular ward staff trainees serve a resident training function, while one carries out administrative duties. There is one attendant for each four to five children. Attendant trainees teach self-help and social skills to retardates under the supervision of the Itinerant Training Team. The Itinerant Training Team is involved with both training children and training and supervising attendant trainees. Youth Corps workers assist the Itinerant Training Team members and work under their supervision.

After six to eight months, the Itinerant Training Team phases out, leaving the ward to be administered by the now trained regular ward attendants. The regular ward attendants are supplemented by the community volunteers serving their four-month internship. The volunteers participate in the social skill developed programs, such as language development and educational skill development. An additional source of manpower is provided by university students. They are usually involved in the language and educational programs, working under the supervision of the professional staff.

REINFORCEMENT OF STAFF

Classroom

Reinforcement used in the classroom consists of progressing from one part of the academic program to the next, recognition or approval from the instructor and peers, and time off from training. Since progress from a given textbook assignment to the corresponding lecture is contingent upon a 90 percent examination grade, and progress from the lecture to the discussion is contingent upon a second 90 percent examination grade, reinforcement for 90 percent examination grades is progress through different components of the academic program. The same contingency holds for the role playing and one child phases of training.

During classroom discussions, the instructor asks questions about problem areas revealed by the lecture exam, and requires all trainees to discuss the lecture content. During these discussions, trainees are given verbal recognition by the instructor for correct responses. People who finish the classroom program ahead of the rest of the group receive time off.

Ward

There are three main contingent reinforcements used with attendant trainees and the Itinerant Training Team: 1) the authority and responsibility to make changes in the program goals and the way the program is implemented, 2) recognition from supervisors and peers, and 3) time off from work. There is a weekly staff meeting on the ward that is similar to a group therapy session. Attendant trainees, the Itinerant Training Team, the program directors and administrators sit down and discuss resident training problems and staff problems. Those attending the meeting have the right to criticize anyone in the program, and if a consensus is obtained, changes are made in ward operation procedures. For example, if attendant trainees protest that their custodial duties

are so time consuming that no time is left to teach retardates self-help skills, an effort is made to isolate the cause of this problem, and steps selected by the attendants are taken to eliminate it.

Three forms of recognition are used as reinforcement. An Itinerant Training Team member may be watching a trainee teaching a retardate a self-help skill and tell her she is doing a good job of training, or she may comment on the quality of the trainee's data sheet. Second, during each weekly ward staff meeting, trainees and members of the Itinerant Training Team are given recognition for having made a significant behavioral change in a particular child. The child's name is announced and the chairman of the meeting then describes the nature of his improvement and announces the names of the persons who work with that child. The person's picture is taken and posted on the "Recognition Bulletin Board". Third, an engraved plaque is awarded each month to the group of trainees and members of the Itinerant Training Team whose children showed the greatest progress during the past 30 days.

Time off is given primarily for attendance and punctuality. When a person has come to work without being late for 25 successive days, she receives a half day off. This procedure appeared to result in a marked reduction in absenteeism and tardiness. Time off was also used successfully to reinforce data collection.

In order to make it possible to use contingent reinforcement with attendant trainees and the Itinerant Training Team, a chain of responsibility and accountability is clearly defined to determine which persons are accountable for the different ward functions. Each attendant trainee and each member of the Itinerant Training Team is responsible for certain children and certain custodial duties and accountable to

one supervisor. If some aspect of training or some custodial duty is neglected, it is clear who is responsible. If a particular phase of training with certain children or certain custodial duties is being carried out satisfactorily, it is clear who should be given recognition. Similarly the duties and responsibilities of the supervisors are also clearly defined. Supervisors are responsible for attendant trainees and members of the Itinerant Training Team and accountable to the program director. If an attendant trainee or a member of the Itinerant Training Team is neglecting her duties, it is the responsibility of the supervisor to find out why and correct the situation. It is also the responsibility of the supervisor to give recognition when certain contingencies have been satisfied. Further, it is the responsibility of the Ward Program Director to see that the supervisor executes her duties and to give the supervisor recognition for contingencies that have been established for her that she has satisfactorily met. She, in turn, is accountable to the Program Coordinator who is responsible for giving reinforcement and feedback to the Ward Program Director. The Program Coordinator is accountable to the Director of Nursing Services and the Clinical Director. The Clinical Director is responsible for the Program Coordinator and is accountable to the Superintendent who is responsible for her. The Program Coordinator has the additional responsibility of providing reinforcement for the Director of Nursing, Clinical Director, and Superintendent in order to maintain their interest and support for the program. Reinforcement for the Superintendent, Clinical Director, and Director of Nursing usually consists of getting federal money for new clinical programs, initiation of new programs which help solve chronic resident problems, and providing favorable publicity for the institution.

CONCLUSION

This ward program appears to have survived the rigors of institutional resistance to a new resident treatment project and will probably become a part of the institutional status quo. The community program is still in its infancy and volunteer recruitment is a difficult problem but its chances of survival appear to be good. Participants in both programs feel that they have made progress in training that would not have been achieved with more conventional resident and staff training and management procedures. Other institutions and community school programs for the mentally retarded in Ohio are beginning to adopt some of the behavior modification techniques used in these two programs. In conclusion, contingent reinforcement appears to be effective for shaping and maintaining behavior modification skills in staff.

FOOTNOTES

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[2]Heber, R. F. A manual on Terminology and Classification in Mental Retardation. American Journal of Mental Deficiency, 1961, (2nd ed.) Monograph Supplement, Willimantic, Connecticut: American Association on Mental Deficiency, 1961, 109pp.

PEERS AS CLASSROOM BEHAVIOR MODIFIERS[1]

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Behavior modification procedures based on reinforcement theory have been applied to child behavior by a variety of adult "therapists." Parents, teachers, institutional ward attendants, and various mental health professionals have repeatedly demonstrated their abilities to modify the deviant child's behavior (see Bandura, 1969).

One important aspect of these demonstrations is the ever growing interest in evaluating and programming the child's natural environment, Patterson (1969), for example, has shown parents and teachers appear to support deviant child behavior through differential attention provided in the home or in the classroom. These kinds of "baseline" assessments are of importance, not only in a theoretical sense, but they also have diagnostic value. That is, a prescription for therapeutic action is often available when such information is set within a reinforcement theory paradigm. If a parent or teacher is shown to attend systematically to the child's problem behavior, it then follows from a reinforcement theory viewpoint that a reversal of this pattern might weaken the behavior. Reversal in this sense means shifting the adult attention from deviant to non-deviant child behavior.

[1]This research was supported in part by Research Grant MH 16190-01A1 from the National Institute of Mental Health.

To date, a variety of investigations have documented the diagnostic value of baseline assessments of the deviant child in his natural environment. Parents, found to provide social attention contingencies for the deviant child's problem behavior, have been trained to shift these contingencies with remarkable effects on the problem behavior (e.g., Hawkins, Peterson, Schwied, and Bijou, 1966). Following baseline assessments of teachers' interactions with deviant children, similar therapeutic measures have yielded positive changes in student behavior (e.g., Thomas, Becker, and Armstrong, 1968). Thus, as far as parents and teachers are concerned, naturalistic observation has lead to promising new functions for these components of the deviant child's social environment.

A Neglected Social Component

Within the last five years a number of research and action oriented workers have demonstrated the potential importance of peers as behavior modifiers. Available studies indicate that the peer group probably operates in much the same manner as do adults -- and that their influence in some settings may actually be greater than that of adults. Unfortunately, much of this research has been correlational or purely observational in design, thus limiting interpretations of the findings. However, the findings have been consistent: In naturalistic settings ranging from nursery schools to institutional homes for delinquent girls, the peer group has been found to operate in a systematic fashion, dispensing its social attention in various forms for specific aspects of the child's behavior. For example, delinquent girls receive reliable peer approval for anti-social responses but not for pro-social responses (Buehler, Patterson, and Furniss, 1966); pre-schoolers are likely to

continue aggressive actions if they are followed by a certain kind of peer attention, but not if other kinds are dispensed by the group (Patterson, Littman, and Bricker, 1968). Interestingly enough, one of the studies, (Buehler, et. al., 1966) produced correlational evidence to suggest that the peer group may often be more important than adults in the control of deviant child behavior. Partial support for this conclusion is also available from the observational work of Wright and his colleagues (Wright, 1967). Essentially, these investigators discovered that peers constitute the most common source of social interactions after the child reaches the age of eight.

