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The Effects of Staff-Training and Daily Feedback on Self-Care Behavior in a Nursing Home

Lorraine F. Schack

Western Michigan University

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THE EFFECTS OF STAFF-TRAINING AND DAILY FEEDBACK ON SELF-CARE BEHAVIOR IN A NURSING HOME

by

Lorraine F. Schack

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Master of Arts

Western Michigan University
Kalamazoo, Michigan
December 1977
ACKNOWLEDGEMENTS

In carrying out this study the contributions of many people were irreplaceable. I would like to express my appreciation to the staff of Matheson Nursing Home for their time and cooperation in the process of collecting these data. My special gratitude goes to Koni Mollet, Linda Perkins, Marybeth Weiser, and Jennifer Westphal for their untiring efforts and dedication.

In preparing this thesis the very useful advice, encouragement and constructive criticism of Professors Galen Alessi, Wayne Fuqua, Jack Michael, and Malcolm Robertson were essential. My thanks go to Dr. Fuqua for his enduring effort and feedback in organizing and carrying out this study. In collecting the data the contributions of Annise O'Brien, Michelle Stone, and Paula Shilton were indispensible as was the financial support from the Graduate Student Research Fund of Western Michigan University. Finally, I would like to thank those residents who agreed to participate in this study.

Lorraine F. Schack
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>METHOD</td>
<td>10</td>
</tr>
<tr>
<td>Subjects</td>
<td>10</td>
</tr>
<tr>
<td>Setting</td>
<td>12</td>
</tr>
<tr>
<td>Response Measure</td>
<td>12</td>
</tr>
<tr>
<td>Generalization Probes</td>
<td>13</td>
</tr>
<tr>
<td>Reliability</td>
<td>15</td>
</tr>
<tr>
<td>Procedures</td>
<td>15</td>
</tr>
<tr>
<td>Experimental Design</td>
<td>16</td>
</tr>
<tr>
<td>Treatment Conditions</td>
<td>18</td>
</tr>
<tr>
<td>RESULTS</td>
<td>21</td>
</tr>
<tr>
<td>Interrater Reliability</td>
<td>21</td>
</tr>
<tr>
<td>Individual Subject Analysis</td>
<td>21</td>
</tr>
<tr>
<td>General Trends</td>
<td>42</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>44</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>51</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>55</td>
</tr>
<tr>
<td>Appendix I</td>
<td>55</td>
</tr>
<tr>
<td>Appendix II</td>
<td>67</td>
</tr>
<tr>
<td>Appendix III</td>
<td>71</td>
</tr>
</tbody>
</table>
INTRODUCTION

Aging has traditionally been viewed as a biologically based process which can be neither escaped nor reversed. It is generally agreed among professionals that "the older person tends to be rigid in behavior and inadaptable to change, either in environment or in habits" (Coe, 1967, p. 116). Dependency has been universally recognized as a pre-determinant characteristic of old age resulting from irreparable physiological damage. Traditionally, a decline in the independent performance of daily self maintenance behaviors has come to be an accepted and, in many cases, an expected consequence of increasing age. While it is true that increasing dependency may be initiated by physical or biological factors, there are environmental components which exacerbate these behavioral changes. As self-care is the most basic of all personal contributions to health and well-being, the present study functionally defined dependency as a loss of self-care skills such as washing, dressing, and grooming.

When placed in a nursing home, self-care behaviors often begin to deteriorate or increase in rate of deterioration. The probable cause for the resulting increased dependency is to be found in the contingencies of reinforcement for self-care behaviors. When attendants take over the responsibility for daily health care of the residents, the consequences (e.g., social and physical) which normally reinforce such behaviors in the natural environment are delivered independent of behavior on the part of the resident.
Social and behavioral repertoires deteriorate as a result of non-contingent stimuli and reinforcements, therefore inducting residents into a sick, dependent role similar to the behavior pattern which has been termed by Seligman (1973) as "helplessness".

Those who live in institutions suffer from a lack of positive reinforcement (Skinner, 1976). Many nursing home environments are deficient of tangible rewards and motivating stimuli. Reduced sensory-motor mechanisms also make it more difficult for geriatric residents to take advantage of available reinforcers (Zerbe and Hickey, 1975). Therefore, staff contact has become a strong reinforcer in nursing home environments. Those individuals who are most independent generally attract the least attention from the staff. Conversely, the inability to perform self-care behaviors increases the residents' contact with staff members. The existing situation thus fosters dependency and the resident learns the appropriate skills necessary to maintain attention from the staff. Once it is assumed that a person cannot regain his or her former level of functioning, reinforcers delivered by self (e.g., self-verbalizations) and others (e.g., sympathy, attention) as well as the physical and social environments within the institution, maintain the presumed dependency. The old person is not reinforced for returning to health and performing his or her previous social and motor activities, nor punished for remaining dependent. The more dependent the resident becomes, the more tasks that are taken over by the caretakers, therefore further increasing
the dependency of the resident by extinguishing more self-care behaviors.

When aging is viewed as a one-way movement toward uselessness and helplessness, therapy becomes largely custodial as caretakers provide more assistance than is necessary. "By giving too much help we postpone the acquisition of effective behavior and perpetuate the need for help" (Skinner, 1976, p. 7). Consequently, dependency ensues. This helpless behavior can be reversed by training staff members to retrain residents to do more for themselves.

Positive self-verbalizations often decrease as positive reinforcement for self-help decreases and dependency increases. The residents may respond emotionally to their lack of self-care skills with what is often referred to as pessimism and depression. A conflict situation as to whether or not to perform self-care arises due to differential reinforcement that is contingent upon passive or independent behaviors.

Two contrasting viewpoints on the behavioral effects of institutionalization of the elderly can be found in recent literature. Lieberman (1967) states that there is no evidence that institutionalization has either harmed or helped the aged. Institutions are primarily a place to live for people who have nowhere else to go. The opposing view is expressed by Dubey (1968). "...some of the behavioral deterioration observed in institutionalized geriatric patients appears to be the result of not only the physical aging process but also the result of the institutional
atmosphere which fosters functioning at below-optimum capacity" (p. 177). Unfortunately, data to support either view are non-conclusive. An area in need of further research is a comparison of the rate of behavioral deterioration in institutions versus outside the institution.

Two questions become evident at this point. (1) How many people in nursing homes are dependent upon attendants to perform daily self-care? (2) Why should our goal be that of maintaining independent self-care? A 1975 study conducted by the U. S. Government (Dept. of Health, Education, and Welfare) examined the population characteristics of 283,915 nursing home residents and concluded that 93.9 percent (263,551) required assistance with bathing, about 72 percent (202,000) required the services of another person when dressing, and slightly more than two-thirds (68% or 193,137) needed assistance with toileting. These figures accurately portray the scope of the problem of independent self-care.

The importance of maintaining independent self-care behaviors is evidenced in Blenkner, Jahn, and Wassner (1964). They randomly divided non-institutionalized elderly into three service programs which received assistance from minimal to maximal levels. The lowest level group received information and direction, while the highest level group received an intensive program of direct service. The death rate at a 6-month follow-up was highest in the maximal service group (four times higher than in the minimal program). This suggests that whatever people do for themselves is better for them
and that "...persons in a program that makes no attempt to provide personal service may fare better than those in one providing a high level of individual care if that care is rendered through institutional settings" (Blenkner, 1967, p. 103).

The more one maintains the behavioral repertoire that was predominant during his/her life prior to entry into the nursing home, the less aversive and burdensome s/he is to family members and nursing home personnel. S/he also becomes less expensive to maintain as the number of skilled personnel can be decreased or reassigned to other residents. Self-care may also be a prerequisite to other productive or social activities outside of the institution.

An issue which becomes apparent is that as the system sets standards for effective behavior, individuals tend to meet those criteria. A higher level of performance can be expected as more complex behaviors are required prior to reinforcing consequences. By training nursing home staff to set the standards higher and provide consequences contingent on meeting or exceeding those standards, we can expect residents to behave according to the adjusted criteria.

