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## Performance feedback to enhance the quality of teaching by institutional direct care staff.

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PERFORMANCE FEEDBACK TO ENHANCE THE QUALITY  
OF TEACHING BY INSTITUTIONAL DIRECT CARE STAFF

A Thesis Presented

By

RICHARD KEVIN FLEMING

Submitted to the Graduate School of the  
University of Massachusetts in partial fulfillment  
of the requirements for the degree of

MASTER OF SCIENCE

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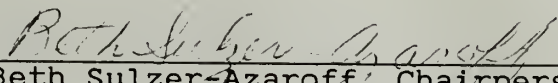
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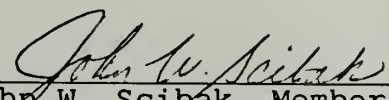
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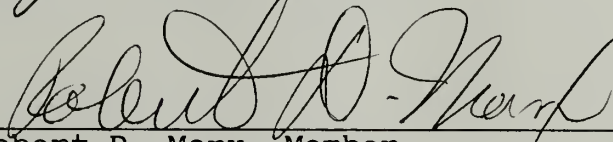
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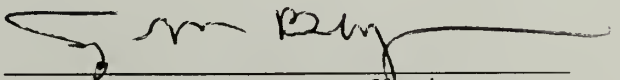
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hoped for. She may never know just how critical her role was in helping me to complete this project.

## ABSTRACT

### Performance Feedback to Enhance the Quality of Teaching by Institutional Direct Care Staff

September, 1987

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M.S., University of Massachusetts

Directed by: Professor Beth Sulzer-Azaroff

Written and oral feedback, delivered on the job, were used in combination as the primary instructive procedure to train four institutional direct care employees to administer a broad range of general and specific teaching behaviors while teaching self-care skills to four developmentally disabled students. A supportive didactic procedure consisted of a set of written instructions presented by the experimenter immediately prior to baseline and reviewed just before the introduction of the intervention phase. Measures of two aspects of subjects' teaching skills were taken: (1) general teaching skills used to prepare the teaching environment and conduct and record the results of the teaching session, and (2) specific sequential prompting tactics used when teaching individual steps of a task analysis. Skill acquisition by students taught by the subjects was assessed via probes delivered throughout the study. The experimental procedures



were replicated across six subject-program combinations (two of the subjects each conducted two programs). All six replications demonstrated improved teaching by the subjects. All students made gradual progress in their self-care skills and maintained or improved upon these gains at a two month follow-up.

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# CHAPTER I

## INTRODUCTION

Training and management of institutional direct care staff has been an expanding area of research in recent years. Recognition of the critical role direct care staff play in affecting the welfare of institutional residents (Ivancic, Reid, Iwata, Faw, & Page, 1981) as well as frequent reports of unsatisfactory work performance (Brown, Willis, & Reid, 1981; Repp, Barton, & Brulle, 1981) have lent impetus to research efforts on this topic.

One particularly important area of staff performance is the implementation of behavioral procedures for teaching self-care skills to residents. As many direct care staff have not had the educational background or formal experience to enable them to conduct such training upon entry to the work site (Whitman, Scibak, & Reid, 1983), additional training is indicated. Typically, training is conducted through some type of inservice or workshop format, often outside of the actual work environment. The effectiveness of training workshops may be maximized when component techniques such as modeling, role play, use of audio-visual aids, on-the-job practice, and instructor feedback are employed (Christian & Hannah, 1983). However, as the following discussion indicates, even training workshops and instructional sets which have been carefully

planned have frequently failed to result in generalized and/or durable change in staff behavior. As the subsequent material will show, a focus on consequences is essential. The current research was designed and conducted to investigate the effectiveness of one particular consequence, performance feedback, as the primary procedure to train four institutional direct care staff to teach self-care skills to residents they served.

#### The Need for Consequences in Staff Training

A number of studies have demonstrated empirically that antecedent training interventions alone, such as memoranda, inservice presentations, and even workshops have failed to produce the outcomes for which they were designed. The following review of two such studies highlights the need also to arrange consequences such as performance feedback if training is to be maximally effective.

Quilitch (1975) undertook to increase the number of mentally retarded adults engaged in appropriate activities on two wards in a state institution. A resident was counted as active if he was "doing a chore, grooming himself, reading or writing, conversing with another person, or using recreational materials" (p. 60). To improve the ability of direct care staff to promote resident engagement, he provided the following sequence of staff

interventions: (1) an official departmental memo stressing the importance of conducting daily activities with the residents; (2) a four hour workshop during which lectures, a film, and a slide presentation further instructed staff on the importance of providing activities for residents and gave them examples of activities they might arrange; and (3) a posted schedule of specific activities to be conducted along with a feedback poster indicating the average daily number of residents actively engaged on the previous day.

Groups of direct service and professional staff from two residential settings, Wards I and II, were the recipients of the interventions. The memo condition was in effect for 19 days on Ward I. Measurements taken over this period indicated a daily average of only two active residents, of the 28 present. Over 15 days of measurement on Ward II, a daily average of only one active resident, of 29 present, was found.

The workshop condition was in effect in Wards I and II for 17 and 23 days, respectively. The daily average number of active residents was two in Ward I and remained at one in Ward II during this phase.

Scheduling and feedback was then implemented in multiple baseline fashion across the two wards and resulted in an increase to a daily average number of seven active

residents in Ward I and eight in Ward II. The results of this study clearly demonstrated that a departmental memo and an instructional workshop were both insufficient to produce staff behavior change. However, when scheduling and feedback were provided, staff began to provide activities which increased resident engagement.