Perhaps the clearest demonstration of peer group influence on deviant child behavior was reported by Patterson and Brodsky (1966). These investigators attempted to increase interactions between a deviant child and members of his peer group. While the attempts proved successful, information reflecting the role of peers in the maintenance of the child's problem behavior was lacking; in addition, the necessary experimental steps to demonstrate causality were not conducted.

In summary, the background data are clear; the peer group may sustain the deviant behavior of its group members. Also, some evidence is available to show that the group, if properly directed, can modify such behavior. Thus experimental efforts in this therapeutic direction are warranted.

This paper presents findings produced by several lines of peer therapist investigation at the University of Tennessee. The investigations have differed in terms of the deviant populations studied, and in the methods used to obtain therapeutic control. They have been similar in the sense that children composing the deviant child's natural

environment have been chosen as therapists; and, in all cases the school classroom was the natural environment.

1. Classroom Discipline: Peer Reinforcement Control of Problem Children.

This investigation was conducted by the author in collaboration with Robert Solomon of the University of Tennessee. Essentially, the aim was to examine the effectiveness of peers as behavior modifiers of disruptive classroom behavior.

Subjects, treatment setting, and observers.

Subjects were ten boys selected from a fifth grade classroom in a county school. The classroom was recommended by the school principal because of long-term discipline problems presented by the students. Prior to the beginning of the study, the teacher had threatened to resign her position if the problems were not handled in some way.

Discussions with the teacher and informal observations of the classroom activities revealed that five children were the major violaters of classroom rules. These children were designated as "target subjects" and represented our deviant sample.

Further discussions with the teacher were aimed at selecting five peers to serve as potential behavior modifiers for the target subjects. These children were designated as "control subjects". Since we intended to train the control subjects through instructions and observer feedback, a history of cooperation with adults was deemed a most important selection criterion. A second, and equally important selection factor concerned the child's popularity with the other children. Assuming that popularity was an indicator of a child's reinforcement value for the other children, high scorers on a sociometric schedule were given priority as subjects.

Observers used in this study were graduate students trained in natural science principles of observation and operant techniques. Most of the data were collected by single observers, although periodic reliability checks were obtained at various phases of the study.

Procedure.

Following the selection of target and control subjects, the teacher was instructed to seat one control subject next to each target subject. This procedure accomplished one goal: it would now be possible to examine control subject attention as it occurred contingent upon target subject behavior. In essence, this phase could serve as a baseline step in determining peer support of deviant child behavior.

Behavior and Stimulus Classes. The first few observation sessions were geared to obtain samples of target subject behavior. Observers were instructed to record in longhand a running record of target subject behavior. These records were then discussed between the teacher and the author to provide concrete examples of how the target subjects disrupted the classroom activities. Three specific behaviors were clearly identified as disruptive by all concerned: talking (including laughing and shouting); out of seat (any unauthorized leaving of seat); object play (manipulation of any classroom irrelevant object). These behaviors were scored separately but grouped into a single class for data presentation purposes. The class was labeled disruptive behavior.

A single stimulus class was formulated to record the control subjects' behavior. Since their behavior was conceptualized as possible reinforcers for the target subjects' behavior, they were considered on the stimulus side of the reinforcement theory paradigm. Any verbal or physical action was scored as a single instance of the stimulus class social

attention. To be scored, these actions had to be considered, in the observers' judgment, to be directed at a target subject.

Reponse and stimulus units. After the behavior and stimulus classes were formulated, further observations were obtained through a time unit checklist. Each target child was observed for five minutes per session, the subject order being determined on a random basis. Observers scored the subjects's behavior at ten second intervals, allowing a maximum of one disruptive behavior per interval. The first disruptive behavior occurring during an interval was recorded for that interval. Thus, for each observation session, a maximum of thirty disruptive responses was possible for each target subject. Social attention provided by control subjects was scored according to the same procedure.

Baseline sessions. A total of five sessions was devoted to naturalistic observation of target and control subjects. Unit counts of disruptive behavior and social attention appeared to be relatively consistent from session to session at the end of that time. The last baseline session was videotaped for the peer training procedures described later.

Peer training. Following completion of baseline, the authors and the teacher met with the five control subjects. First, the children were asked to "help" the five target subjects. Since it was common knowledge that the target subjects were poor students (academically), the control subjects were told that they might improve the target subjects' grades. When all control subjects agreed, the authors described observer records of disruptive behavior. The control subjects quickly pointed out, with little adult assistance, that disruptive behavior inter-

fered with academic progress. Following this conclusion, the authors asked "why" the disruptive behavior occurred. Again the control subjects were quick to mention that peer attention was a very large factor, although none implicated themselves.

At this stage in the conference, the teacher began to direct much of the discussion. This was done by intent since she would be responsible for maintaining the hoped for changes in control subject behavior.

Parts of reinforcement theory were explained to the subjects in simple terms; that is, particular emphasis was placed on the concepts of extinction and shaping. The control subjects were told that behavior depends on its consequences: if a response is desirable, following it with social approval may insure its future occurrence; conversely, undesirable behavior may be eliminated if its usual consequences are eliminated. In an effort to illustrate these statements and to specify desirable and undesirable behaviors of the target subjects, the video-tape of the final baseline session was presented. The subjects were told to stop the video-tape (by signal) whenever they spotted undesirable behavior (our category-disruptive behavior) or whenever they spotted desirable behavior. When stops occurred, target subject behavior was discussed and its social attention contingencies were examined as well.

The final phase of the discussion involved specific instructions to the control subjects. They were told to ignore disruptive behavior and to provide approval for desirable behaviors such as reading and writing (whenever possible). The teacher then announced that she would keep a daily tally of correct and incorrect attention contingencies provided by each control subject. This tally would be discussed by the teacher and the control subjects at the end of each day.

The meeting terminated with this advice to the control subjects: "Do not discuss this project in detail with your classmates. If they ask about your role in the project or announce that they have caught on to your role, just say that you are helping the University guys and you can't talk about it until later".

Further training was provided by the teacher through her discussions with the control subjects at the end of each day. These discussions served as a source of motivation for control subjects and to correct their contingencies.

