

TEACHING BEHAVIOR MODIFICATION TO NONPROFESSIONALS¹

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Two 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 behavior modification principles and (2) ratings of ability to apply behavior modification techniques. Results indicated that role playing was more effective in teaching behavior modification skills while the lectures were more effective in teaching principles of behavior modification.

Although much attention has been paid to the residents in institutions for the retarded, personnel have been neglected. With a few exceptions (*e.g.*, Bricker, Morgan, and Grabowski, 1968; Gardner, 1970a; Panyan, Boozer, and Morris, 1970) behavioral principles have not been 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 has the effectiveness of the programs currently in operation been evaluated. Most behavior modification education programs use a combination of lectures and demonstrations (Patterson, 1969; Watson, Gardner, and Sanders, 1971) to train personnel. Despite this, there has been no attempt to examine in depth the process of teaching behavior modification skills. The present study attempted to evaluate the effectiveness of role playing and lectures

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for teaching behavior modification techniques to attendants. For purposes of this study, effectiveness refers to ability to apply behavior modification techniques and knowledge of behavior modification principles. It was predicted that role playing would be the more effective method of teaching behavior modification techniques, because 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. In terms of knowledge of behavior modification, the second prediction was that lectures would be more relevant than role playing. In this regard, knowledge of behavior modification principles was seen as a "verbal" skill.

Subjects

Twenty female attendants enrolled in an in-service education program for new employees were matched in pairs and randomly assigned to one of two groups. The subjects were matched for social-economic status, attitude toward the retarded, knowledge of mental retardation, and knowledge of nursing skills. In addition, pre-test measures on the two dependent variables were used further to equate the groups.

Materials

The major dependent variables were measures of behavior modification ability. The Training

Proficiency Scale or TPS (Gardner, 1970*b*) is a 30-item five-point rating scale that measures proficiency in applying behavior modification techniques. An example of a scale item is: "Gives rewards quickly". The test is administered by observing attendants training other attendants who assume the role of a resident. The rating sessions usually last 15 to 20 min. Ratings on the TPS have been found to correlate significantly ($r = 0.98, 0.88$) with independent judgments of overall training ability by two experienced behavior modification trainers; ratings of training ability in a role-playing situation were found to approximate ($r = 0.87$) ratings of training ability in sessions with retarded children. In addition, high interscorer ($r = 0.89$), test-retest ($r = 0.86$), and split half ($r = 0.97$) reliabilities have been reported (Gardner, Brust, and Watson, 1970).

The Behavior Modification Test or BMT is a 229-item true-false test that measures knowledge of behavior modification 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 ($r = 0.89$), indicating that knowledge of behavior modification principles and ability to apply behavior modification techniques are related (Gardner, *et al.*, 1970).

Three measures were used to equate the groups. These were: The Attendant Opinion Survey or AOS (Bensberg and Barnett, unpublished), the Attendant Information Survey or

AIS (Bensberg and Barnett, unpublished), and the Test Reservoir for Aide Instructors in Nursing or TRAIN (Gardner, 1967). The AOS is a 115-item four-point scale that purports to measure attitude toward the retarded and the institution in 23 different areas (*e.g.*, strictness toward patient, irritability, institutional identification). The AIS is a 160-item true-false, multiple-choice, and fill-in test of knowledge about mental retardation. The TRAIN is a 30-item multiple-choice test of general nursing aptitude.

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. The relevant information is presented in Table 1.

The behavior modification education program at Columbus State Institute consists of two major phases: role playing and lectures. Role playing consists of six 1-hr sessions in which various behavior modification techniques are demonstrated. Emphasis is placed upon methods of administering reinforcers and shaping behavior. Attendants work in pairs, each alternately assuming the role of resident or trainer. They are supervised by experienced behavior modification technicians, with technician-trainee ratios averaging one to five. The behavior modification technician begins by demonstrating standard training procedures, such as teaching a child to

Table 1
Sample Characteristics

	Group			
	R	L	<i>t</i>	P
Number of Regular Employees	13.0	14.0		
Number of New Careers Employees*	7.0	6.0		
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.

dress or undress, to obey simple commands, and to eat with a spoon. Following this, the attendants work in pairs on these same skills, with feedback provided by the technician. Detailed descriptions of the procedure have been presented elsewhere (Gardner, *et al.*, 1970).