Operant technology is an environmental intervention strategy designed for changing behavior. "Behavior modification...helps people by arranging conditions under which they get things rather than receiving them gratis" (Skinner, 1976, p. 9). When studying the management of elderly behavior, this approach offers the following advantages:

(a) most behaviors (or lack of behaviors) are treated as learned responses which can be modified via environmental
changes;

(b) operant methods are individually designed and emphasize immediate behavior change;

(c) paraprofessionals can carry out the program; and

(d) the intervention skills are generalizable to a large variety of elderly persons with different problems and needs.

Since the 1960's operant techniques have been applied with the elderly on an individual, group, and ward-wide basis. Although limited in number, successful applications of behavioral technology with various target behaviors with the elderly have been demonstrated. Recent literature has suggested that much of the "senile" behaviors demonstrated by nursing home residents is controlled by the external events which contingently follow the behavior. Based on these principles, Lindsley (1964) first recommended designing specialized environments to overcome the behavioral deficits of the aged. Behavior modification, using various types of reinforcement systems and environmental restructuring, has been successfully used with regressed geriatric populations to retrain and enhance verbal and/or social interaction skills (Bergen and Rose, 1977; Hoyer, Kafer, Simpson, and Hoyer, 1974; Mueller and Atlas, 1972); walking (MacDonald and Butler, 1974); and attendance and participation in daily activities (Blackman, Howe, and Pinkston, 1976; McClannahan and Risley, 1974, 1975). All of these studies successfully demonstrated that functional relationships between environmental events and the behavior of elderly persons do exist. Furthermore, "aging" behaviors previously termed irreversible and biologically
based were modifiable and could be turned into adaptive behavior patterns via systematic changes in the environment.

The systematic application of operant principles has been demonstrated to modify self-care behaviors of several resident populations (Bensberg, Colwell, and Cassel, 1965; Hoffer and Keilitz, 1976; Phillips, 1968), particularly the mentally retarded. Behavior shaping, task training, and token economies exemplify the treatment procedures implemented. Only a single publication dealing with older adults and nursing home residents has focused on the problem of self-care maintenance. Zerbe and Hickey (1975) developed a short-term training program for the providers of health care services to dependent elderly people. Only a report on the development and use of the program is presently available. However, before any generalizations can be made, it is necessary to examine how the differences between populations interact with self-care maintenance. Unlike the mentally retarded individual who is acquiring a new skill, the nursing home resident is reinstating behaviors that at one time were performed independently. In addition, by having more access to verbal skills, geriatric residents are more amenable to verbal directions and more complex shaping sequences.

Through training in behavior modification skills, aides have been taught to fulfill their designated responsibilities by attending to individual behaviors and by selectively reinforcing and shaping appropriate behaviors (e.g., Gardner, 1972; Hollander and
Plutchik, 1972; Iwata, Bailey, Brown, Foshee, and Alpern, 1976; Katz, Johnson and Gelfand, 1972; Pomerleau, Bobrove and Smith, 1973; Woolcock, Tallon, and Steele, 1977). Baltes and Zerbe (1976) were among the first to suggest training nursing home personnel to carry out experimental programs so that they can be continued once the professionals leave. The present study has carried out this suggestion by having the staff implement stimulus control and reinforcement contingencies, thus altering the nursing home environment so that self-care behaviors can be maintained. The ultimate goal was not only to train paraprofessionals working with a nursing home population, but to have the paraprofessionals in turn train the residents in self-care skills.

Procedures which measure performance and make such measures available to the behaver (e.g., performance feedback) have often proved effective at shaping and maintaining the behaviors in question. Panyan, Boozer, and Morris (1970) increased the daily use of operant training methods and improved daily project performance by developing a feedback system consisting of weekly posted feedback sheets. Welsh, Ludwig, Radiker, and Krapfl (1973) increased daily project completion by posting daily results and recommend this procedure in cases where improvement is so gradual that it does not function as a reinforcer. Quilitch (1975) further demonstrated that by rewarding aides on the basis of improvement of their assigned patients and by providing feedback about their patients, appropriate patient behavior was increased. These studies suggest
that through indirect contingencies, feedback can increase the amount of appropriate behavior in patients.

In sum, a review of the literature reveals that the maintenance of self-care behavior has been investigated with many populations. The findings have not yet been extended to geriatrics. Staff training and feedback have been demonstrated to be effective interventions in both the acquisition and maintenance of a wide assortment of behaviors, including self-care. Once again, these findings have not been applied to a geriatric population.

The intent of the present study was to provide nursing assistants with behavior modification skills as well as to evaluate the effects of performance feedback on self-care behaviors. Effects of feedback were assessed both before and after the staff-training program was introduced. The effects of the training program without feedback were also evaluated in regard to the level of self-care performance by nursing home residents.
METHOD

Subjects

Four adults residing in a private, 93-bed skilled and intermediate care nursing home served as subjects. All four were living in the intermediate care unit throughout the study. The staff-resident ratio was approximately 1:10 on this unit.

Table 1 gives a demographic sketch of each of the residents. The floor nurse assisted the experimenter in the selection of subjects. Each was specially selected according to predetermined criteria. Some of the variables used as a basis for subject selection include the following: (a) absence of physical handicaps prohibitive of independent self-care, and (b) demonstrated ability to follow verbal commands. The behavior problems of the residents had been diagnostically classified either as psychiatric or geriatric in etiology. Psychiatric diagnoses include schizophrenia and depression, while geriatric diagnoses were based on medical problems such as arteriosclerosis and organic brain syndrome (O.B.S.). Three subjects had psychiatric diagnoses and were institutionalized prior to coming to the nursing home. The other one had functional impairments relating to geriatric problems.

Two nursing attendants (aides) working the 7:00 - 3:00 shift participated in the study. Aide A was the primary aide until her employment terminated on Day 34. At that time Aide B became the primary aide. Prior to Day 34, Aide B had been kept informed of
### TABLE 1

**SUBJECT DEMOGRAPHIC DATA**

<table>
<thead>
<tr>
<th>Resident</th>
<th>Sex</th>
<th>Age</th>
<th>Diagnosis</th>
<th>Total time Inst. Prior to Nursing Home (years)</th>
<th>Total time in Nursing Home (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>62</td>
<td>Psychiatric (depression) Geriatric (OBS)</td>
<td>Unavailable</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>65</td>
<td>Psychiatric (Schizophrenia)</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>82</td>
<td>Geriatric (OBS)</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>49</td>
<td>Psychiatric (Schizophrenia)</td>
<td>24</td>
<td>18</td>
</tr>
</tbody>
</table>
what was taking place in order to ensure a smooth transition. The selection of Aides A and B by the experimenter, together with the Director of Nurses, was based on satisfactory job performance, an expressed interest in learning the principles and techniques of behavior modification, and an interest in reinstating and maintaining resident independence.

Setting

All phases of this investigation took place in each resident's bathroom which was connected to an adjoining bedroom. The bathroom was a small rectangular room with a sink and mirror at one end and a toilet at the other. The sink could not be reached from the toilet. As of Day 12 a small table was introduced upon which a basin filled with water, soap, wash cloth, and towel were placed for residents who were unstable while standing at the sink.

Response Measure (Dependent Variable)

The major dependent variable was the level of assistance required from a nursing aide in performing daily self-care behaviors. The number of self-care behaviors measured for each subject ranged from 15 to 20. A core of 13 tasks were selected for all four subjects. Individual supplementary tasks were added as seen necessary during daily routines. This was generally based on individual differences such as sex, physical disabilities, health, and behavior patterns. The daily recording sheet listed the four
subjects and the tasks involved. A stop-watch was used to measure the total time spent performing self-care tasks for each subject on a daily basis. A sample recording sheet can be seen in Figure 1.