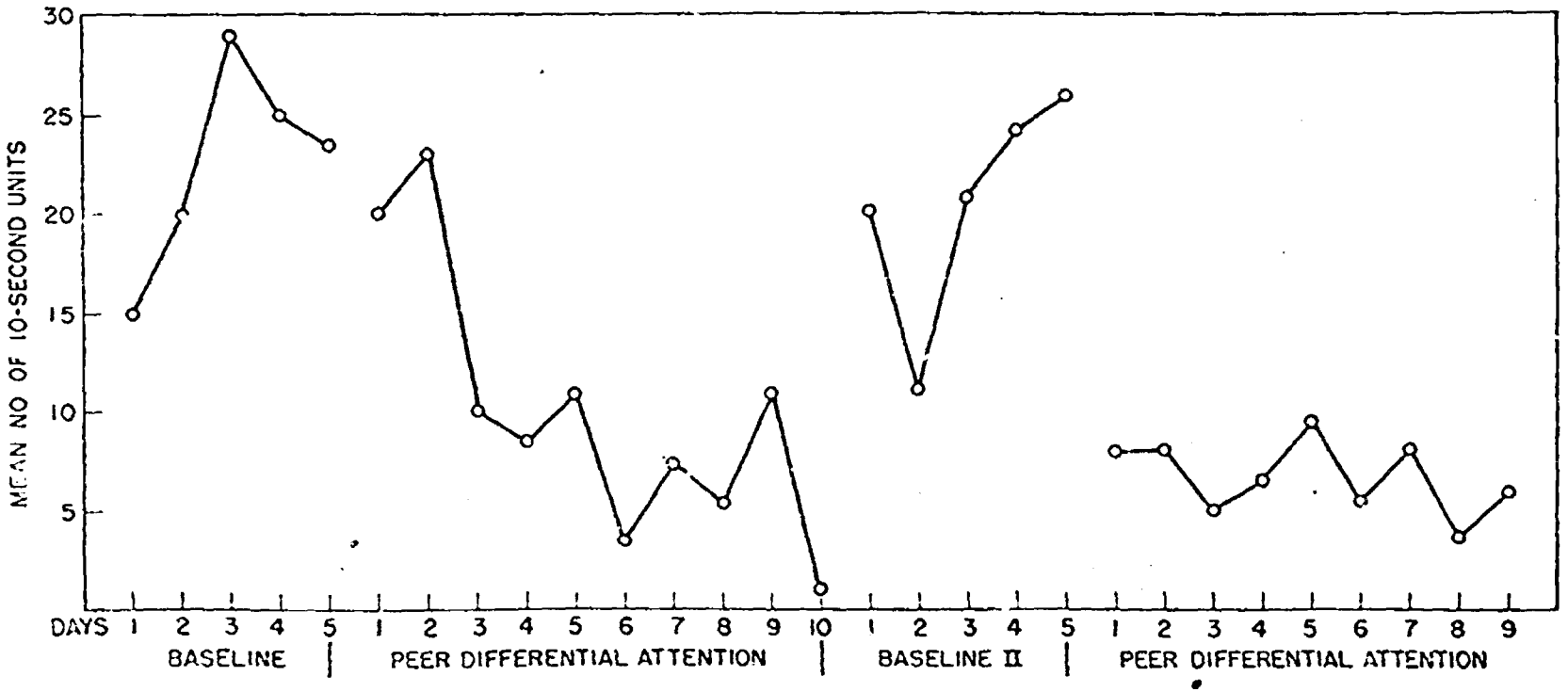
Experimental demonstrations of peer reinforcement control. As later data will show, this training intervention was followed by marked reductions in target subject disruptive behavior. To evaluate the reinforcement role of control subject attention contingencies in producing these effects, several weeks were devoted to reinstating baseline contingencies for the target subjects. This "reversal" was accomplished through another meeting with the control subjects. Following this probe to assess causality, the control subjects were instructed to resume their therapeutic contingencies.

Results

The slide describes mean unit counts of disruptive behavior produced by the five target subjects over baseline and treatment phases of the study. From an individual subject viewpoint, it is worthy to note that response curves for each of the target subjects follow the trends depicted here. Notice the gradual but stable decline in disruptive behavior following the initial training of the control subjects. Although not shown in this slide, control peer attention shifted from disruptive

Slide 1

Mean number of disruptive behaviors produced
by five "target" subjects over all baseline and treatment days



target behavior to more appropriate target responses. Then, when the control subjects were instructed to shift their attention (to disruptive behavior), predictable target subject behavior followed. As the slide shows, this reversal phase resulted in a sizeable increase in disruptive behavior. Finally, when the control subjects resumed their selective attention to non-disruptive behavior, a sharp decline in disruptive behavior followed. Thus, the experimental evidence is clear: the control subjects were effective sources of reinforcement for the target subjects, and these sources were instrumental in producing changes in target subject disruptive behavior.

Some anecdotal data are of interest. Initially we worried about stressful effects of these operations on the control subjects. Anyone who can recall his elementary school experiences will attest to the likelihood of peer ostracism directed at the "teacher's pet" or "creep"; working to help the teacher is often frowned upon by the peer group. Surprisingly enough, just the reverse effect occurred with our control subjects. They were often imitated by the other children and their friendships continued. In other words, they continued to hold their high social status in the classroom. Perhaps their work as a team was a factor here, or perhaps their initial popularity kept them in good graces. In any case, their therapeutic actions did not result in aversive consequences for them.

This study is now being replicated in another Knox County school. The replication is more sophisticated than this effort in several ways: (1) target subject achievement is also under evaluation and, (2) teacher and peer reinforcement power will be compared.

II. Interactions Between Normal and Retarded Children: The Modification of Peer Social Behavior.

This investigation was conducted by Sidney Teel of the University of Tennessee (Teel, 1970). The long-range purpose of the study was to examine the feasibility of placing retarded (Educable Mentally Retarded or "EMR") children in regular elementary classrooms. The immediate purpose of the study involved an attempt to increase EMR classroom attention and to approximate normal peer interactions between one EMR child and his non-retarded classmates.

Teel's review of the literature revealed that EMR children usually are ignored by their non-retarded peers. And, if the EMR is at all successful in obtaining peer attention it is usually through behavior that arouses teacher displeasure (e.g., wandering about, shouting, hitting). Clearly, if the EMR is to function adequately in the regular classroom, modifications in his social behavior are of first importance. Assuming that peers do contribute to his disruptive behavior, techniques aimed at therapeutic shifts in peer attention would be in order. Teel attempted to effect such shifts through teacher reinforcement of the non-retarded peers.

Subjects, treatment setting, and observers.

Six elementary classrooms (grade6) constituted the treatment setting. Classrooms contained from 11 to 35 normal children and 1 child classified as EMR. Descriptions of observers used in this study are essentially the same as that of the first study reported in this paper.

Procedure.

Behavior and stimulus classes. Following discussions with the teachers and observations of classroom and free play activity, three classes of EMR behavior were formulated for study. Relevant behavior

included group participation or sitting at desk and either writing or looking at a book; irrelevant behavior encompassed looking around the classroom, play with or staring at academically irrelevant objects; peer interaction included non-aggressive talking, touching, or gesturing to classmates. This latter behavior class was observed only during free play times or during lunch time.

After these classes were formulated, further observations were obtained through the ten-second time unit checklist used in the previous study. Again, each EMR child was observed for five minutes per session.

Baseline sessions. When observer recording of these three behavior classes appeared reliable, (85% agreement per class, per session), the baseline sessions were begun. After a total of four sessions, the behavior classes displayed little variation in frequency of occurrence between sessions. Thus, since the subject behavior appeared fairly stable, it was decided to initiate the treatment procedures.

Teacher training. Teacher training was designed to accomplish two goals: (1) to increase the EMR's relevant classroom behavior through teacher differential attention to the relevant behavior class; (2) to increase non-aggressive EMR interactions with the normal peers. This latter step was implemented through teacher differential attention to a normal peer when the EMR interacted appropriately with that peer. Teacher attention to the peer was differential in the sense that only pro-social peer responses to the EMR's interaction attempts were followed by teacher attention. Hopefully, this aspect of teacher training would have a dual function; peer pro-social responses to the EMR should increase in frequency, and those peer responses should strengthen EMR interactions with the peers.

Teacher training began with the reading of a programmed text describing the application of reinforcement theory to childhood behavior problems (Patterson and Guillon, 1968). In addition, the purpose of this study was outlined for them and they were told to follow the above procedures designed to increase the EMR's relevant and peer interaction behaviors. Following the observation sessions, needed corrections were pointed out to the teachers and/or they were commended for their correct contingencies.