Lattimore, Stephens, Favell, and Risley (1984) investigated staff compliance with body positioning prescriptions for nonambulatory residents, using workshop training as an initial intervention. The workshop was comprised of a 20 minute slide presentation during which a list of positioning principles was reviewed, a question and answer period, and a written posttest.

For one group of five staff members, mean correct positioning, as measured by an observational checklist, changed from 49% during baseline to 45% following the workshop. A second group of five staff members improved their performance slightly during the workshop condition, from 27% during baseline to 29%.

Supervisor feedback resulted in substantial increases in correct positioning. The first group improved to 75% and the second group to 57% mean correct positioning. The authors were compelled by these results to note that "workshops are clearly insufficient for producing consistent compliance in program implementation"

(Lattimore et al., 1984, p.83).

Another critical issue in staff training is that of generalization. Direct care workers are typically responsible for carrying out educational programs with many residents, a fact which highlights the importance of generalization of acquired skills as a further objective of staff training. Kissel, Whitman, and Reid (1983) conducted a training study which included an investigation of generalization of staff teaching skills and resident progress. In their review of the literature, they reported finding few studies which formally assessed generalization of institutional staff performance resulting from training efforts.

It appears clear that if staff training gains are to occur, no less generalize to and endure in the actual work environment, then on-going management practices such as on-the-job feedback need to be arranged (Reid & Whitman, 1983). Furthermore, it seems unwarranted to delay consequences such as feedback, under the assumption that a workshop alone would prove sufficient.

#### Performance Feedback

Performance feedback has been shown to be a particularly effective training and management technique in recent institutional staff management studies (Reid &



Whitman, 1983). Positive changes in staff performance have resulted in the areas of staff-resident interactions (Brown et al., 1981; Quilitch, 1975), maintenance of goal writing skills (Ford, 1980), timely completion of progress reports (Repp & Deitz, 1979), implementation of client therapy sessions (Kreitner, Reif, & Morris, 1977), completion of toileting and physical therapy regimens (Greene, Willis, Levy, & Bailey, 1978), safe lifting and transfer of nonambulatory residents (Alavosius & Sulzer-Azaroff, 1986), conducting fire evacuation drills (Fox & Sulzer-Azaroff, 1986), and implementation of self-care skills training programs (Panyan, Boozer, & Morris, 1970; Kissel et al., 1983; Realon, Lewallen, & Wheeler, 1983; Realon, Wheeler, Spring, & Springer, 1986).

Sulzer-Azaroff and Mayer (1986) define performance feedback as: "Information transmitted back to the responder following a particular performance. Feedback can include seeing or hearing the results, being told how well the job was done, and receiving statements of specific praise. Feedback may be reinforcing or punishing and/or it may serve a discriminative function by guiding subsequent performance" (p. 394).

Prue and Fairbank (1981) noted that feedback has the organizational advantages of being a low cost procedure which may be positive in orientation, relatively simple to

deliver, and may serve the instructive function of clearly identifying job requirements. Also, they indicate that it may be a valuable technique for organizations that have limited access to other programmable rewards such as monetary incentives and time off. Alavosius and Sulzer-Azaroff (1986) highlighted this final point in defense of the utility of performance feedback in a state residential facility for mentally retarded adults. They were able to demonstrate substantial improvements in the safe lifting practices of direct service staff after they were provided with written and oral feedback.

#### Parameters of Feedback

Referring back to Sulzer-Azaroff and Mayer's definition, it is apparent that if one is to plan a feedback intervention, several dimensions must be considered: The responder(s) must be identified and performance(s) targetted. The nature and specificity of information to be fed back and the mechanism for delivery of that information need to be determined. Also, the question of who will provide feedback must be considered.

In 1981, Prue and Fairbank discussed five parameters along which feedback interventions can vary. They were: (1) recipients, (2) content, (3) temporal characteristics, (4) mechanisms, and (5) source. Each of these parameters is

discussed briefly below.

Recipients of feedback may be a group of individuals, such as direct care employees who work together on a hall (Panyan et al., 1970), or, feedback may be delivered to an individual (Repp & Deitz, 1979). Furthermore, feedback may be displayed publicly or offered privately. Deciding on who the recipient(s) will be can be an important consideration in human service organizations. For example, presenting feedback to a group through public posting may require less time than conducting individual feedback sessions. This is to be balanced against the potential benefits derived from providing feedback messages more specific to individual behavior.

The content of the feedback message may reflect a comparison of an employee's current performance with some previous performance or against a specific criterion. Additionally, the content of feedback may be arranged to include praise or statements of approval (Realon et al., 1983; Brown et al., 1981), suggestions, constructive criticism, and so on.

Temporal characteristics refer to both the duration of the feedback interaction (e.g. a passing comment versus an indepth feedback session) and the contiguity between the emission of the target performance and the delivery of feedback (ie., the immediacy with which feedback is

delivered). It may be that feedback is scheduled to occur during the implementation of a program, weekly, or perhaps even on a monthly basis (Ford, 1980).

Mechanisms of feedback include: oral feedback; written feedback such as memos (Kreitner et al., 1977), checklists (Alavosius & Sulzer-Azaroff, 1986), and publicly posted charts (Welsch, Ludwig, Radiker, & Krapfl, 1973; Quilitch, 1975; Panyan et al, 1970); mechanical feedback which could be in the form of videotaped performances (Bricker, Morgan, & Grabowski, 1972); and self-recorded feedback (Kissel et al., 1983).

Finally, the source of feedback is another parameter. Feedback might be provided by supervisors, peers, subordinates, outside consultants or researchers, or the employee himself or herself. Fox and Sulzer-Azaroff (in preparation) compared the effects of feedback from three sources (experimenter, supervisor, and fire safety instructor) on the number of fire evacuation training sessions conducted by teams of direct care staff. In this case, no socially significant differences between feedback source were noted; feedback from all three sources resulted in more sessions being carried out than during baseline.