Each self-care behavior was rated on a six-point scale according to the relative degree of independence observed in the subject's performance of that behavior. The following is a breakdown of the rating scale, followed by an example for each level. The sample behavior is washing upper body.

0. Behavior absent: Task performed neither by aide nor by resident - The upper body is not washed.

1. Aide: Task performed by aide. No opportunity for resident to perform task--the upper body is washed by the aide.

2. Physical guidance: Task performed by resident with physical guidance from the aide--the upper body is washed by the resident as the aide physically guides his/her hand.

3. Verbal guidance: Task performed by resident with verbal guidance from the aide--the upper body is washed by the resident as the aide provides multiple verbal prompts (e.g., "put the cloth in your right hand," "wash your left arm").

4. Verbal or Physical Prompt: Task performed by resident with single physical or verbal prompt from aide--the upper body is washed by the resident following a single prompt (e.g., "wash your upper body").

5. Independence: Task performed by resident without physical or verbal assistance from aide--the upper body is washed by the resident without assistance.

Generalization Probes

A generalization measure was obtained on the self-care behavior of the subjects when an alternate aide was on duty. This occurred
<table>
<thead>
<tr>
<th>TASK</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>I  Taking off robe</td>
<td></td>
</tr>
<tr>
<td>II Taking off gown</td>
<td></td>
</tr>
<tr>
<td>III Washing face</td>
<td></td>
</tr>
<tr>
<td>IV Wetting cloth</td>
<td></td>
</tr>
<tr>
<td>V  Turning on faucet</td>
<td></td>
</tr>
<tr>
<td>VI Washing upper body</td>
<td></td>
</tr>
<tr>
<td>VII Washing lower body</td>
<td></td>
</tr>
<tr>
<td>VIII Soaping cloth</td>
<td></td>
</tr>
<tr>
<td>IX Rinsing upper body</td>
<td></td>
</tr>
<tr>
<td>X  Rinsing lower body</td>
<td></td>
</tr>
<tr>
<td>XI Drying upper body</td>
<td></td>
</tr>
<tr>
<td>XII Drying lower body</td>
<td></td>
</tr>
<tr>
<td>XIII Applying powder (deod.)</td>
<td></td>
</tr>
<tr>
<td>XIV Selecting clothes</td>
<td></td>
</tr>
<tr>
<td>XV Putting pullover on</td>
<td></td>
</tr>
<tr>
<td>XVI Putting button top on</td>
<td></td>
</tr>
<tr>
<td>XVII Buttoning shirt</td>
<td></td>
</tr>
<tr>
<td>XVIII Putting on pants</td>
<td></td>
</tr>
<tr>
<td>XIX Brushing teeth</td>
<td></td>
</tr>
<tr>
<td>XX Brushing hair</td>
<td></td>
</tr>
<tr>
<td>XXI Putting in laundry</td>
<td></td>
</tr>
<tr>
<td>XXII Shaving</td>
<td></td>
</tr>
</tbody>
</table>
randomly throughout the investigation. Special instructions were given by the nurses to "let the resident do as much as possible by him/herself". All measures were recorded according to the same procedure as described below.

Reliability

Approximately every fourth day throughout the study (25% of the total sessions) a second observer independently recorded the level of task performance. This individual was naive to the purposes of the study and experimental conditions in effect. Each reliability observer received verbal instructions for data recording with written sample behaviors. A practice session was also provided before inter-observer agreement was assessed. During this session task performance levels were compared and discussed by the two observers until a mutual agreement was reached. In order to assess reliability, the scores on both data sheets were compared and exact agreement reliability was calculated. An agreement was defined as a task on which both observers recorded the same level of response; a disagreement as a task which did not receive the same score by both observers. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100.

Procedures

The study was conducted five mornings per week between the
hours of 7:30 A.M. and 10:30 A.M. Each session began when the aide entered the resident's bedroom to perform regularly scheduled daily hygiene and terminated when she exited.

One observer, equipped with a recording sheet and a stopwatch was visibly located outside the door of the individual resident's bathroom in which daily self-care tasks were performed. Prior to recording baseline data, there was a one-month habituation period in order to allow residents to adjust to the presence of the observer. Data were gathered for 65 sessions over a period of four months. Mornings on which showers took place were excluded due to inconsistent changes in setting and routine.

Experimental Design

A modified version of a multiple baseline design (Baer, Wolf, and Risley, 1968) was employed to assess the effects of the treatments in increasing independence levels in self-care behaviors. Baselines against which changes were to be measured were identified and recorded concurrently for all four subjects. An experimental variable was applied to two of the subjects while the remaining two subjects remained in baseline conditions. In order to show that the intervention was effective and accounted for the change in behavior, the same experimental variable was applied to the remaining two subjects after staff-training. By showing that specific behavior changes are associated with the intervention at corresponding times, the effects of extraneous events are controlled and the effects of the experimental conditions are demonstrated.
A reversal of each experimental condition was incorporated within the design in order to demonstrate that behavioral changes take place only when the experimental conditions were in effect. After stable baseline rates were obtained (11 sessions) the first experimental variable (feedback) was introduced for Subjects 1 and 3 and behavior changes were noted. This condition was then followed by a return to Baseline on Day 23, when the experimental variable was discontinued. Beginning on Day 31, staff-training took place and post-training data were collected for all subjects concurrently. After 14 days the feedback phase was introduced for Subjects 2 and 4 while Subjects 1 and 3 remained in the Post-Training condition. This was withdrawn on Day 56 until the study terminated on Day 65.

<table>
<thead>
<tr>
<th>Days/Phases</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
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<tbody>
<tr>
<td>S1</td>
<td>BL</td>
<td>FB</td>
<td>BL</td>
<td>ST</td>
<td>TR</td>
<td>TR</td>
</tr>
<tr>
<td>S2</td>
<td>BL</td>
<td>BL</td>
<td>BL</td>
<td>ST</td>
<td>TR</td>
<td>TR &amp; FB</td>
</tr>
<tr>
<td>S3</td>
<td>BL</td>
<td>FB</td>
<td>BL</td>
<td>ST</td>
<td>TR</td>
<td>TR</td>
</tr>
<tr>
<td>S4</td>
<td>BL</td>
<td>BL</td>
<td>BL</td>
<td>ST</td>
<td>TR</td>
<td>TR &amp; FB</td>
</tr>
</tbody>
</table>

BL = Baseline; ST = During staff-training; FB = Feedback; TR = Post staff-training.
Treatment Conditions (Independent Variables)

Baseline I

During this and all subsequent conditions, one aide and one resident were present while the self-care behaviors were being performed. During Baseline, the aides were asked to tend to the residents in the customary manner. No prompts, rewards, or feedback of any sort were given to either the aide or the resident during this phase of the program.

Treatment I - Goal-referenced daily feedback

During this condition an individual feedback chart was introduced. The chart was a 28 x 22 sheet of poster board which was posted within view on the bathroom door (see Figure 2). Included on the chart were the individual self-care tasks, baseline means for each task, the days of the week, and levels 0 - 5. Blue dots were used to indicate daily performance at levels 0 - 4 while a red dot indicated independence or level 5. Right after each session, the observer placed a dot on the chart for each task.

It was explained that the purpose of this chart was to inform both the resident and the aide of the current level of functioning. The resident was verbally told by the aide to try to improve his/her score by doing more for him/herself. The aide was encouraged to attend to the chart and, in many cases, commented to the resident about his or her daily performance. Based on the subject's
<table>
<thead>
<tr>
<th>TASK LEVEL</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THURS</th>
<th>FRID</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking off robe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taking off gown</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing Face</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetting cloth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filling basin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turning on water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusting shower</td>
<td></td>
<td></td>
<td></td>
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Figure 2. Sample individual feedback chart.
behavior, it was difficult to determine whether or not s/he was attending to the feedback. However, this was not required.