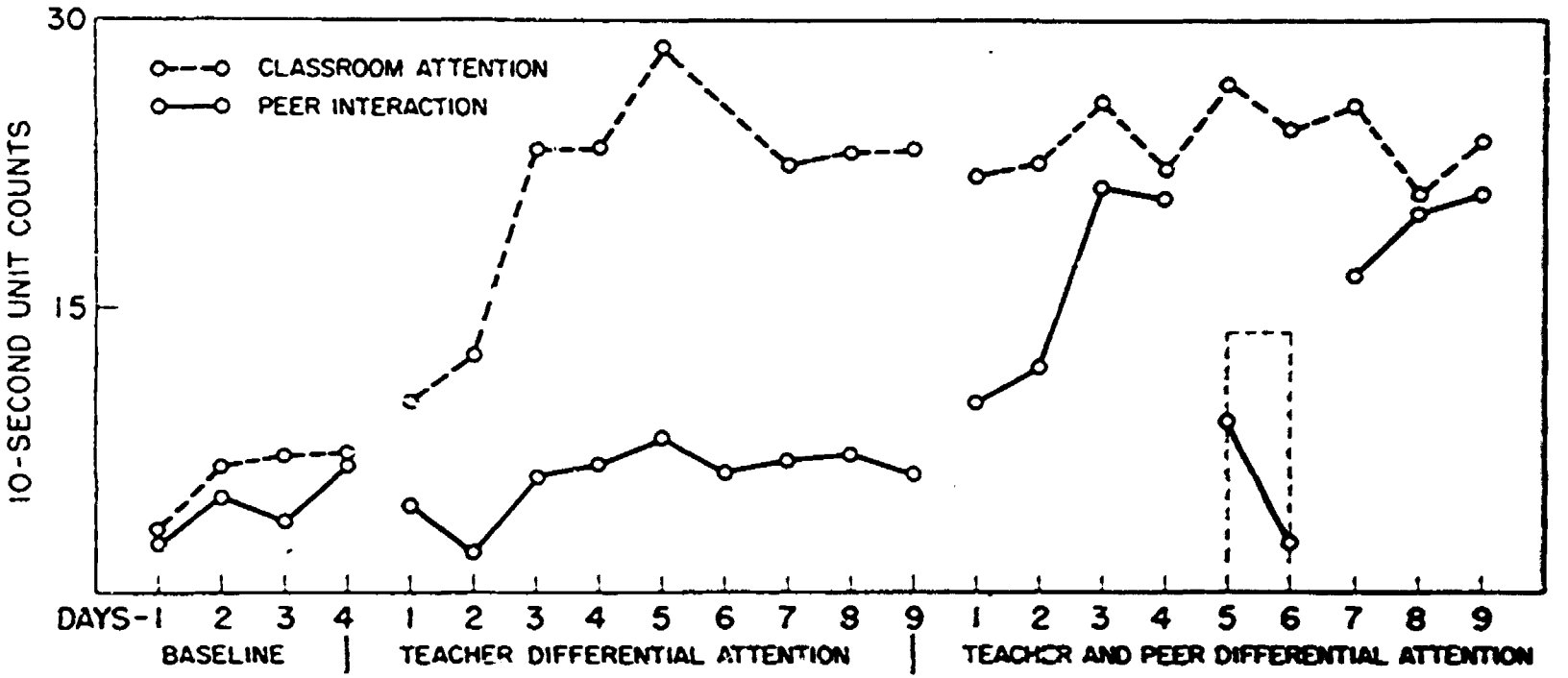
Experimental demonstrations of teacher and peer reinforcement control. As in the first study, the role of social reinforcement contingencies in producing changes in subject behavior was assessed by reinstating baseline contingencies. After the expected changes were evident in EMR behavior, the teachers were instructed to resume their baseline methods (non-differential attention) of attending to peers and the EMR's. Following this "reversal" phase, the teachers again resumed the differential attention program, thus completing the test of reinforcement control.

Results

The slide describes the behavior of one EMR child over all phases of the study. To simplify the data presentation, only relevant behavior (labeled classroom attention) and peer interaction are plotted. Notice the marked and stable change in classroom attention following the teacher's differential attention to this behavior class. The reinforcement control test for this behavior change is not depicted here; the outcome provided clear evidence of this teacher's reinforcement control of the EMR's classroom attention.

Slide 2

Unit counts of classroom attention and peer interactions
produced by one EMR subject over baseline and treatment days



The training techniques used for peer therapists in our first study are worthy of further exploration. Children at the fifth grade level of elementary school might be effectively trained through techniques normally used to train adult behavior therapists. It will be recalled that instructions and observer feedback proved highly effective in directing peer attention contingencies for the behavior of target subjects. If children of this age (and other age ranges) are indeed so responsive to adult directions, the use of children as behavior modifiers has much to recommend it.

Probably the most important conclusion presented by these studies concerns their integration with other studies utilizing parents and teachers as behavior therapists. The social environments of young deviant children are primarily composed of three sources of reinforcement: parents, teachers, and other children. It is also relatively common for the deviant child to produce his problem behaviors in the presence of all three classes of people. Since these sources have been shown to maintain the deviant child's problem behavior, therapeutic control of all three sources would be indicated for optimal results. Most investigators, however, have chosen to focus their tratment programs on only one or perhaps two of the three sources. Logically, the most stable and general results would be produced through shifting reinforcement contingencies provided by all relevant people.

Of greatest relevance to the topic of this paper are the systematic changes in EMR-peer interactions. Notice that teacher shaping of these interactions proved quite successful. As the slide indicates, teacher differential attention to selected peers resulted in a sizeable increase in the EMR's peer interactions. In other words, teacher reinforcement of peer pro-social responses to the EMR's interaction attempts, "caused" the EMR to increase the frequency of these attempts. The conclusion of causality is based on the reinforcement control test depicted in the section between dotted lines. This section describes the outcome of teacher reversal of her social attention contingencies for peer behavior. Here she resumed her non-differential attention to peer behavior. Then, following this test, the teacher resumed her differential reinforcement of pro-social peer responses to the EMR's interaction attempts. Notice that her second initiation of this shaping program resulted in a marked increase in the EMR's peer interactions. Thus, the teacher's reinforcement role in changing the frequency of these interactions seems quite clear.

Naturally, we have chosen one of our best EMR subjects for this presentation. However, the other five subjects, while their behavior changes were not as dramatic, also behaved according to the social attention contingencies set by their teacher and peers.

Discussion.

We have presented two lines of empirical investigation directed at exploring the use of peers as behavior therapists. While these studies did not examine long-term effectiveness of these therapists, their short-term effects were clear. With retarded and behaviorally disturbed children, peers can implement dramatic improvement in the problems presented by these children.

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Needed: Programs for the Disturbed-Retarded[1]

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Since I didn't pick the title of this paper, I should warn you that I intend to digress considerably from it.

Most everyone here would probably be quick to agree that retardates, like, or more so, than normals, display on occasion symptoms of emotional disturbance and that these individuals need speical treatment that differs from the typical program for either emotionally normal retardates or normal intelligence disturbed. To quote the recent (May, 1970) action policy proposed for residential services of the President's Committee on Mental Retardation, "Ideally, short term programs should be made available to the retarded with emotional, social, and/or medical problems who require intensive treatment or training within a sheltered environment".

Judging from the literature (if the MR literature does, in fact, reflect the actual state of affairs in the field) one must conclude that the number of available <u>treatment</u> (as opposed to custodial) programs for this population is extremely limited in number.

Based on my own personal experience over the last two years in planning, implementing and administering a program of this type, I would like to review the problems associated with program planning for this population.

[1]The preparation of this article was supported, in part, by Grant No. SR20-WHO-2068-05 (MH2167) from the U.S. Department of Health, Education & Welfare.
[2]Now at the office of Program Analysis & Statistical Research, Texas Department of Mental Health & Mental Retardation, Austin, Texas.

First, there is the problem of incidence. Despite a rather lengthy list of studies, the actual frequency or prevalence of emotional problems among retardates is not known. Most studies have surveyed quite specific, non-representative samples. For example, Gorelick (1966) found that 10% of 886 EMR high school students in Los Angeles were noted to have emotional problems. Menolascino (1965) found 11% of 616 referred children (under 8 years old) to a diagnostic clinic as suspected MR's "were noted to display emotional problems of a nature and extent to warrent a formal ...diagnosis." Koch (1969) found that 11% of 1,049 children seen in the Southern California traveling clinic project had either emotional disturbance or major personality disorder associated with mental retardation. Penrose (1954) found that 16% of institutionalized retardates showed some type of neurotic or psychotic behavior pattern.