#### Performance Feedback and Institutional Program Delivery

Both the rate and the quality of implementation of

institutional programs have been addressed in performance feedback studies. In particular, improving rates of program implementation by direct care staff has been a common target for change (Panyan et al., 1970; Welsch et al., 1973; Kreitner et al., 1977). However, as noted previously, many staff have either never received training (Whitman et al., 1983) or fail to maintain the quality of their performance following training (Quilitch, 1975; Lattimore et al., 1984). The fact that staff conduct more teaching sessions offers no assurance that the quality of their performance is adequate to produce changes in resident skills (Realon, 1981). While consistent and continued implementation of programs is vital, several researchers have recognized the need to focus on the quality with which programs are delivered (Kissel et al., 1983; Realon et al., 1983; Realon et al., 1986; Page, Iwata, & Reid, 1982).

Training staff who are employed in organizations serving the mentally retarded to become more effective teachers presents some critical challenges. Skill acquisition of mentally retarded individuals can be extremely slow and, as such, fail to function as a reinforcer for staff (Realon et al., 1983). Positive feedback from supervisors, then, may be important to boost the overall level of reinforcement in the work environment. Furthermore, if supervisor feedback is used systematically



to train staff to become more effective teachers, ultimately it should be possible for more natural reinforcers, in the form of resident progress, to begin to occur and assert some additional control over staff behavior.

An especially thorough combination of training and management procedures in the area of quality of staff teaching was reported in a recent study by Kissel and colleagues (1983). Classroom training and on-the-job feedback were used to teach four direct care staff three important skills: the correct use of verbal instruction, physical guidance, and reward. These skills constituted the dependent measures of staff performance in the study. Measures of resident progress were also collected. Following baseline, a training session lasting approximately one hour was provided to each staff member. It consisted of instructional, modeling (using videotapes of staged training sessions), rehearsal, and feedback procedures. Staff members then began conducting training sessions in the natural environment and were given verbal feedback by the experimenter on their teaching behavior. Feedback was accompanied by a review of a videotape of the training session. Frequency of feedback was faded from almost daily to biweekly during this phase. During a subsequent maintenance phase, direct care staff were

trained and received feedback on recording and graphing data related to their own teaching behavior and the progress of the residents they instructed.

Staff each conducted three programs with the residents (toothbrushing, handwashing, and haircombing) but only received direct training and feedback on the teaching of toothbrushing skills. The other two programs served as generalization responses, designed to allow the experimenters to systematically evaluate whether or not staff used teaching skills across other self-care programs. Generalization was promoted during the first training session by: (1) showing a videotape of the experimenter modeling teaching performance while implementing a handwashing program in addition to a toothbrushing program, and (2) informing staff that the teaching skills they were learning were useful in conducting any self-care program. Maintenance was promoted in this study by introducing a self-management phase during which staff learned to monitor their own behavior in addition to keeping records of resident progress.

A multiple baseline design across four staff participants and four residents was used to demonstrate a functional relationship between the training and management package and the positive changes observed in both staff teaching behaviors and resident skill acquisition.

Furthermore, staff were found to generalize their teaching skills across residential programs over which they recieved no direct training and feedback. As a result, residents improved their levels of independence for untreated programs as well as treated programs. This study clearly demonstrated that, through the use of traditional classroom training followed by on-the-job performance feedback, institutional direct care staff acquired basic behavioral teaching skills and applied those skills effectively during a follow-up period lasting six to nine weeks and across residential programs.

It should be pointed out, however, that subjects in the study by Kissel and colleagues (1983) were only trained to use verbal instruction, physical guidance (defined as used correctly only if verbal instruction failed to occasion the desired response), and reward. While these are critical skills, and did promote resident gains in this research project, a host of other general and specific skills might also be necessary if direct care staff are to be effective teachers of residents with diverse behavioral repertoires and learning deficits.

Realon and associates (1983), also recognized the importance of promoting high quality teaching interactions between institutional direct care staff and residents. They investigated the differential effects of verbal feedback

and verbal feedback plus praise on the teaching performance of six direct care staff employed at a state residential facility for mentally retarded men.

Seven aspects of staff teaching performance were investigated: (1) having program materials ready before beginning, (2) using the designated command to begin the program, (3) following program task analyses steps in the correct sequence, (4) using graduated guidance when cues were provided, (5) providing reinforcement enthusiastically, (6) avoiding excessive verbalizations while implementing the program, and (7) documenting resident progress accurately and completely. Performance on each of these seven items was scored on a checklist as performed either correct or incorrect. The percentage of items done correctly was calculated for each subject for each teaching session conducted.

Three subjects working on first shift in a residential unit received verbal feedback in multiple baseline fashion. A second group of three subjects from the same unit but working on second shift received verbal feedback plus praise, also presented in multiple baseline fashion. No staff training other than that which occurred as a result of the feedback messages was reported to have been provided to any subjects either prior to or following baseline observations.



Subjects provided with verbal feedback alone increased their correct use of the checklist items from 45% to 78%, 35% to 69%, and 36% to 76%, respectively. Subjects who received verbal feedback plus praise improved from 57% to 86%, 53% to 82%, and 59% to 91%, respectively.

One important finding from this study is that all subjects improved substantially in their use of a set general teaching skills upon receiving verbal feedback, whether praise was included or not. Unfortunately, we are not informed as to the teaching skill repertoires of the subjects prior to their involvement in the study. If they had little or no background in teaching, the positive results of this study would suggest that on-the-job feedback might be relied on as a primary training strategy, obviating the necessity for extensive and more costly antecedent training interventions.