Staff-training

A 5-day (15 hour) training period in the application of behavior management techniques was held for both Aides A and B. The orientation of the training program was practical rather than theoretical (see Appendix 1). Topics covered included: reinforcement, extinction, shaping, chaining, stimulus control, prompting, fading, and record keeping. Each daily session consisted of one hour presenting and explaining new material, one hour role-playing, and one hour discussing daily application to the four subjects. Homework was given daily. On the fourth day of training, the film *Who did what to whom?* (Mager) was presented and discussed. A written post-test (see Appendix 2) covering application knowledge was administered on Day 5, on which the scores were 95% and 100% for each aide.

Treatment II - Post-training

This condition followed the training period for all subjects. The aides systematically applied the behavior principles taught during training.

Immediately following daily sessions, feedback was informally provided to the aides by the experimenter. The aide was either reinforced for the appropriate application of behavior management principles or was directed toward alternate, more effective responses.
RESULTS

Interrater Reliability

The agreements between observers indicated that all raters accurately recorded the self-care measures. A mean reliability level of 89.6 was attained. Condition by condition interrater reliability levels were: Baseline 95.7; Feedback ($S_1$ and $S_3$) 83.5; Baseline 81.2; Post-Training 90.5; Feedback ($S_4$) 95.0; and Post-Training 91.7.

Individual Subject Analysis

The effects of posted feedback, staff-training, and staff-training paired with feedback on target self-care behaviors for each individual subject are illustrated in Figures 3-14.

Nursing home residents are far from being a homogeneous group. Therefore, what is to be expected are individual rather than group behavior changes. In the present study, the data were first analyzed for each individual and then summarized according to general trends.

Subject I

Figure 3 shows the mean level of self-care per condition for all tasks performed daily. Subject One's mean level of self-care during Baseline was 2.2. This indicates that physical guidance was provided during most sessions. During Treatment Condition I
Figure 3. Mean levels of total daily performance for each condition for Subject 1.
Subject One's mean level of self-care increased to a point where only verbal guidance was necessary for the task to be performed (level 3.3). During the reversal this increased slightly to 3.6. Subject One's mean level increased to 4.0 requiring only a single prompt during the second treatment condition (Post-training) and remained at 4.35 throughout the remainder of the study.

Figure 3 also shows data from probes for generalization of the gains in self-care behavior to alternate aides. Of particular interest is that the data were quite similar for the assigned and alternate aides prior to staff-training. During Feedback the level of self-care was higher with the non-assigned (alternate) aide. After staff-training, Subject One's level of performance continued to improve, while tapering off with the alternate aide.

Figure 4 shows one behavior in which positive change occurred throughout the experiment and one behavior in which some deterioration occurred. The task of tooth-brushing was selected to demonstrate the increasing trend of independence in Subject One's performance. During Baseline Subject One performed the task when provided with a series of verbal instructions (level 3.0). During Feedback only a single prompt was necessary approximately 60% of the time (level 3.6). When feedback was eliminated, the Subject returned to a level of 3.0. Following staff-training, Subject One's mean score rose to a level of 4.0 (single prompt) and steadily increased to 5.0 (independence) at the end of the investigation.

The task of drying lower body was representative of those four...
Figure 4. Mean levels of change during each condition for Subject 1.
behaviors in which a decreasing trend occurred. During Baseline the performance of this task required only a single prompt (4.0). When feedback was implemented, Subject One's performance deteriorated to necessitating physical guidance (level 2.25). When feedback was removed, the subject's performance improved slightly to a mean level of 2.75. Staff-training brought the performance back up to a level requiring verbal guidance or a single prompt (level 3.5). This gradually increased again to a level of 4.0 and then dropped to 3.50.

Figure 5 shows the directions of change for all 18 of the targeted behaviors during each of the treatment conditions. When feedback was in effect, three behaviors improved and then deteriorated when feedback was withdrawn; eight behaviors improved and did not reverse; five behaviors showed no change; and two deteriorated and then improved. No behaviors were limited by a ceiling effect nor showed a deterioration without a reversal. After the termination of staff training, one behavior improved and then reversed; thirteen improved and remained at that level; two showed no change; and two deteriorated. In this phase no behaviors were limited by a ceiling effect or showed a deterioration without a reversal.

**Subject II**

Figure 6 shows Subject Two's mean level of self-care for all six conditions. During Baseline this level was 2.1. This indicates that physical guidance was generally necessary for this subject to
Figure 5. Directions of change for all 18 of the targeted behaviors during each of the treatment conditions for Subject 1.

- **U-R** = Up, Reversal
- **U-NR** = Up, No reversal
- **C** = Ceiling
- **N-C** = No change
- **D-R** = Down, Reversal
- **D-NR** = Down, No Reversal

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Figure 6. Mean levels of total daily performance for each condition for Subject 2.
perform the appropriate task. During the following two conditions this subject remained in Baseline. Her mean level remained approximately within the same range, with a larger number of tasks requiring verbal than physical guidance. Once Post-Training was initiated, Subject Two's mean level rose to 2.8 (verbal guidance prompted the subject to perform most tasks). Subject Two was in the hospital during the time when she was to be in the feedback phase, and was thus unable to participate in this treatment condition. At the time of termination, Subject Two was performing self-care behaviors at a level of 3.2 (verbal guidance alone was required for most self-care behaviors).

Also found in Figure 6 are the behavioral effects when an alternate aide was working. No data were available for the initial baseline. When Feedback was in effect for Subjects 1 and 3, Subject Two's level of self-care was quite similar to the times when the assigned aide was on duty. During Condition 3 this generalization level fell and did not approach the trained-aide level.

Figure 7 shows one behavior in which positive change occurred throughout the study and one behavior in which some deterioration occurred.

The task of soaping the cloth was selected to demonstrate the increasing trend of independence for Subject Two. During Baseline (conditions 1-3) this task was performed by the aide during all sessions. Following Staff-Training the task was performed by the resident with physical guidance. At the termination of the study, only verbal guidance was necessary.
Figure 7. Mean levels of change during each condition for Subject 2.
The task of brushing or combing hair was selected to exemplify a behavior in which a decreasing trend occurred. During Baseline, Subject Two performed the required task when physical guidance was provided. When feedback was implemented for Subjects 1 and 3, this resident's performance level improved to a point where only verbal guidance was necessary in order to prompt the behavior. Subject Two's behavior began to deteriorate when condition 3 (Baseline) was implemented and continued to do so throughout the remainder of the experiment. The subject completed the study at a level approximately equal to that of the initial baseline.

Figure 8 shows the directions of change for all 17 of the targeted behaviors following staff-training. As Subject Two was not involved in the feedback condition, no data were recorded. During the Post-Training condition one behavior improved and then reversed; seven improved and did not reverse; three behaviors showed no change; two deteriorated and then reversed; and four deteriorated without reversing. No behaviors were limited by a ceiling effect.

Subject III

Figure 9 shows Subject Three's mean level of self-care for all six conditions. During the initial baseline, Subject Three performed at a mean level of 2.1. This indicates that physical guidance was generally provided by the aide while the resident was performing each task. During the Feedback condition (condition 2) Subject Three's mean level of performance increased (the level indicated by
Figure 8. Directions of change for all 17 of the targeted behaviors during each of the treatment conditions for Subject 2.

U-R = Up, Reversal  N-C = No change
U-NR = Up, No reversal  D-R = Down, Reversal
C  = Ceiling  D-NR = Down, No reversal

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Figure 9. Mean levels of total daily performance for each condition for Subject 3.
verbal guidance only). This did not reverse when feedback was withdrawn. During Post-Training, on Day 36, Subject Three had a sudden rise in blood pressure whereby the nurse requested that the aide perform the morning care routine. This occurred intermittently throughout Condition 4. When this resident was no longer ill, her mean level of self-care improved to where a single prompt induced the performance of each task. This remained steady throughout the balance of the investigation.