The incidence rates found in MR institutions vary from state to state depending on the availability of community programs. The tolerance of special education programs in the public schools and the number of retardates placed directly in, or transferred to, state hospitals for the emotionally disturbed. In my own state of Texas a recent survey (Martin, 1969) estimated that 10% of the State Hospital population could be classified as retarded. Most of these individuals had been admitted directly to the hospitals and had never been in a facility for the retarded. There is no way of knowing how many of these retardates were committed because of disturbed behavior or were committed simply to circumvent the rather lengthy waiting lists for the state schools. Martin pointed out that the actual figures found (which includes borderline retardates) were much lower (percentage-wise) than many hospital administrators had imagined. This over-estimation was probably due to

the extreme management problems that many retardates present. As Mercer (1968) points out, "severely retarded patients in a mental hospital present problems in individual treatment and in ward management far greater than their actual number suggests."

Other disturbed retardates can be found in state prisons, facilities for delinquents, orphanages, foster homes, private institutions for the retarded, or in their own homes.

Another aspect of the incidence rate question is the non-equivalency of definitions from study to study. Most studies have utilized diagnostic classifications rather than frequency of symptomatic behaviors making comparisons between studies nearly impossible.

Within institutions, the problems seem greatest among the mildly retarded as they usually come because of maladaptive behavior rather than intellectual deficits as such. As Tarjan (1966) puts it, "On admission most of them manifest behavior disturbances which originate in a neurosis-like conflict. Many other patients have superimposed emotional problems". Stephens, Peck, and Veldman (1963) found that emotional problems constituted a major cause for failure among discharged educable retardates.

It seems clear that emotional and behavioral disturbances constitute a well recognized and significant problem in all levels of retardation. The incidence ratio is not known and probably varies with environmental factors, age, sex, and level of functioning.

Diagnostic Difficulties

There are considerable problems in the area of diagnosis of emotional problems among the retarded. Despite the fact that nearly all the major psychiatric syndromes have been observed in retardates (Sarason

and Gladwin, 1958; Menolascino, 1965), the current AAMD diagnostic manual (Heber, 1961) is extremely limited when it comes to the medical classification of mental disorders associated with retardation. If the retardation is presumed to have caused the disturbance one has only two diagnostic options:

Code No.	
83	Psychogentic mental retardation associated with emotional disturbance.
84	Mental retardation associated with psychotic (or major personality) disorder.

If the emotional problem is not presumed to have caused the retardation, or if the emotional problem is associated with some cerebral pathology, one is limited to adding a "supplementary term". The AAMD supplementary terms for psychiatric impairment were taken from the American Psychiatric Association Diagnostic and Stratistical Manual (1952):

Code No.	
5x	With other psychiatric but not further specified.
51	Behavioral reaction.
52	Neurotic reaction.
53	Psychotic reaction.

Since formal diagnoses have such far reaching implication for individual, intra-institutional and inter-institutional program planning, it seems that this limited system could stand to be updated. A much more meaningful approach can be found in the latest APA Diagnostic and Statistical Manual (2nd ed., 1968). Under this system, whenever an individual is both mentally retarded an emotionally disturbed, two separate diagnoses are made. One diagnosis describes the type of psychiatric disorder and the other indicates the type and severity of the retardation (Wilson and Spitzer, 1969).

There is still the question, however, of whether the problems of mentally handicapped individuals are the same as those of normal children. I think not. For example, Nihara (1969) found, in his factor analytic study of the Adaptive Behavior Scale, that neurotic and psychotic symptoms were combined in a single factor (which he called personal maladaption) in all ages of retardates from pre-adolescent to adult. Furthermore, the social maladaption factor (similar to Heber's behavioral reaction) found in pre-adolescents, late adolescents and adult retardates merged into a unity maladaption factor in the early adolescent population. Thus the institutionalized early adolescent retardate is likely to exhibit a disgnostically confusing combination of psychological disturbances and anti-social, rebellious behavior.

With educable retardates diagnosis can utilize available terminology, more or less. With the severely and profoundly retarded the guidelines between "normal" behavior and "disturbed" behavior are much less clear. We need better normative data for these levels. The manual for the Adaptive Behavior Scale reports some normative data along these lines but the unforgiveable omission of standard deviations make utilization of the norms rather difficult.

Perhaps a more meaningful approach would be to develop empirical psychiatric rating scales such as those of Lorr and his colleagues.[1] More adequate and meaningful diagnoses which would reflect the actual precipitating problems should help pinpoint actual programming needs and lead to more appropriate placements.

Problems in Implementing Programs for Disturbed-Retarded

There are numerous roadblocks to adequate treatment programs within institutions.

[1] For example see Lorr, Klen, & McNair (1963)

a. Failure to agree on what constitutes a problem. The passive or withdrawn individual is rarely recognized by dormitory personnel to be a "problem", as disturbance is usually conceived of as behavioral rather than emotional. Individuals who are behaviorally disturbed may be frequently brought to the attention of the professional staff, usually in the hopes that the "problem" will be transferred elsewhere. In the author's experience, most psychological or psychiatric staffings have been oriented towards categorizing and only rarely have specific behavioral recommendations been forthcoming. Diagnoses of psychotic, schizophrenic, or behavior reaction have little meaning to the attendant who wants to know what they can do when a resident attacks them or breaks a window.

At times, attendant level personnel fail to understand that "bad" behavior can be indicative of an emotional problem. Certainly within the social milieu of the lower and lower-middle class attendant, bad behavior is simply bad, not sick. The cure for badness is punishment. One occasionally hears the remark that "all so-and-so needs is a good paddling". On the other hand, many professionals tend to equate bad behavior with disturbance and frequently view punishment as unwarranted, ineffective or both.

Generally speaking, methods of physical control are taboo topics within institutions for the retarded. One rarely finds In-Service Training courses on the correct use of restriction or restraint. Most institutional procedures manuals spend more space discussing the consequences for disciplinary mistreatment than in outlining proper and effective methods. Most behavioral control techniques are taught informally and are handed down from employee to employee. The failure

of administrative and professional personnel to contribute meaningfully to the problem of behavioral control is probably one of the most important causes of mistreatment of residents.

One commonly used (at least in Texas) technique of control is to transfer problem residents to buildings housing lower level residents. These buildings are frequently referred to by residents and staff as "drag" buildings. These buildings often become dumping grounds for bad attendants as well. Given inadequate employees and intolerable working conditions, the staff must depend on the larger, more intelligent residents to do the bulk of the work. Altogether too often these working residents are permitted to manage other residents with methods that would lead to dismissal if used by an employee. Some administrators occasionally overlook incidents on "drag" buildings that would not be tolerated elsewhere.

When professionals and attendants do get together on cases, there still can be a number of barriers to impede effective communication. Many attendants feel that only those who have "worked a building" can understand what kind of problems exist and make meaningful suggestions.

There is at least informal evidence that professionals are not necessarily good attendants and really don't have much to contribute to day to day ward management. For example Leiken (quoted by Siegel, 1969) states, in reference to a ward for disturbed non-retarded, "I also had the experience of working on a cottage with a social worker, just the two of us, for about an eight hour period about six months ago. There were twenty-four children on the cottage. The staff specifically asked us to do this so that I could be more in tune with these kids. Well, by the end of the day I could have killed everyone

of these kids. I was so mad and so frustrated I could just imagine if someone said to me that it was OK to hit, regardless of how he said it, I wouldn't hear the rest of it. There were times when I would have loved to smack the kids and I would not have done it in any organized or therapeutic way."

Any attempt at change within the social context of an institution involves two things:

1. You are upsetting a social system of interaction between and among residents and staff.
2. You are implying that what used to be was bad, wrong, or inadequate to meet the need.