In another study, Realon and colleagues (1986) investigated the teaching performance of 21 direct care staff working in three residential units of a large state mental retardation center. All staff had previously been certified in using backward chaining and shaping procedures through staff training which included "four to 10 hours of instruction and role-playing, followed by completion of a supervised practicum and an unsupervised practicum in each training method." (Realon et al., 1986, p.201). Performance



was measured using the seven item checklist used by Realon et al. (1983) in previous research.

The interventions employed were either verbal feedback plus praise or verbal feedback plus praise plus money. "Money" in the latter phase referred to a \$40.00 sum that a group of staff could earn by each conducting three or more teaching sessions per week for two consecutive weeks. Average performance for the group had to meet or exceed 90% correct as measured by the checklist.

Various sequential arrangements of baseline, feedback plus praise, and feedback plus praise plus money were administered across four groups of staff working either on different shifts in one cottage or in different cottages. In one cottage, staff conducted both haircombing and handwashing programs. Following the collection of baseline data for each program, staff received feedback plus praise plus money contingent on their performance during the delivery of haircombing programs. Feedback plus praise only was provided for performance on the handwashing programs. The average percentage of checklist items done correctly during baseline was 71% for haircombing and 74% for handwashing. The respective interventions resulted in increases to 96% for haircombing and 94% for handwashing.

In a second cottage, staff on first and second shifts each received the following sequence of conditions: (1)

feedback plus praise, (2) feedback plus praise plus money, and again (3) feedback plus praise. First shift staff averaged 45% correct during the feedback plus praise condition. Second shift staff averaged 52% correct. Feedback plus praise plus money resulted in immediate increases on both first and second shifts to 96% and 97% respectively. Slight decreases to an average of 90% on both shifts were noted after a return to the feedback plus praise alone condition.

Finally, in a third cottage, staff received feedback plus praise plus money following baseline measurements. Staff improved from an average of 39% at baseline to 92% during the intervention. A return to baseline probe and a three month follow-up probe each indicated that performance maintained at a high level in the absence of feedback and/or money.

Measurements of resident progress showed improvements concomitant with staff improvements. This study demonstrated that providing money in addition to feedback was effective in rapidly improving staff performance. Design limitations do not allow for a clear assessment of the differential effects of that intervention compared to feedback plus praise alone. Still, this research contributes to the staff training literature by demonstrating an innovative and affordable intervention

package which combined feedback as a vehicle to guide performance with the additional incentive of money.

Another very important finding from this study is the low levels of performance observed for staff who had previously participated in an extensive training package which required that they demonstrate the ability to use the checklist components 100% correctly at least four times. These data stand as further evidence that even comprehensive and sound staff training does not ensure the long term maintenance of acquired skills in the absence of continued management interventions. Staff did, however, maintain skills at high levels after three months following their participation in this study. The money contingency or the fact that this was the subjects' second experience in a training project may explain the high maintenance levels. Or, it may be the case that contingency-shaped behaviors such as teaching skills may endure for a relatively long period of time (e.g. several months) but still be susceptible to decay over a year's time if natural or planned contingencies are absent.

The research reviewed above clearly demonstrates the potential for direct care staff to acquire skills and conduct high quality teaching sessions with developmentally delayed learners. Among the various consequences used, performance feedback, repeated within the natural

environment, was a critical variable in all the studies. As such, the replicative history of feedback in human service settings has now been firmly extended into the realm of quality of program implementation.

Staff teaching behaviors assessed in the studies cited above ranged from a set of more general components (Realon et al., 1983; Realon et al., 1986) to those more molecular and specifically defined (Kissel et al., 1983). By providing feedback to staff on a more comprehensive set of both general and finer grained teaching components, it may be possible to train staff to use an even more generalizable repertoire which would assist them in teaching other residents with varied learning impairments and educational needs. The generalized use of teaching skills across other residents and/or programs would result not only in increased practice of the skills, but also in a greater likelihood that natural reinforcers in the form of resident progress would result.

#### Feedback as an Instructional Method

Feedback may also be found to function effectively as a primary vehicle for training staff. Direct care staff at many facilities are not required to attend or are not offered training in applied behavior analytical teaching procedures. Furthermore, as was discussed earlier, research



has demonstrated the poor generalization or maintenance of skills learned through traditional training methods. The provision of performance feedback alone, directly on the job by a residential supervisor trained in behavioral procedures, may effectively mitigate direct care staff's lack of prior training. Furthermore, supervisors might be better able to offer individualized clinical assistance to staff as a result of direct monitoring of programs.

Few studies have investigated the adequacy of feedback to produce significant changes in staff performance without first providing a fairly comprehensive antecedent training condition. Additionally, this experimenter found no research where detailed feedback had been given on a comprehensive set of both general and specific teaching skills.

### Purpose

The purpose of this study was to conduct a systematic replication (Sidman, 1960) of procedures used in other studies, demonstrating the utility of performance feedback as a primary vehicle for training institutional direct care staff to provide high quality teaching interactions. Systematic replication refers to an effort to extend the reliability and generality of a previous finding, or findings, by varying one or more of the experimental

conditions that were present in that/those investigation(s) (Sidman, 1960). The procedures used in the current study varied in several aspects from those in previous research. First, feedback was provided as the main training intervention, preceded only by the delivery of a short set of written instructions and a demonstration. Second, subjects received detailed feedback on a broad set of both general and specific teaching components. Furthermore, the subjects' performance on each component of a set of general teaching components was analyzed separately. Direct replications of the current experimental procedures were made with four subjects who carried out, in total, six self-care skills programs.