The lecture series consists of eight 1-hr sessions designed to present major behavior modification principles in everyday language. Approximately 20% of class time is allotted for class participation and group discussion. The lectures cover three major areas: (1) reinforcement, (2) shaping techniques, and (3) stimulus control. In addition, handout material is given to all the attendants. The content of the lectures has been presented in detail elsewhere (Watson *et al.*, 1971).

Procedure

The attendants were matched in pairs and then randomly assigned to one of two groups, role playing (R) or lecture (L), depending on which phase they entered first. That is, attendants assigned to R entered role playing first while those assigned to L entered the lectures first. After the first phase was completed, the attendants entered the remaining phase (either role playing or lectures).

Testing with the BMT was done in groups. The TPS was administered individually by trained raters. High interscorer reliability obviated the need for a same-subject, same-judge design, and the attendants were randomly assigned to one of three raters at each evaluation point. While independent, simultaneous ratings were not obtained in this study, observer bias was avoided by ensuring that the raters had no knowledge of which subjects were in which condition. Each attendant was evaluated with both measures (TPS and BMT) at three different times: pre-treatment, following either role playing or lectures, and post-treatment. This design allowed for: (1) matching the attendants on pre-treatment scores, (2) evaluating the effectiveness of both role playing and lectures in isolation, and (3) evaluating the effect of the

two different sequences, since upon completion all subjects would have had both treatments, with only the order varied.

RESULTS

Training Proficiency

The mean scores for both groups on the TPS are presented in Table 2. An analysis of variance reveals that there were significant differences between the treatment groups ($F = 18.48$, $p < 0.001$), evaluation points ($F = 97.61$, $p < 0.001$), and between the groups over time ($F = 14.11$, $p < 0.001$). Multiple t tests revealed that there were no significant differences between the groups on the pre- or post-treatment test; however, Group R exceeded Group L after phase I as predicted. The apparent increase in Group R scores from Phase 1 to post-treatment was not significant ($t = 1.607$) nor was the increase in Group L scores from pre-test to phase one ($t = 1.545$). Thus, role playing contributed more to training proficiency skills; however, sequence effects (*i.e.*, whether or not role playing came first) were not significant.

Table 2
Mean TPS Scores for Group R and L

	R	L	$t(df = 18)$
Pre-Treatment	45.5	45.6	0.025
Phase One	94.8	52.4	6.235*
Post-Treatment	108.3	96.0	1.618

*0.001.

Knowledge of Behavior Modification

Means scores for both groups on the BMT are presented in Table 3. Gains in knowledge of behavior modification proceeded as expected.

Table 3
Mean Scores on BMT for Group R and L

	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

*0.05.

There were no overall significant differences between the treatment groups ($F < 1$), but there were significant differences over the evaluation trials ($F = 60.69$, $p < 0.001$) and there was a significant interaction between treatment and trials ($F = 20.08$, $p < 0.001$). 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 1 as predicted. Group R's increase in scores from pre-treatment to Phase 1 was not significant ($t = 1.838$), but there was a significant increase following the lectures ($t = 2.746$, $p < 0.05$), as predicted.

Socio-Economic Status

The effects of socio-economic status were examined by comparing the scores of New Careers² (NC) employees with those of regular attendants (A). None of the regular attendants 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) was greater than among the regular attendants (67). For this analysis, 22 (13 NC and nine 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 because their matched controls dropped out before completing the course.

Pre- and post-treatment scores 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 103.5 and 97.8 respectively. Again, there were no sig-

nificant differences. This finding has obvious relevance in terms of manpower development.

DISCUSSION

The primary purpose of this study was to examine the 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.

Comparisons between different socio-economic groups provide information that is useful for selection. In this study, there were no differences between a high unemployment, exclusively black, inner-city group and the regular attendants hired by the institution in initial or final performance on either measure (BMT or TPS). A previous study (Gardner, 1972) was found that experienced attendants did not differ significantly from inexperienced attendants in terms of knowledge (BMT score) or attitude following the education program described here. These two findings suggest the hypothesis that the prescriptive nature of education under this system combined with the novelty of the subject matter eliminated differences between different groups of subjects. Moreover, the lack of difference between different sequences (a major finding in this study) could also be explained in these terms.

It is clear that the current system of training in behavior modification generates attendants who are knowledgeable in behavioral principles and skillful in applying behavior modification techniques, but 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, Gardner (1972)

²New Careers is a program for low income, high unemployment, inner city residents sponsored by the Office of Economic Opportunity.

found that the brightest attendants chose not to work on 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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