Almost inevitably there will be some degree of sabotage by employees. Amelioration of this sabotage can be enhanced by: 1. an accurate knowledge of the social structure of the institution, the goals and values of the attendants and how they differ from the professional and administrators; 2. an accurate knowledge of social and motivational structure of residents as well as a good idea of what actually takes place in daily ward activities; 3. altering the reinforcement structure of the institution to encourage change of attitudes and actions.

Studies such as Scheff's (1964) article "Control Over Policy by Attendants in Mental Hospital", Goffman's Asylums (1959), Stanton and Schwartz's The Mental Hospital (1954), and Belknap's Human Problems of a State Mental Hospital (1956) need to be replicated with institutions for the retarded.

Treatment Problems

I do not wish to, at this time, review treatment techniques for disturbed retardates. There are a number of rather detailed reviews

and bibliographies already available[1]-particularly for group and individual psychotherapy. Let me just say that, in reviewing this literature several years ago, I was struck by two things:

1. It's some of the worst designed research that's ever been published.

2. Positive results seemed to be associated with poor design.

Most current programs are based at least in part on some sort of behavior modification technique such as token economics, aversive consequences, etc.

I would like to direct a few remarks to that area:

I think the time has come when having an operational behavior modification program should not be sufficient cause for publication. We know that they work. What we don't know, and need desparately to know is:

a. what types of programs are most appropriate to what kinds of problems or populations? Is aversive conditioning appropriate only for profoundly and severely retarded or can it be used with let's say educable retardates?

b. what are the effects of changing various aspects of programs on their effectiveness, in other words what aspects of a program are critical to success and what aren't?

c. we need to know more about the differential effects of various reinforcements as well as their comparative cost/effectiveness.

I'm afraid some of my more radical behaviorist colleagues have promised more than can be delivered. I think cure for many disturbed or disturbing retardates is an unrealistic goal, particularly when the "cured" resident is expected to return to the pathological environment of the typical warehouse dormitory. What is needed is programs to provide prosthetic environment (Lindsley, 1964) an enabling environment that permits the disturbed individual to function in as productive and happy a

1. For example see Cowen (1962), Gunzberg (1958), Szurek & Philips (1966)

manner as is possible. For some transfer of learning can be a realistic goal, for others, many others, it would be like expecting an amputee to be able to walk just because he has had the use of a wooden leg for a period of time.

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ABSTRACTS OF PAPERS PRESENTED AT

PSYCHOLOGY DIVISION MEETINGS AT THE

94TH ANNUAL MEETING OF THE AMERICAN

ASSOCIATION ON MENTAL DEFICIENCY, WASHINGTON, D.C.,

MAY, 1970

AUTHOR: Earl E. Balthazar, Ph.D.

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TITLE: Measurement and Identification of Twelve Diagnostic Groups Using Form II of the Central Wisconsin Colony Scales of Adaptive Behavior.

ABSTRACT: Statement of Problem: Frequency counts of the socially adaptive behaviors of 288 severely and profoundly mentally retarded residents were transformed statistically, intercorrelated, and factor analyzed. Eighteen factors emerged from an original list of 71 subscale items.

Subjects were grouped by means of the factor scores. Two major classes appeared. The first was composed of two low frequency subgroups. The second included subjects who indicated high frequency behaviors. These were sorted by computer into ten subgroups. They were then cross-validated with a rater sort.

It is submitted that identification and study of these groups may have value for diagnostic purposes and for program development and evaluation.

AUTHOR: Thomas O. Blackmon, Ph.D.

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TITLE: Study of IQ Retest Evaluations in a Clinic for Mentally Retarded Children.

ABSTRACT: The problem of IQ stability has been a perennial question and studies of normal children have contributed much information on this topic. This paper will review the relevant literature and report the findings of a study of IQ changes in a mentally retarded population taken from 456 cases followed by the Mental Development Center over a period of years. Two major questions will be considered: stability of IQ in relation to age of testing and degree of retardation, and patterns and plateaus in mental development discernible from test-retest comparisons. The findings will be discussed in terms of relevance for diagnosis, case reporting, counseling parents of mentally retarded children, and further investigation of internal and external factors associated with changes in measured intelligence.

AUTHOR: Diane D. Bricker and William A. Bricker

AGENCY: Parsons Research Center, Parsons, Kansas

TITLE: The Effects of Naming on Object Selection by Young, Low-Functioning Children.

ABSTRACT: A two-choice discrimination procedure was used comparing the effects of naming the reinforced object on subject performance before and after a specific training procedure. A pretest, intervention, posttest design was used with random assignment of 30 institutionalized retardates to three conditions. In treatment one the stimulus name plus reinforcement served as a cue for choice, in treatment two only reinforcement served as a cue for choice, and in treatment three a non-intervention control was used. Results indicated both training groups performed significantly better on the posttest. Analysis of training blocks indicated no significant differences between training procedures but significant improvement across blocks. Generalization testing revealed a significant difference in favoring the trained groups.

AUTHOR: LeRoy Clinton and Ross A. Evans

AGENCY: Research and Demonstration Center for the Education of Handicapped Children Teachers College, Columbia University New York City, New York

TITLE: Retardate Discrimination Learning as a Function of Stimulus Complexity

ABSTRACT: This study used sixty retarded adolescents to investigate the influence of task complexity, mental age, and initial response outcome on single alternation discrimination performance. The experimental design was a 3X2X2 factorial arrangement, with task com-

plexity (zero, one, or two irrelevent dimentsions), mental age (above or below median MA), and initial response outcome (initial reinforcement versus initial nonreinforcement) as the three independent variables. Analyses revealed that a task complexity main effect was significant; however, there was a statistically reliable complexity X reinforcement interaction which resulted from the fact that the complexity effect was present only under the initial reinforcement condition. Findings were discussed within Zeaman-House Attention theory.

AUTHOR: Robert M. Conrad

AGENCY: Austin State School, Austin, Texas

TITLE: Thoughts on Founding a Residential Treatment Unit for the Emotionally Disturbed in a State Institution for the Retarded.

ABSTRACT: During the planning and implementation of an operant conditioning oriented treatment program for emotionally disturbed female retardates, many incidents occurred which would hardly warrant research articles in scientific journals. There have been numerous articles concerning operant conditioning programs for the retarded. There have even been a few articles on practical problems associated with these programs. Most of these studies were concerned with non-disturbed retardates and were in no way sufficient preparation for the population dealth with here. With the recent increase in community based favilities for retardates custodial institutions are faced with higher percentages of the so-called "disturbed or disturbing" that cannot be maintained in the home. Observations concernin management of and programming for this type of resident may be helpful to those anticipating setting up similar programs.

AUTHOR: Harvey F. Dingman

AGENCY: University of Texas at Austin, Austin, Texas

TITLE: Social Responses to Social System Definitions

ABSTRACT: The structure of social situations defines social responses for those that accept the social system definitions that they have been given. Mentally retarded individuals are able to learn without specific training the required set of social responses that their system defines as acceptable.

In work by Edgerton and Dingman and Edgerton the careful attendance to rules of conduct of behavior are pointed out. More recently Phillips and Dingman have pointed out the lack of formal instruction in preparing mentally retarded for social situations.

In unpublished observations made over a three-year period Dingman and his co-workers have seen how "models" can be used to shape social

conduct in elementary social situations. The facilitating role of a mother surrogate in promoting social conduct in very young retarded individuals is also demonstrated by observations from a series of studies conducted by Dingman and his co-workers.

From all these studies it is obvious that the restraints of a social situation mold behavior much more than would be expected, and as individuals structure their roles in each social situation their behavior begins to conform to their self description and the situational demands.

AUTHOR: James M. Gardner

AGENCY: Orient State Institute and Ohio State University, Orient, O.

TITLE: Differential Effectiveness of Two Instructional Methods for Teaching Behavior Modification to Institutional Attendants.