The main experimental question asked was: What are the effects of written instructions plus demonstrations followed by oral and written feedback, including statements of approval, on the teaching performance of four direct care staff working in a large residential facility for mentally retarded adults?



## CHAPTER II

### METHOD

#### Participants and Setting

Four direct care staff working in small residential cottages at a state facility for mentally retarded adults were the primary subjects of this study. Four residents of the facility also actively participated as direct recipients of the teaching sessions conducted by the direct care staff.

Direct care staff hold the title of either Mental Retardation Attendant (MRA) or Mental Retardation Technician (MRT). These individuals perform a wide range of programmatic and health care functions. One particularly critical domain of direct care staff's job responsibilities is that of teaching residents skills of daily living.

As a means of investigating alternative training and management strategies for enhancing the quality of program delivery at the direct care level, the current research project was viewed positively and seen as potentially informative by facility administrators. As such, critical support was extended throughout the project by the superintendent of the facility, the director of the participating residential unit, building supervisors, social workers, and, of course, the direct care staff who

volunteered to serve as subjects.

Prior to recruiting subjects, a proposal to conduct this study was approved on ethical grounds by the Human Subjects Committee in the Department of Psychology at the University of Massachusetts, the Human Rights Committee at the host facility, and the superintendent of the host facility.

To begin the recruitment process, residential supervisors from each of two cottages met with the experimenter and were given a general description of the research project. These supervisors, in turn, briefly described the project to direct care staff on first and second shifts in their respective cottages. Interested staff then met with the experimenter who provided them with a more detailed explanation. Staff who chose to participate were asked to sign an informed consent form. A copy of this form is included as Appendix A.

Of the six employees who volunteered to serve as subjects, one accepted a lateral transfer to work in another unit and another withdrew early in the study due to responsibilities which precluded her from being consistently available at a specified time to conduct the residential program. Of the four remaining subjects, two worked on first shift in one cottage and two on first shift in the second cottage. Subjects ranged in age from 30 to 55

years old and, except for Subject 1, had worked at the facility for several years. Subject 1 had been employed there for less than a year. While Subjects 1, 3, and 4 had never received any formal training in teaching developmentally disabled learners, Subject 2 had previously served in the role of a supervisor and had some experience in educational programming. All four of these individuals participated for the duration of the study.

Four of the residents of the facility served by the subjects also participated in the study as active recipients of the instructional sessions. Residents were selected by staff based on the individual's identified need to learn certain self-care skills and the ability to arrange consistent times to implement the program.

Resident 1 was a moderately mentally disabled women in her fifties who often volunteered to help staff perform housekeeping tasks but who generally lacked a number of the component skills required to perform many of them. A bedmaking program was selected based on the fact that she already performed several of the subskills. Consequently, it was assumed that she would be able to make a bed completely on her own with a structured teaching approach. Handwashing was selected as a second program for Resident 1, in part because it was already a scheduled part of her morning routine, but also because she consistently omitted

one step (throwing the towel in the hamper) and performed another (drying hands) incorrectly. Social praise, magazines, and coffee were clearly determined to be reinforcing for this person prior to beginning the program.

Resident 2 was a woman in her mid thirties who might best be classified as severely mentally retarded. Although capable of many self-care tasks, she frequently engaged in stereotypical hand-waving and was often highly physically active and noncompliant. Additionally, few reinforcing consequences were identified before beginning and during the project. Operating a faucet (to obtain a drink of water) was selected as a relevant program for this individual because she occasionally drank water from inappropriate sources and because she lacked the motor skills required to turn a faucet on and off independently.

Another participant, Resident 3, was a sociable woman in her early forties who functioned in approximately the mild range of mental retardation. A program was first designed to enhance her bedmaking abilities. Later in the project, however, toothbrushing was identified as a major area of need. An assessment made by the experimenter with Subject 3 revealed that she had difficulties physically manipulating the toothbrush in order to properly brush both her natural and false teeth.

Resident 4, a woman in her thirties and in the

moderate to severe range of mental retardation, worked on a bedmaking program under the supervision of Subject 4. She took great pride in making her bed, but performed substeps inconsistently and had trouble lining up bed linens, blankets, and her bedspread.

The social worker for each cottage reviewed the experimenter's informed consent form and obtained written consent from the parent(s) or guardian of each resident before the project was begun. A copy of the informed consent form is included as Appendix B.

All bedmaking programs were carried out in the residents' modestly sized but private bedrooms. Toothbrushing, handwashing, and faucet operation programs were conducted in the cottage's lavatories at times when interruptions would be unlikely.

#### Research Personnel

The experimenter and three research assistants conducted all observations. Research assistants were female undergraduate psychology students at the University of Massachusetts. One assistant had taken an organizational behavior management course. Another was employed at the research facility (in addition to being a part time student) and had experience applying behavior analytical teaching procedures. The third research assistant had



little experience with applied behavior analysis or with working with developmentally disabled persons. Each assistant was told that the research project was designed to investigate on-the-job staff training strategies which would include written instructions and performance feedback. Assistants were always blind, however, to the conditions in effect at any given time in the study. This was assured by: (1) providing oral and written instructions to subjects at times when the research assistants were not present, and (2) arranging for the research assistant to leave the observation site immediately upon completion of her observation during both baseline and intervention phases.

### Materials

Each subject was provided a set of written instructions describing how to conduct a teaching session. The instructions varied only in the definitions and descriptions of prompts to be used: Two self care programs required a breakdown to two levels of physical assistance (physical prompt and full physical guidance) whereas the others described a sequence of verbal instruction, demonstration, and physical guidance. The instructional sets are included as Appendices C and D.