Also shown in Figure 9 are generalization probes for the effects of feedback and staff-training on self-care performance when an alternate aide was on duty. During Conditions 1, 2, and 3 the Subject's behavior reflected very little difference between the presence of an assigned or non-assigned aide. During Feedback (Condition 2) the performance level was slightly higher with an alternate aide. After Post-Training was implemented, the resident continued to improve her performance, while she tapered off when an alternate aide was working.

Figure 10 shows one behavior in which positive change occurred throughout the experiment and one behavior in which very little change occurred.

The task of applying powder or deodorant was selected to demonstrate increasing independence for Subject Three. During Baseline, this task was performed during 50% of the sessions by the aide. During the remainder of the sessions powder or deodorant was not used. When feedback was posted, the resident's mean performance
Figure 10. Mean levels of change during each condition for Subject 3.
level increased to a point where she performed the task with physical guidance. This level did not change when feedback was eliminated. During Post-Training, Subject Three's mean level jumped to a point where verbal guidance was all that was required prior to task performance. This gradually increased to a point where a single prompt elicited the behavior. This remained in effect throughout the remainder of the investigation.

The task of putting on top clothes that button was chosen to demonstrate a behavior in which very little overall change took place. During the initial baseline physical guidance was required (level 2.0). During Feedback, some growth took place as sessions occurred when the resident put on her top clothes with verbal guidance only. When feedback was withdrawn, Subject Three's level returned to 2.0. After staff training she performed this task at the same level as during Feedback. Throughout the next two conditions, Subject Three improved to verbal guidance and then deteriorated to a level of 2.5.

Figure 11 shows the direction of change for all 15 of the targeted behaviors during the treatment conditions. When feedback was posted, five behaviors improved and then declined when feedback was withdrawn; six behaviors improved and did not reverse; two did not change; one deteriorated and then reversed; and one deteriorated and did not reverse. No behaviors were limited by a ceiling effect. After the termination of staff-training, eight behaviors improved and did not reverse; five had a ceiling effect;
Figure 11. Directions of change for all 15 of the targeted behaviors during each of the treatment conditions for Subject 3.

- U-R = Up, Reversal
- U-NR = Up, No reversal
- C = Ceiling
- N-C = No change
- D-R = Down, Reversal
- D-NR = Down, No reversal

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one did not change; and one decreased and then reversed. No behaviors increased and reversed nor decreased without a reverse in the Post-Training phase.

Subject IV

Figure 12 shows the mean level of self-care for all six conditions. Of the 20 behaviors investigated for Subject Four, eight had a ceiling effect during the initial baseline and were therefore omitted from the data. During the initial Baseline, Subject Four performed at a mean level of 2.0. This indicates that a majority of the self-care behaviors measured required physical assistance. This level decreased to a mean of 1.0 as a number of tasks were not performed, while others required assistance. The majority of the tasks during Condition 3 were performed by the aide. Once staff-training was completed, Subject Four's mean level jumped to where only verbal guidance or a single prompt cued the resident to perform the behavior. During Feedback, this level again increased to 4.25, approaching independence.

Figure 12 also shows generalization probes for the effects of staff training and feedback on self-care behaviors when an alternate aide was on duty. The performance level during Baseline was higher with the assigned aide. However, during Conditions 2 and 3 this was reversed. During Conditions 4, 5, and 6 this trend again reversed with a higher level of performance when an assigned aide was present.
Figure 12. Mean levels of total daily performance for each condition for Subject 4.
Figure 13 shows one behavior in which positive change occurred throughout the experiment and one behavior in which some deterioration occurred. The task of selecting clothes was chosen to demonstrate the increasing trend of Subject Four's independence. During Baseline (Conditions 1-3) this task was performed by the aide at all times. After staff training a single prompt cued the resident to perform the behavior. When staff training was paired with feedback, Subject Four independently selected his clothes. Once feedback was withdrawn, a single prompt was again required in order for the resident to carry out this task.

The task of washing lower body was selected to demonstrate a behavior in which a decreasing trend occurred. During the initial Baseline verbal guidance (3.0) prompted the resident to perform the task. This level of performance decreased to 1.50 while he remained in Baseline during the next two condition changes. This low level reflects sessions in which the task was either not performed or performed with verbal guidance. Following the termination of staff-training, Subject Four's performance increased to a mean level of 3.75, suggesting that in most sessions one prompt or verbal guidance prompted him to wash his lower body.

Figure 14 shows the directions of change for all 20 of the targeted behaviors during the treatment conditions. When feedback was posted, one behavior improved and then reversed; eight improved and did not reverse; eight reached a ceiling; one showed no change; and two deteriorated and did not reverse. No tasks deteriorated
Figure 13. Mean levels of change during each condition for Subject 4.
Figure 14. Directions of change for all 20 of the targeted behaviors during each of the treatment conditions for Subject 4.

- U-R = Up, Reversal
- U-NR = Up, No reversal
- C = Ceiling
- N-C = No change
- D-R = Down, Reversal
- D-NR = Down, No reversal
and then reversed. During Post-Training, four behaviors improved and reversed; two improved and did not reverse; eight reached a ceiling; four showed no change; and two declined and then reversed. No behaviors deteriorated and did not reverse during Post-Training.

General Trends

Overall, 70 behaviors were targeted in the present study. With the exception of Subject Two, each task was examined during both treatment conditions. During Feedback and/or Post-Training 67 total behaviors improved as opposed to 17 which deteriorated. No change was shown in 23 behaviors. The greatest overall upward changes occurred without a reversal, as natural reinforcers took over when the treatment variable was withdrawn. The total amount of time necessary to complete daily tasks generally showed an increasing trend throughout the study (Appendix 3).

Experimental control was demonstrated by the changes in behavior which occurred when the treatment conditions were implemented. When feedback was posted for Subjects 1 and 3 and withheld from Subjects 2 and 4, no or minimal changes occurred in the latter subjects' behavior. When feedback was presented to Subject 4 (after staff-training), improvement was noticed for Subjects 1 and 3. However, this may have resulted from the effect of training paired with feedback.

The study was carried out for 65 days. On 37 of these days an assigned aide was responsible for resident care. For the
remaining 28 days an alternate aide took over the responsibility. As Post-Training continued, there was less generalization to the untrained aide. Task performance generally improved when the trained aide was present and deteriorated or remained the same when the untrained aide was present.

According to anecdotal data provided by the nursing home personnel and participant aides, increased independence in self-care behaviors resulted in other positive changes. Those areas mentioned by staff personnel include: more social interaction, increased participation in scheduled activities, happier facial expressions, and greater self-confidence. The aides had more time to attend to other residents and make beds while the experimental subjects performed morning self-care behaviors. All staff members involved in the experiment informally applied the behavior principles to non-participant residents.
This experiment analyzed the effects of posted feedback and staff-training on self-care behaviors of nursing home residents. The results demonstrated that feedback and/or staff-training are effective means for improving self-care behaviors. The fact that these behaviors improved only when the treatment interventions were implemented for each resident, suggests that other unidentified variables were not responsible for the increase in independent behavior. Therefore, it is reasonable to conclude that posted feedback and staff-training produced the improved level of self-care behavior.

By successfully demonstrating that functional relationships between environmental events and the self-care behaviors of nursing home residents do exist, the findings of this study are consistent with earlier studies (Baltes and Zerbe, 1976; Bergen and Rose, 1974; Blackman et al., 1976; Geiger and Johnson, 1974; Hoyer et al., 1974; MacDonald and Butler, 1974; McClannahan and Risley, 1977; Mueller and Atlas, 1972). Unlike past studies where researchers were concerned only with the residents themselves, the institutional staff were focused upon for changes in the environment of the residents.

By examining an area of dependency which has received only minimal attention, this study has contributed to gerontological and operant research. A model has been provided for developing
a program that would ensure a higher level of independent self-care behavior. These procedures were effective and easy to carry out. Therefore, an appropriate focus for future treatment of nursing home residents is to redesign the relationship between the environment and individual behaviors in order to strengthen and maintain optimal functioning.