ABSTRACT: Two different instructional methods (role playing and lecture) were compared in evaluating the effectiveness of teaching behavior modification to institutional attendants. Pre- and post-test measures were obtained for two major outcome variables: (1) knowledge of the principles of behavior modification, and (2) ability to train residents using behavior modification techniques. Results indicated that role playing was most effective in teaching behavior modification skills while the lecture was most effective in teaching principles of behavior modification. Ss attending role playing had more favorable attitudes toward behavior modification.

AUTHOR: Peter J. Garito and Donald J. O'Grady

AGENCY: University of Cincinnati, Cincinnati, Ohio

TITLE: Down Syndrome in a Clinic Population: IQ Changes

ABSTRACT: Cross-sectional studies on non-institutionalized children with the Down syndrome have reported greater IQ deficits with increasing age. Longitudinal data, however, suggest great variation in IQ change for these children with varying rates and terminal levels of development. IQs on more than 100 children with the Down syndrome were examined for evidence of decreases with age. Cross-sectional results were consistent with previous reports showing increasing average IQ deficits related to test age. The interpretation, however, that these children show consistent decline in IQ appears to be an oversimplification, since the cross-sectional data appear to reflect a selection bias in the early (<3) years and later (≥8) years. Further, repeated testings show much IQ variation in both directions. Differences in early social maturity and other factors were examined in relation to the data.

AUTHOR: Jerry B. Hutton

AGENCY: Dallas Baptist College, Dallas, Texas

TITLE: The Case Conference Ritual or How to do a "Good" Job without Really Trying

ABSTRACT: The view of the case conference (or "staffin") as a handicap in applying know-how to problem solving is presented. Criticisms apply to case conferences typically conducted in diagnostic clinics and residential facilities serving the mentally retarded. Six of the motives which help keep the case conference ritual alive are: status quo, ego enhancement, guilt, hostility, appeasement, and inferiority. The motives are examined and illustrations are given. An alternate plan is presented, whereby, programming and planning are individualized and implementation is possible without expensive time and energy being displaced by typical case conference ritualism.

AUTHOR: Robert Lehrke

AGENCY: Minnesota State Hospital

TITLE: The Importance of Sex-linked Genetic Factors in the Etiology Of Mental Retardation and Learning Disorders.

ABSTRACT: A hypothesis is proposed that there are X-linked genetic factors relating to certain aspects of intelligence, including verbal abilities. These factors may account for a third of all retardation. Evidence for the existence of such factors will be presented.

Of particular significance is that this hypothesis can explain the approximately 50% excess of male retardates reported in the most reliable epidemiological studies. In addition it may well have a bearing on the greater number of males with special learning problems including dyslexia.

AUTHOR: James F. McGettigan

AGENCY: Case Western Reserve University, Cleveland, Ohio

TITLE: Conservation of Number in Young Mentally Retarded Children.

ABSTRACT: 120 educable retarded children, ages eight, nine and ten, were tested on six sets of conservation of number tasks. Each of four trials deployed the objects along a different dimension, like length, area height and volume. The results indicate that although educable retarded children achieve concrete operations like conservation of number, some tasks are more difficult than others. It was concluded that performance is related to the types of dimensions of deployment of the sets.

AUTHOR: John A. McLaughlin and W. B. Stephens

AGENCY: Temple University, Philadelphia, Pennsylvania

TITLE: A Comparison of the Factorial Structure of Reasoning in Normals and in Retardates

ABSTRACT: Although there is currently a proliferation of research related to Piaget's theory of cognitive development, the relationship between different tasks and substructures apparently requiring the same mental structures is still far from adequately explored. In an effort to gain insight into relationships which exist between Piagetian measures of reasoning, two separate factor analyses were accomplished.

The sample, which was composed of 75 mentally retarded male and female subjects (IQ 50-75, CA 6-18) and 75 normal male and female subjects (IQ 90-110, CA 6-18), was drawn from normal and special education classes in the greater Philadelphia area. The two sub-samples, retarded and normal, were further divided into cross-sectional samples of three age ranges; 6-10, 10-14, and 14-18.

Data provided through use of the Piagetian reasoning assessments was analyzed in two separate factor analyses: one of retardates' performance; one of normals' performance. Results indicate that retardates' performance on reasoning tasks did not define the two distinct factors, one of initial and one of generalized conservation, that emerged in the analysis of normal scores.

AUTHOR: Donald L. MacMillan

AGENCY: University of California, Riverside, California

TITLE: Expectancy for Failure in Cultural-Familial Retardates and Normals

ABSTRACT: The problem was to ascertain whether interruption has different significantly for retardates than for normals. Specifically, to determine whether retardates attribute interruption to their own inabilities. The subjects were sixty educable retardates and sixty normals, equated on MA, served as subjects in the study. Subjects from both groups were randomly assigned to one of three treatments: Success, Failure, or Control. The subjects were to duplicate six designs with Kohs Blocks. Three designs were interrupted prior to completion. Instructions for Success treatment indicated they were stopped because they did so well; Failure because they were doing poorly; and Control subjects were told nothing. Each subject was asked to select one task to repeat, and then asked why three designs had not been completed. It was found that retardates blamed themselves for the tasks not being complete, while normals (except under Failure condition) made external references. Under Success and Control conditions, retardates made significantly more self-blaming

references than did normals. Conclusions: For retardates, interruption signifies a personal failure. Such is not the case for normal children.

AUTHOR: Marvin F. Malcotti and Roger J. Milstein

AGENCY: Pennhurst State School and Hospital, Spring City, Pa.

TITLE: The Effect of a Stimulus Enrichment Program

ABSTRACT: Twenty severely retarded residents were divided into two groups matched on the basis of CA (Mean=20.5) and IQ (Mean=31). One group was exposed to an intensive stimulus enrichment program for 18 months, while the second group lived in similar ward conditions with no enrichment programming. Subsequently, all S's were given a simple discrimination learning task, the Peabody Picture Vocabulary Test, the Stanford-Binet Form L-M, and the Vineland Social Maturity Scale. There were no significant differences between the groups on the discrimination learning task, on the Peabody Picture Vocabulary Test, the Vineland Social Maturity Scale, or the Stanford-Binet Form L-M. An epigenetic developmental view suggests that the S's were too old to benefit from an enrichment program.

AUTHOR: Kazuo Mihira

AGENCY: Parsons State Hospital and Training Center, Parsons, Kansas

TITLE: Person-Clusters on Three Dimensions of Adaptive Behavior

ABSTRACT: A behavior rating scale was developed to provide objective assessment of adaptive behavior as defined by the AAMD Manual of Terminology and Classification. Factor analysis of the scale scores, using 919 adult institutionalized retardates, delinated three major dimensions, Personal Independence, Social Maladaptation and Personal Maladaptation. Based upon three dimensions of adaptive behavior, the patients were allocated to a number of person-clusters whose score patterns are objectively isolated by B.C. TRY Computer System Program. Implications of the results are discussed in relation to a need for modification of the unidimensional classification system of adaptive behavior currently accepted in the field of mental retardation.

AUTHOR: Jerome D. Pauker

AGENCY: University of Missouri School of Medicine

TITLE: Medical Record Correlates of Large Differences Between WISC Verbal Scale and Performance Scale IQs.

ABSTRACT: An empirical investigation of the behavioral significance of WISC IQ patterns was undertaken 20 boys with VS-PS differences of at least 15 IQ points (12PS>VS, 8 VS>PS), each matched for age and FS

IQ with a control with less than 10 points VS-PS difference were used.

PS>VS and VS>PS groups were each compared (significance of difference between proportions in matched samples) with respective controls for frequencies of statements in their coded medical records. FINDINGS AND CONCLUSIONS: 54 and 30 statements, respectively, differentiated PS>VS and VS>PS groups from their respective control groups at better than .10 level. Descriptive statements for the two groups form two cohesive and different behavioral patterns.