For each self care program, a task analysis was

constructed by the experimenter with input from each subject. The Murdoch Center C & Y Program Library (Wheeler, Miller, Duke, and Salisbury, 1977), a comprehensive collection of task analyses for developmentally disabled learners, served as an important reference in developing several of these task analyses. Each task analysis was transferred to a data sheet onto which subjects recorded resident responses during teaching sessions. Written instructions and an adequate supply of data sheets were given to each subject in a personalized pocketed folder. The experimenter and research assistants also used these data sheets to periodically record resident responses as a measure of resident skill acquisition. Data sheets for all six self-care programs are included as Appendices E through J.

The experimenter developed checklists to rate various aspects of the subjects' teaching performance. The experimenter and research assistants used these to record subjects' responses as well as resident responses on two targetted steps. In addition, the checklists were used directly by the experimenter to provide performance feedback during the intervention phase. Two variations of the checklist were employed, differing only in the sequence of prompts prescribed for individual programs. Samples of both checklists are provided as Appendices K and L.

Videotape equipment was used to film mock teaching sessions. These were used to train research assistants to conduct observations reliably in the laboratory prior to observing and recording in the field.

Items used during each teaching session (such as clean bed linen, toothbrushing materials, and so on) were made freely available by the host facility to subjects and residents in each cottage.

### Observation System

#### Dependent Measures

Several component teaching responses were isolated from various sources and defined for measurement. These were formatted into the observational checklists included as Appendices K and L. For each teaching component, observers circled either a plus (+), minus (-), or zero (0) to indicate whether a subject's teaching response was used correctly (+) or incorrectly (-), or whether it was omitted (0). Five of the components were adapted from a checklist developed by Wheeler et al., (1977). The five were: (1) having training materials ready before beginning, (2) using the correct request to begin the program, (3) following the program steps in the sequence listed on the task analysis, (4) rewarding the resident upon completion of the final program step, and (5) correctly recording resident

responses. A sixth component, referred to as repeated practice, was also included. Repeated practice referred to the act of requesting and systematically prompting the resident to repeat certain steps with the intent that he or she might acquire those skills more rapidly. The above six teaching skills are hereafter categorized and referred to as the General Teaching Components. They are listed as components 1, 2, 4, 5, 6, and 7 on the observation form.

In addition to the six performance measures listed above, a sequence of prompts, delays, and rewards was specified for each subject to use when teaching the two steps identified on the task analysis. This sequence was based on methodology employed successfully by Horner and Keilitz (1975) to train mentally retarded subjects to brush their teeth, and included the following progression: (1) no help, (2) verbal instruction, (3) 5 second delay (to allow sufficient opportunity for the resident to respond), (4) demonstration and verbal instruction, (5) 5 second delay, (6) physical guidance and verbal instruction, and (7) reward contingent upon completion of the step at whatever instructional level was required. Subjects were instructed to use this sequence when teaching each of two steps of the task analysis.

The experimenter identified two steps, with input from the subject, prior to the onset of each session. These were

generally the last two steps of the task analysis not yet performed independently by the resident. For two residents who required graduated guidance to be able to physically perform several of the steps of their programs, demonstration was omitted and the prompting sequence was changed to: (1) verbal instruction, (2) physical prompt and verbal instruction, and (3) full physical guidance and verbal instruction. These sequential components are hereafter referred to as the Prompting Sequence and are subsumed under step number three on the observation form. Response definitions for the General Teaching Components and the Prompting Sequence Components are included as Appendix M.

As noted previously, subjects were asked to have the resident perform each of the two identified training steps twice (repeated practice component). Whereas repeated practice was scored as having been either implemented or not implemented in the General Teaching Components category, the observation form included a second row of boxes in which to record staff's use of Prompting Sequence Components (prompts, delays, and rewards) while conducting the repeated practice step.

### Observer Training

Observer training was conducted at the University of



Massachusetts. Research assistants first met with the experimenter and received an overview of the research project. Each assistant was then required to read and discuss literature selected by the author which explained behavioral teaching procedures typically employed with mentally retarded learners (Foxy, 1982; Horner and Kelitz, 1975). Next, observers met in a laboratory setting at the University and reviewed response definitions and observational checklists with the experimenter. A series of eight videotapes of mock teaching sessions were then viewed and scored simultaneously yet independently by the observers and the experimenter. The mock sessions, filmed previously by the experimenter, depicted a variety of staff performances that might be expected in the research setting. These ranged from seriously flawed teaching interactions to examples of exemplary performance. Each component of staff performance was scored as to whether it: (1) occurred and was performed correctly, which was scored as a plus (+); (2) occurred but was performed incorrectly, which was scored as a minus (-); or (3) did not occur, which was scored as an omission (o). Scoring was done by circling the appropriate sign on the observation form. Interobserver agreement (IOA) scores were calculated immediately following each observation. An agreement was scored only if observers scored exactly the same sign.

Interobserver agreement scores were calculated and are reported separately for the six General Teaching Components and for the components comprising the Prompting Sequence.

Interobserver agreement (IOA) was calculated by dividing the number of agreements by the number of agreements plus disagreements and then multiplying by 100%. Thus, for the General Teaching Components, the total number of agreements possible was six, whereas for the Prompting Sequence Components the number of possible staff responses varied with the resident's responses. Replaying tape sections allowed the experimenter and observers to analyze disagreements and to prevent future occurrence of the same types of disagreements. Training took place over approximately four one to one and one half hour meetings with each observer and was discontinued when each one demonstrated IOA scores at or above 80% for five consecutive mock teaching sessions.