A practical advantage of the present treatment package is that once the staff has become trained in behavior modification, posted feedback and social reinforcement require no additional funds and are potentially available in all nursing homes. Therefore, this becomes a cost effective procedure as residents become less dependent upon staff members in daily routine activities, thus allowing a rearrangement of staff to other areas or an overall staff reduction. Follow-up data will be necessary to ensure that there is no diminution of performance. The question of maintenance, or resistance to extinction once the program is removed, warrants extensive research in order to establish conditions whereby the behaviors will be maintained. An analysis of cost-effectiveness must also be performed in order to determine the advantages and disadvantages of this and similar procedures.

By comparing the effects of feedback alone, staff-training alone, or a combination of feedback and staff-training, it becomes apparent that the use of any component of the treatment package resulted in higher levels of self-care. An analysis of the individual task data further supports this conclusion. Upon closer
examination of individual subject data, there was little difference between feedback and staff-training in controlling the behavior of the residents, although feedback produced a higher level of performance in a slight majority of self-care tasks. Conceivably, there is a confounding effect here, as higher-level responding during the feedback paired with staff-training phase may have been brought about by prior exposure to earlier conditions (sequence effects). Multiple treatment interference (Campbell and Stanley, 1963) may have affected the within subject performance levels of Subjects 1 and 3 due to exposure to feedback prior to staff-training and of Subjects 2 and 4 due to exposure to staff-training prior to feedback. It therefore becomes difficult to separate the effects of the particular order of conditions from the effects of the conditions (Kazdin, 1973).

Inspection of individual subject graphs suggests some meaningful differences. The initial mean performance level for Subjects 1-4 were 2.24, 2.0, 2.0, and 2.0, respectively. At the termination of the study, the mean performance levels were 4.25, 3.25, 4.25, and 3.75. Although at the introduction of the program all residents were performing self-care at approximately the same level (physical guidance), Subject 3, who was not institutionalized prior to entry into the nursing home, showed the most improvement. Subject 2, who was institutionalized for 48 years, showed the least improvement. This may be due to her absence during feedback or a lack of a learning history adequate to establish social praise and feedback.
as a conditioned reinforcer. One suggestion for future research is to compare psychiatric and geriatric residents in terms of performance maintenance and acquisition.

More dramatic results may have been observed had the reinforcing consequences for the attendants and the residents been stronger than feedback and verbal praise. More powerful external incentives such as performance lotteries (Iwata et al., 1976); monetary bonuses (Katz, et al., 1972); or coffee breaks (Woolcock, et al., 1977) are suggested.

This study did not control for the quality of task performance. For example, if a subject washed his or her upper body with a single prompt, but omits one underarm, this was scored as a 4. After staff-training, however, the aides were more attentive and physically or verbally assisted the resident, therefore producing spuriously lowered scores. A second change in the aide's behavior occurred when the first feedback condition was implemented. The aide responded by setting up a table so the residents who were unsteady on their feet could perform their own self-care while sitting down. In addition, she began requesting those subjects in this phase of the study (Subjects 1 and 3) to perform tasks on which data were being taken, but previously were not engaged in by the residents (e.g., selecting clothes). This was not extended to Subjects 2 and 4. This raises two suggestions for further research: (1) attend to prompting the initial response occurrence and then measure and shape response quality, and (2) provide aides with an intensive
orientation program emphasizing variability in the self-care repertoire and the attendants' role in maintaining self-sufficiency. Ongoing supervision (Brown, Willis, and Reid, 1977) using reinforcement principles should be maintained to insure continuous quality of aides' application of behavior management skills. Desirable staff behaviors will not necessarily guarantee desirable resident behaviors. Therefore, this indirect measure is not the only assessment of staff proficiency. The aides' behavior can be directly measured by changes in verbal and training skills.

The high level of generalization from an assigned to non-assigned aide was observed during and after the first feedback phase with less generalization after behavior modification training. This change was partially due to the assigned aide becoming more skillful at reinforcing appropriate behavior. Consequently, this aide became a discriminative stimulus for performing these behaviors.

An unanticipated outcome of the study concerns the nursing attendants. Those directly involved with the program were encouraged by it. Their job changed from passive custodial care to active participation in helping the residents become more independent. The success of the treatment program, demonstrated by behavioral changes and improvement in the residents, was in itself, reinforcing to the attendants. These positive results encouraged an increase in desirable attendant behaviors. Those aides not directly involved became curious about the project and often questioned how they could implement it for other residents. This is an important result, as aides who work in nursing homes are generally untrained and
uninterested in the plight of the residents.

The results of this study have contributed to an increasing body of literature demonstrating that by restructuring geriatric environments, degenerative processes associated with aging can be halted. This view opposes that which attributes senility to biological antecedents which inevitably lead to helplessness. Only when individual behaviors are viewed as modifiable, can an environment be developed in which interventions are tailored to each resident's changing needs and interests.

Prosthetic environments (Lindsley, 1964) compensate for or support behavioral deficits, therefore allowing disabled residents to effectively behave. Independent self-care skills, for example, can be maintained by providing equipment and facilities (e.g., grab-bars, chairs near the wash basin, tipped mirrors and shelves) which are accessible to residents and appropriate to their level of skill (McClannahan, 1973). The need to further evaluate prostheses with regard to elderly behavior is suggested.

Besides concerning ourselves with the alleviation or prevention of deficient behaviors, we should focus on those behaviors (e.g., learning and creativity) that can improve with age (Felheim, 1977; Knox, 1977; and Woodruff, 1977). Nursing homes can facilitate learning by providing closed circuit televisions similar to those provided to homebound students, educational classes, seminars and workshops, discussion groups, and outside speakers.

The effects of the research on environmental restructuring are encouraging and should persuade future researchers to look at aging
as a dependent rather than independent variable (Wohlwill, 1970). The treatment of the elderly requires the design of special environments to promote adaptive and productive behaviors. When nursing homes adopt these procedures, "successful aging" will become more realistic.
REFERENCES


APPENDIX 1
OUTLINE FOR STAFF TRAINING*

I. Behavior Modification

1. Behavior modification is a theory of behavior that says a behavior is determined by its consequences or what happens immediately afterwards.

2. Plan in advance how you will react to certain behaviors by determining which behaviors you would like to encourage and which ones you would like to discourage.

II. Reinforcement

1. A reinforcer is any event that increases the strength of a behavior. By reinforcing a behavior, the probability that the response will occur again is increased.

2. It is necessary to identify that which is reinforcing to that particular person.

3. When someone is required to do something to get a reinforcer, the requirement is called a reinforcement contingency.

4. In order for rewards to work well, they must be given properly:
   a. Give the resident a reward s/he likes a lot.
   b. Give the resident the reward only after s/he does what s/he is supposed to do.
   c. Give the reward immediately (within 1/2 second) after s/he does what s/he is told to do.
   d. Deprive the individual of the reinforcer during ordinary circumstances.
   e. Give small amounts of reinforcement.

f. Name the particular behavior you are reinforcing. Praise the specific behavior, not the whole person.

g. Be consistent!

5. There are 3 kinds of reinforcement:

a. edible - can be eaten or drunk.

b. manipulatable - toys and games that don't involve other people.

c. social - involves other people.

List possible reinforcers for each of the four residents.

III. Extinction

1. Not only do we give reinforcement to make the resident more cooperative, but we also withhold reinforcement to make him more cooperative.

2. Extinction is ignoring the person when s/he does something we do not want him to do. The trainer neither looks at nor speaks to the person. This is NOT giving reinforcement. Since reinforcement causes behavior to occur and maintains it, then not giving it should cause it to diminish and disappear.

List examples of behaviors which are undesirable for each resident.

IV. Teaching incompatible behaviors

1. Teach the resident a behavior that prevents the undesirable behavior from occurring. The person is then reinforced for making the desired response while either being ignored or punished for making the undesired responses.