AUTHOR: Marvin Rosen

AGENCY: Elwyn Institute, Elwyn, Pennsylvania

TITLE: Conditioning Appropriate Heterosexual Behavior in Mentally and Socially Handicapped Populations

ABSTRACT: The treatment of sexually deviant responses of the mentally retarded and the teaching of appropriate social behavior and sexual role represent two aspects of the same problem. Sex education programs for the mentally subnormal typically attempt to provide pertinent information, or to teach inhibition and control, rather than reinforce adequate sexual behavior or effect behavior change. This paper discusses several behavior modification techniques designed to extinguish anxiety associated with heterosexual responses, make deviant responses aversive, and substitute more acceptable behavior. These strategies can be applied in individual psychotherapy in a way that should not threaten or disrupt the operation of the typical institution or training facility.

AUTHOR: Laurel Schauer and Jane M. Kessler

AGENCY: Case Western Reserve University, Cleveland, Ohio 44106

TITLE: Use of the Leiter International Performance Scale (Arthur Revision)

ABSTRACT: Assessing intellectual functioning in mentally retarded children often presents special problems so that the usual tests are inappropriate. The Leiter International Performance Scale (Arthur Revision) has many attractive features which recommend its usage as a supplement in cases of non-verbal children and it may be the only measure possible. This paper will review the relevant literature and present the findings of a study of its comparability with the Stanford-Binet (1960 Revision) and its usefulness in diagnosis and planning with a group of 100 children seen at the Mental Development Center for evaluation. Three groups will be differentiated on the basis of the Leiter scores in relationship to Binet scores (consistent, high, low) and will then be compared in terms of clinical characteristics and further development.

AUTHOR: Dorothy Shipe

AGENCY: The Ontario Institute for Studies in Education

TITLE: Impulse Control and Social Competence in Mildly Retarded Youth

ABSTRACT: Measures of delaying capacity (voluntary choice of delay of gratification (DOG), the Porteus Mazes (PM), and Kagan Matching Familiar Figures (MFF)), were related to one another, to two measures of locus of control, and to measures of social competence in two groups of mildly retarded males. Fifty institutionalized (mean CA 20.6 years; mean IQ 64.7) and fifty vocational school (mean CA 15.9; mean IQ 72.7) Ss were used.

For the vocational school (but not the occupational training center) Ss, significant intercorrelations between the MFF, PM, LOC, and IAR were found. Significant correlations were also found between the four variables and academic and shop grades. Some relationships to behavior ratings were also found. Multiple correlations of predictor with criterion variables are presented. Implications for theory and practice are discussed.

AUTHOR: W. B. Stephens and John A. McLaughlin

AGENCY: Temple University, Philadelphia, Pennsylvania

TITLE: The Observance of Rules in Normals and Retardates

ABSTRACT: Interest in the development of moral judgment and moral conduct prompted the present study, which utilized situations adapted from Piaget's "Rules of the Game" to determine if differences existed in the performance of normals and retardates in the ability to verbalize and observe rules in a game of bowling. The sample was composed of 75 normal male and female subjects (IQ 90-110, CA 6-18). The two sub-samples, retarded and normal, were further divided into cross-sectional samples of three age ranges; 6-10, 10-14, and 14-18.

Analysis indicates that both normals and retardates could verbalize rules. However, when observed in a non-structured game of bowling, a developmental trend was noted; i.e. older subjects exhibited a stricter observance of rules than younger subjects. During play, retardates changed rules more frequently than normals. When normals and retardates were equated on mental age, there was no significant difference in observation of rules.

AUTHOR: Henny Sternlicht, Gabriel Pustel, & Michael De Respinis

AGENCY: WillowBrook State School, Staten Island, New York 10314

TITLE: A Comparison of Adult Homosexual and Heterosexual Retardates on Certain Graphic Procedures.

ABSTRACT: The Figure Drawing Test, Bender-Gestalt, and an animal drawing test were administered to 30 mildly retarded institutionalized adult males, 15 of whom were overtly heterosexual and 15 of whom were overt chronic homosexuals. With the exception of one of Machover's signs, none of the reported graphic signs was able to differentiate the homosexual group from the heterosexual one, and the reasons for this will be discussed.

AUTHOR: Donald H. Thor, Ph. D.

AGENCY: E.R. Johnstone Training & Research Center, Bordentown, N.J.

TITLE: Discrimination of Succession in Visual Masking by Retarded and Normal Children.

ABSTRACT: Twenty educable retardates were compared with first, fourth, and eight grade normal school children in visual masking discrimination. Retardates performed at the same level as the younger, normal children of slightly higher mental age. Mean threshold durations of normal children decreased significantly with increasing chronological age. Within group differences for discriminating succession at 10 and 30 msec. durations of stimulus presentation were consistent; uniformity of threshold change across groups suggests similarity in mode of visual processing with the primary difference between groups due to a varying rate in stimulus processing.

AUTHOR: John H. Throne

AGENCY: University of Kansas, Lawrence, Kansas

TITLE: A Radical Behaviorist Approach to the Contribution of "Genetic Structures" to Mental Retardation

ABSTRACT: "Genetic structures" are at best "setting events" whose contribution to mental retardation is dependent not on certain, specified component qualities intrinsic to the structures, but on the reinforcing (or extinguishing) extrinsic consequences which befall the behavior of organisms possessing those structures. A corollary proposition is that since retarded genotypes are inferred on the basis of phenotypical expression, only the latter may be said to possess an "existent state," from a scientific point of view; which means not only that the ascription of behavioral causation (including the causes of mental retardation)

to "genetic structures" is not only unnecessary, but unwarranted. Moreover, since behavioral phenotypes may be altered through environmental consequation, the causes of retarded phenotypical expression are environment-specific, notwithstanding whatever "genetic structures" are extant in the given case.

AUTHOR: Luke S. Watson, Jr. and James E. Gardner

AGENCY: Columbus State Institute, Columbus, Ohio

TITLE: The Influence of Contingent Reinforcement on Shaping and Maintaining Behavior Modification Skills in Attendants

ABSTRACT: Two studies were conducted to evaluate contingent reinforcement. In the first, attendant trainee progress through an eight-lecture academic program was made contingent upon test performance. If trainees made less than a 90% score on the daily reading assignment test, they were not allowed to attend the corresponding lecture for that day. In the second study, time off from work was the reinforcement to attendants for collecting toileting data. Both studies indicated that contingent reinforcement resulted in superior performance when compared with non-reinforcement.

AUTHOR: John J. Winters, Jr. and Frank A. Harvey

AGENCY: E. R. Johnstone Training & Research Center, Bordentown, N.J.

TITLE: Paired-Associate Learning in Normals and Retardates: A Comparison of Two Methods

ABSTRACT: Thirty-two institutionalized retardates and 32 equal MA normals were presented eight pairs of pictures in a paired-associate learning task to be learned to a criterion of one errorless trial. Half of each group learned by the method of anticipation; the other half learned by the method of blocking. Half in each treatment received training in their respective method; the other half did not. The normals learned faster than the retardates and there were no effects of training, methods of learning, or interactions, indicating that the two methods are equivalent. Matched noninstitutionalized retardates will also be tested.

AUTHOR: Shermen Yen, Ph.D.

AGENCY: Hoxbyton State Hospital

TITLE: The Service Potentials of Dental Health Technician (DHT) Within the Psychological Service in a Treatment Facility for Mentally Retarded

ABSTRACT: The purpose of the paper is to explore various service functions of the PHT. The presentation is partially based upon the supervision experiences of the author with a group of PHT students.

It is felt that the PHT should be able to perform the following tasks adequately with little supervision: (1) administering psychological tests, (2) conducting counseling, (3) serving as behavior therapist agent, and (4) assisting in research.

It is concluded that utilization of the PHT can partially meet the need of professional manpower shortage; furthermore, because of the shortened academic training, the PHT is more flexible in adopting new treatment approaches.