#### Interobserver Agreement

The experimenter served as the primary data collector for all field observations except one, which was conducted by a research assistant. Simultaneous yet independent IOA checks were conducted by secondary observers (research assistants) during baseline, intervention, and followup sessions for both subject and resident responses. Observers were strategically positioned in the bedrooms and

lavatories where the teaching took place so that neither could observe the scores recorded by the other. As a further step toward ensuring independent scoring during observations, the checklist enabled scoring of staff teaching responses by circling a sign for either plus (+), minus (-), or omitted (o), instead of requiring a constructed notation (This tactic avoided the possibility that either the observer, the experimenter, or both would learn to discriminate the sound of a pencil or pen forming the specific signs on the observation form.).

Interobserver agreement checks on the responses of residents were conducted periodically by the experimenter with either a research assistant or the subject (if she had demonstrated accuracy in her scoring) as the secondary observer. During those sessions, the subject was asked to use the full prompting sequence for all steps in the program task analysis. For each step, responses of the resident were marked as having occurred: (1) independently, (2) following verbal instruction, (2) following verbal instruction with demonstration, (3) following verbal instruction with a physical prompt, or (4) through full physical guidance combined with verbal instruction. Incomplete performance of the step was scored as "not completed". The number of agreements was divided by the number of agreements plus disagreements and multiplied by

100%.

In total, IOA checks were conducted for 30.8% of all observations of the teaching responses of the subjects and for 47.8% of all observations of the responses of the residents. The mean interobserver agreement for all observations of subjects was 85.3%, and, for all observations of residents, 87.8%. Table 1 gives the IOA means and ranges for each experimental phase for both staff and resident responses. Disagreements were heavily weighted, due to the small number of components in each of the two categories of General Teaching Components and Prompting Sequence Components. The General Teaching Components consisted of only six responses, while the Prompting Sequence Components varied but often consisted of only four to six responses.

Disagreements in recording were discussed with observers subsequent to calculating the IOA score for that session. Discussions consisted of reviewing response definitions and coming to agreement on how a particular response should be scored.

### Experimental Design

Direct replications (Sidman, 1960) of the experimental procedure were made across six subject-program combinations to demonstrate a functional relation between performance

Table 1. Interobserver agreement scores for data collected on performance of subjects and residents.

<u>Staff:</u>				<u>General Teaching Components</u>		<u>Prompting Sequence Components</u>	
<u>Subject</u>	<u>Program</u>	<u>Phase</u>	<u># of Checks</u>	<u>Mean (%)</u>	<u>Range (%)</u>	<u>Mean (%)</u>	<u>Range (%)</u>
1	Bed-making	BL	3	72.2	66.7-83.3	83.0	80.0-85.7
		FB	5	96.7	83.3-100	88.0	60.0-100
		FU	2	91.7	83.3-100	90.0	80.0-100
1	Hand-washing	BL	5	83.3	66.7-100	74.0	40.0-90.0
		FB	3	88.9	83.3-100	83.3	66.7-100
		FU	2	100	-	91.7	83.3-100
2	Operating faucet	BL	2	91.65	83.3-100	81.7	80-83.3
		FB	0	-	-	-	-
		FU	2	100	-	90.6	81.3-100
3	Bed-making	BL	2	91.7	83.3-100	55.0	50.0-60.0
		FB	0	-	-	-	-
		FU	N/A	(S.3 moved directly into toothbrushing)			
3	Tooth-brushing	BL	1	83.3	-	57.1	-
		FB	5	80.0	66.7-100	88.6	80.0-100
		FU	1	100	-	60.0	-
4	Bed-making	BL	3	88.9	83.3-100	66.7	-
		FB	2	83.4	66.7-100	90.0	80.0-100
		FU	1	83.3	-	70.0	-

Resident:

<u>Resident</u>	<u>Program</u>	<u>Phase</u>	<u># of Checks</u>	<u>Mean (%)</u>	<u>Range (%)</u>
1	Bed-making	BL	1	68.7	-
		FB	1	76.5	-
		FU	1	82.4	-
1	Hand-washing	BL	2	95.0	90.0-100
		FB	1	100	-
		FU	1	100	-
2	Operating faucet	BL	1	100	-
		FB	1	100	-
		FU	1	87.5	-
3	Bed-making	BL	1	85.7	-
		FB	1	85.7	-
		FU	1	78.6	-
3	Tooth-brushing	BL	1	81.3	-
		FB	1	100	-
		FU	1	81.3	-
4	Bed-making	BL	2	82.1	71.4-92.8
		FB	3	85.7	78.6-92.8
		FU	1	92.8	-



feedback and positive changes in teaching skills used by the subjects. Baselines were not assessed concurrently due to the withdrawal of one subject, and to varying delays in obtaining informed consent for the participation of the residents with whom the subjects worked.

Figures 1 and 2 (presented in the Results section) display graphically the six replications as they occurred in real time. Two replications were made with Subject 1, who conducted both bedmaking and handwashing programs simultaneously throughout the project. The handwashing program was arranged to allow for an assessment of skill generalization in the absence of feedback and, subsequently, of performance under the feedback condition. Subject 3 also implemented two programs during the study, but did so in sequential order. She began with bedmaking and, subsequent to baseline, received feedback on three sessions. At that point, however, Resident 3 was making her bed almost totally independently. Therefore, the bedmaking program no longer represented a teaching challenge for Subject 3 and she helped to select another program, toothbrushing, which she began and continued with throughout the duration of the project. Subjects 2 and 4 each conducted one program, obtaining a drink of water and bedmaking, respectively, to provide the final two replications in the study.