List examples of undesirable and incompatible behaviors for the residents.

**GIVE PRAISE FOR APPROPRIATE BEHAVIOR. DO NOT TAKE IT FOR GRANTED.**

**EMPHASIZE WHAT THE RESIDENTS ARE DOING CORRECTLY, RATHER THAN INCORRECTLY.**

**UNDESIRABLE BEHAVIOR WHICH IS ATTENDED TO WILL INCREASE IN FREQUENCY.**
V. Shaping

1. Shaping is used to teach a new behavior. It consists of reinforcing closer and closer approximations of the desired or goal behavior.

2. Train the individual at his or her own pace. Do not move to a new step until s/he has mastered the previous step. Reinforcement is given when the last step in the sequence is completed.

3. Notice that the procedure progresses in a backward fashion. It begins at the training step immediately followed by reinforcement--that closest to the goal behavior.

4. The size and number of steps used in the procedure will depend upon how well the individual is learning the step being taught. If s/he is learning rapidly, relatively few steps need to be employed. If the individual is having difficulty learning the task, it is helpful to add more steps at the points where s/he has difficulty, thus making each step smaller or requiring less of him at each component.

5. Before behavior can be shaped:
   a. One must identify the goal behavior you wish to teach. Once this goal has been identified it is possible to plan a training program. If the goal of training is not clearly determined, you cannot determine the steps that make up the final goal.
   b. Identify the steps that make up the goal.
   c. Identify the level that the individual is at right now.

6. When shaping:
   a. Be ready to praise the resident immediately, before another response is made.
   b. Do not wait for a perfect performance--reward a good try.
   c. If the individual becomes upset or is not progressing, you might have taken too big of a step. Back off to a previously mastered step and try again.
   d. Demand only small steps, reward the steps appropriately, and gradually increase the size of the steps over time.

REMEMBER TO USE A REINFORCEMENT THAT IS STRONG ENOUGH FOR THE PERSON TO WORK FOR!!!!!!!!!
VI. Chaining

1. This procedure allows the individual to learn a complex sequence of behavior (dressing).

2. One main reinforcement is given after all behavior in the sequence has occurred.

3. Example - Dressing may consist of four single behavioral components: 1 - putting on underpants 2 - putting on pants 3 - putting on undershirt 4 - putting on shirt
   Each of the four components are first taught singly in a backward fashion. Then they are conditioned together, one at a time, using the same type of backward approach.

4. After all the single components have been identified, the response directly preceding the presentation of reinforcement is usually shaped first. Then continue shaping, one component at a time, in a backward fashion.

Steps involved in shaping behavior:

a. determine existing level.

b. shape individual "pieces" of behavior.

c. shape complex sequences of behavior using a chaining procedure.

When a resident is being taught self-help skills, s/he should be:

a. taught in very small steps.

b. taught in a backward fashion.

c. rewarded frequently.
PUTTING ON PANTS

1. With the resident sitting, you put her pants on both feet, then have her stand up. Pull his pants up his hips. Then place his hands on the sides of the pants with her thumbs inside the waistband. Say, "Pull your pants up," and guide her with your hands on hers to pull the pants up to her waist. Then say, "Good, you pulled your pants up," and give her the decided reward.

2. You put the resident's pants on up to mid-thighs. Place her hands on the sides of the pants with her thumbs inside the waistband, saying, "Pull your pants up." Guide her with your hands on hers to pull the pants up to her hips. Then allow her to finish pulling the pants up to her waist. Say, "Good, you pulled your pants up," and reward.

3. Continue in the above manner, helping her after you have put her pants on up to her knees, then later to her ankles.

4. Sit beside the resident and put the pants on one foot for her. Place her hands on the pants and, with your hands on hers, say "Put your pants on." Guide her in putting her pants on the second foot. Have her stand up and finish putting on her pants without assistance. Praise her and reinforce her.

5. With the resident sitting, place her hands on the pants saying, "Put your pants on." Guide her in putting her pants on the first foot. Remove your hands and she can now finish putting her pants on. When she has mastered this step, the task is hers and she will be able to put on her pants without assistance once you hand them to her.
PUTTING ON A PULLOVER SHIRT

1. Standing in front of the resident, place both of her arms through the shirt and into the sleeves. Then lift her arms up over her head and bring the shirt into position with the neck opening on top of her head. Gently put her arms down to her sides. This will bring the shirt down over her head. Say, "Put your shirt on," and place her hands on the bottom of the shirt with her thumbs tucked in the rolled-up part and guide her as needed in pulling her shirt down to her waist. Then say, "Good, you put your shirt on," and reward.

2. You place both her arms into the shirt sleeves and lift her arms up over her head, saying, "Put your shirt on." Guide her as needed in putting her arms down to her side. Remind her to finish by telling her to pull her shirt down. When she is done, say, "Good, you put your shirt on," and reward.

3. You place both her arms into the shirt sleeves. Then say "Put your shirt on", guide her as needed in lifting her arms over her head. When she has brought her arms down and pulled her shirt down to her waist, say, "Good, you put your shirt on" and reward.

4. You put the shirt on one arm. Help her in grasping the rolled-up shirt at the bottom with the hand that is already through the shirt sleeve and say, "Put your shirt on." Guide her as needed in putting her other arm in. When she has finished putting her shirt on herself, say, "Good, you put your shirt on" and reward.

5. You hand her the rolled-up shirt and help her to grasp it at the bottom, saying, "Put your shirt on." Guide her as needed in putting her arm through. Then help her in releasing her grasp from the shirt and to grasp it again with the hand that is already through the shirt sleeve. She can now finish putting her shirt on. Say, "Good, you put your shirt on," and reward. This is the most difficult step to master so it will take more sessions than the other steps.

6. With the shirt laid out on the bed, front-side down, say, "Put your shirt on." Place her hands on the bottom of the shirt back and guide her in gathering the shirt up to the armholes. She can now finish putting her shirt on. Say, "Good, you put your shirt on." and reward. Once she has mastered this step the task is hers, and she will be able to put her shirt on without your assistance once it is laid out.
VII. Stimulus Control

1. This refers to the fact that certain cues in the environment actually control our behavior. For example, a red traffic light and children running out in the street control our pressing down on the car's brake pedal when the car is moving. It is an automatic signal for us to stop.

2. Stimulus control develops by having a cue become associated with a particular form of behavior that is reinforced. The reinforcement causes the cues to gain control over the behavior itself. By toilet training a child in the bathroom, while he is sitting on a toilet with his pants down and reinforcing defecation or urination, the bathroom, the toilet, and the pants in a lowered position will become cues that control elimination.

3. When an individual is told by the trainer to take off his shirt or his pants and then is reinforced for doing this, the verbal commands "Take off your shirt" or "Take off your pants" acquire stimulus control over the person taking off his shirt and his pants. Similarly, telling him to put on his shirt and his pants and then reinforcing him for this, causes the verbal commands "Put on your shirt" and "Put on your pants" to acquire stimulus control over the individual putting on his shirt and pants.

4. The place where the resident is taught acquires important stimulus control properties over his undressing and dressing performance. If he is taught in the same place each day, he will perform better than if taught in different rooms. Changing rooms may confuse the resident. When a resident is taught to wash and dress in the bathroom, the bathroom itself becomes a cue that is controlling washing and dressing. The verbal command is also a cue for this behavior. That is why we are using the same bathroom every day.

5. The time of day and the routine in which events occur also facilitate the resident's progress in a training program.

VIII. Prompting

1. Prompting consists of providing additional information or assisting the person in going through the motions by giving special cues that direct attention toward the task the trainer is attempting to teach. The purpose of a prompt is to make it clear what one is supposed to do. These prompts usually consist of physical manipulation of some part of the body, gestural, and verbal cues.
2. Gestures are more effective than words alone for making residents understand what you want them to do.

3. Physical prompts are even more effective than words or gestures for making a resident understand.

IX. Fading

1. Fading consists of gradually removing prompts.

2. Once we have a resident following instructions when we use gestural and physical prompts, we want to eliminate them gradually so we can get him to follow instructions when only verbal commands are used. This is called fading because we eliminate prompts gradually.
   a. Eliminate physical prompts first.
   b. Then eliminate gestural prompts.

3. Fading is the act of gradually changing cues in the person's environment. If we use physical movements of the person's limbs, gestures, and a verbal command "Take off your shirt," to get the person to take off a pullover shirt, and then gradually eliminate movement of the limbs, gestures, and leave only the verbal command, we are fading out movement of the limbs and fading out gestures. If gestures and movement of the limbs are removed too soon, dressing behavior may be disrupted. If this happens, reintroduce gestures and/or movement of the limbs to re-establish stimulus control. After dressing behavior stabilizes, repeat fading procedures.
SAMPLE PROMPTING SEQUENCE

A woman is being taught to take off a dress. We often find it helpful to take her hand, pull it down behind her back, make it grip the dress itself, and then pull the arm upward as we say "Take off your dress." Once this type of prompt has undressing behavior under control, we may fade out the physical prompt and use a gestural prompt paired with the verbal command, "Take off your dress," where we motion to the child to take off her dress. After the behavior is well established, we would fade out the gestural prompt and simply use a verbal command alone, i.e., "Take off your dress."

If a person is halfway through taking off or putting on a garment and runs into difficulty, we would use either a physical, a gestural, or a verbal prompt to keep her moving. If she had pulled her dress down over her head but failed to put her arms in the sleeves we would gently push an elbow upward (physical prompt) and say, "Come on now, put on your dress." Or we could just use a gestural prompt if she were far enough along in training so that the physical prompt was unnecessary. Finally, some people appear to tire out halfway through taking off or putting on a garment during training. They just stop. It is often sufficient simply to "hustle" them along with the words, e.g., "Come on now, let's get that dress off; Come on, take off your dress; Let's go now."
X. Record Keeping

1. Progress records will help you see that the resident really has learned over the past few weeks--here is a reward for you!

2. Record keeping is necessary for three reasons:
   
a. Merely observing the person and using your memory to recall whether s/he is getting better, worse, or is remaining the same can be very deceptive. We tend to remember what we want to remember.

   b. If the person stops making progress in the training project and we become discouraged, we tend to forget the progress made before.

   c. After awhile memories become dim and we forget the course of total progress since the beginning of the treatment program.

3. Functions of record keeping:

   a. Makes it possible to determine whether those in the program are changing, the direction, and extent of change.

   b. Allows one to assess the relationship between different programs within the overall training project.

4. Types of record keeping:

   a. Frequency of tally system.

      Tells the total number of responses. The trainer marks on a piece of paper each time a response occurs.

      Example - the number of times between 1:00 and 2:00 that someone turns a call light on.

   b. Duration or time.

      Tells how long the behavior lasted or how long it has been since the behavior occurred.

      Example - how long has the person been sitting in a chair without trying to get up?
c. Qualitative or grading the response.

The task is performed and a grade is assigned according to the quality of the response.

Example - On a pre-determined scale of 1-5, how much assistance did someone need to get dressed?

General

Reinforcement:

1. Motivates a person to work or train.

2. Provides feedback by letting a person know s/he is performing correctly.

If you see very little progress, before you become discouraged ask yourself:

1. Does he really understand what I want him to do? Can I show and guide him more?

2. Is this step too difficult? Can I find a slightly easier step for him to learn first?

3. Is the reward still something he wants? Can I find something else he might like even more?

Once a new behavior is learned, some reinforcement is needed that will maintain the behavior, but it should be one that is usually found in the situation (not artificial). Examples may be mealtime desserts or recreational activities.

Artificial reinforcement is used to shape new behavior, while natural reinforcement is used to maintain it once it is acquired.
BIBLIOGRAPHY


Panyan, M. C. and Patterson, E. T.  Teaching attendants the applied aspects of behavior modification. Mental Retardation, 1974, 30-32.

Pascal, C. E.  Using principles of behavior modification to teach behavior modification. Exceptional Children, 1976, 426-430.


APPENDIX II

POSTTEST

1. Which is more effective?
   a. Bob, after you wash your entire upper body, including your underarms, with soap, I'll wash your back for you.
   b. Bob, I'll wash your back and then give you back the cloth if you will wash the rest of your body, including your underarms, with soap.

2. Which is more effective?
   a. Cookie, if you comb your hair today, you can have it done in the beauty shop tomorrow.
   b. Cookie, after you comb your hair we will go and have it done in the beauty shop.

3. Which is more effective?
   a. Virginia, you did a great job putting your shirt on. Here is a cigarette.
   b. Virginia, you did a great job putting your shirt on, let's write a letter to your son.

4. Which is more effective?
   a. Theresa, you are wet. We will have to change your clothes.
   b. Theresa, you are wet. Why did you do that? You know you shouldn't. Scold, scold, scold. Now, let's go together and change your clothes.

5. Which is more appropriate after Bob shaves and combs his hair?
   a. Bob, you look good when you shave and comb your hair.
   b. OK Bob, we are all through. See you later.
6. Which is more appropriate?
   a. Cookie, that was a really good try putting your shirt on by yourself. Let me help you with the rest.
   b. Cookie, you didn't do a very good job, did you? Let me help.

7. Which is more appropriate? (Remember the person mentioned.)
   a. Tightly guiding Virginia's hand as she puts soap on the cloth.
   b. Tightly guiding Theresa's hand as she puts soap on the cloth.

8. For the past three days Theresa has taken off her gown when you tapped her hand and said "Theresa, take off your gown." Describe in one or two sentences what you would do on the following day.

9. Which is more appropriate?
   a. Each day having Virginia select clothes, undress, wash face, wash upper body, wash lower body, dress, brush teeth, hair (in this order).
   b. Continuously changing the order.

10. Which is more appropriate?
    a. Rewarding Theresa with verbal praise.
    b. Rewarding Virginia with verbal praise.

11. Virginia has just selected her clothes by pointing. She has never taken them out of the closet before. You should...

12. Bob has just selected his clothes by naming what he wants to wear. You should ...
13. Theresa has turned the water on and soaped her cloth for the past few days when you lightly guided her hands. Today you decide to give the instruction "Theresa, turn on the water and put soap on the cloth." She just stands there and looks at you. What should you do next? Why do you think this happened?

14. Linda - And he kept sitting there and sitting there. He would not come when I called for him to come over and wash.

Jennifer - So, what did you do?

Linda - What else could I do? I stayed there and pleaded with him to come with me. I even sat there and answered his silly questions.

What could Linda have done differently?

What do you predict will happen tomorrow?

15. "Cookie, if you remember to wash and dry yourself by yourself today, we will go for a walk around the building." Cookie does nothing. Why?

16. Theresa, you forgot to wash under your right arm. Give me the cloth. I'll do it.

What is wrong with this? What do you predict will happen in the future?
17. Which is more effective?
   a. Theresa, I'm really pleased that you didn't wander off today when you walked around the hall. That is terrific. Let's walk together outside.
   
   b. Theresa, get back here. You know you are not to go to the other side. Take my hand and we will go back to the chair. Now, stay here...

18. What might be the next step?
   For the past two or three days you said "Virginia, pull your pants up". Your hands were tightly wrapped around hers.

19. Which is more appropriate?
   a. Cookie, here is your comb. Comb your hair (hands comb to her).
   
   b. Cookie, here is your comb. Pick it up and comb your hair.

20. Which is more effective?
   a. Virginia, you really did well when you put your shirt on, put your underpants on, put your pants on.
   
   b. Virginia, you really did a good job getting dressed today.
Appendix 3. Average number of minutes per session averaged over each condition for Subjects 1, 3, and 4.