Several steps were taken in order minimize the chance that unplanned environmental variables would occur and exert control over the subjects' performance. First, on-site supervisors agreed not to intervene (with written memos or orally, for example) in an attempt to favorably affect the performance of the subjects. Second, the experimenter communicated, at first when recruiting subjects and again just prior to baseline, that participation in the project should be viewed as a relatively private endeavor undertaken by the subject, the particular resident, and the experimenter. Relatedly, the private nature of specific program areas in each cottage (resident's individual bedrooms, lavatories scheduled for private use) reduced significantly the likelihood that a session would be openly observed and thus occasion discussion. Finally, the subjects did not attend any inservice or training programs in the months prior to or during the project.

Baselines lengths, measured in number of sessions, were varied to help ensure that effects due to experiential factors, if they existed, would be observed. However, exact baseline lengths were not predetermined and then randomly assigned to subjects, as has been suggested by Barlow and Hersen (1984). Instead, baseline lengths were predetermined for each subject but were extended if visual

inspection of the data suggested possible trends. Baseline lengths are shown graphically in Figures 1 and 2.

Harris and Jenson (1985) indicate that when replications of an intervention are made over several months or longer, special threats exist in the form of changes in the way the intervention is presented (integrity of treatment) or in the way the observational system is used (observer drift). Control of these two types of instrumentation threats in the current study was arranged by: (1) utilizing a single checklist to guide the delivery of feedback, and (2) ongoing recalibration of the observational system with each observer.

### Procedures

#### Prebaseline

Prior to the onset of the project, each subject was asked to choose one or two self-care skills that she would like to teach to one particular resident. At this time, three subjects stated that due to schedule limitations on their shifts, they could only allow time to teach one skill. These skills were: (1) operating a faucet to obtain a drink of water, chosen by Subject 2; and (2) bedmaking, selected by both Subjects 3 and 4. Subject 3 later switched to teaching toothbrushing skills. Subject 1 managed to arrange her schedule to teach two skills,

bedmaking and handwashing, to the resident with whom she worked.

### Written Instructions

Before beginning baseline observations, each subject met privately with the experimenter and read, along with the experimenter, a set of scripted instructions (refer to Appendices C and D). During this reading, the experimenter showed the correct use of verbal instruction, demonstration with verbal instruction, physical guidance with verbal instruction, and reward. With Subjects 2 and 3, graduated guidance was also introduced by defining and demonstrating how to use physical prompts with verbal instruction and full physical guidance with verbal instruction. The process of fading from full physical guidance to physical prompts and, finally, to no physical guidance was also described and demonstrated during a session of instruction with each subject. Subjects did not practice or receive feedback on any of the teaching components included in the instructional set. This instruction was conducted the day before the first baseline session for all subjects except Subject 3. She received these instructions x days before the first baseline observation due to an intervening illness.

### Baselines

Following the presentation of written instructions, baseline observations were conducted for each staff-program combination. In all cases except with the two programs carried out by Subject 1, baselines did not take place concurrently. All baselines varied in the number of observations conducted. For Subject 1, baseline for both bedmaking and handwashing programs began on April 21, 1986. The baseline for bedmaking ended on May 14, 1986, after nine observations had been conducted. Baseline measurements for handwashing ended on July 14, 1986 after 20 observations had been made. Subject 2 started baseline on July 1, 1986 and ended on July 21, 1986 after six observations had been made.

For Subject 3, a total of four baseline observations were made between May sixth and fourteenth, 1986, for the bedmaking program she instructed. Later, Subject 3 began a second program (toothbrushing) with the same resident. Ten baseline observations were conducted for the toothbrushing program between June 24, 1986 and July 24, 1986. Baseline for Subject 4 began on July 17, 1986 and ended on August 13, 1986 after eight observations had been made.

### Performance Feedback

Oral and written feedback was provided by the experimenter to each subject at the end of the last



baseline observation for each program. Thereafter, feedback was given after every program session, except during follow-up. Feedback was delivered by showing the subject the corresponding observational checklist (see details below and Appendices K and L) which also served as the data collection form. Subjects were given oral descriptions of the items on the form during the first few feedback sessions and when they asked about an item. However, no formal training in interpreting the form was provided. The feedback message was delivered as soon as possible after the subject had completed the program, with delays rarely exceeding five minutes. As was noted previously, during all phases, the second observer left the teaching environment immediately upon completion of her scoring duties. Secondary observers, therefore, were unaware of whether or not feedback was provided.

The experimenter presented feedback in the following manner. First, the experimenter handed to the subject a carbon copy of his completed checklist to read and to keep. Next, he reviewed orally each item on the list, offering praise for component responses performed correctly, and suggestions on how to correct those done incorrectly or omitted. In most cases, review of the seven components was followed in serial order. Finally, any questions or comments the subject had were answered and the next session

was scheduled. These sessions typically lasted two to five minutes, after which the subject returned to her work.

The number of sessions conducted by each subject during the intervention phase varied. Thus, the number of feedback messages received by each also varied. Teaching sessions were scheduled for observation four times per week on four separate days but all of these four sessions were rarely conducted due to unforeseen events that interfered. These included staff shortages, holidays and sick days taken by the subject, resident medical appointments, and so on. Data points on the graphs in Figures 1 and 2 indicate the exact number of sessions administered each week by every subject.

#### Feedback for Maintenance

Prior to the last two weeks of planned observations, each subject was asked to continue to implement the program(s) as often as she could, but was informed that she would only be observed and receive feedback from the experimenter once per week for two remaining weeks. Each subject was asked to think of and discuss, in those two weeks, any further problems with which she might need assistance in order to continue the program. Following the final two feedback sessions, the experimenter arranged to visit and observe again in approximately two months.

### Follow-Up

Each subject was contacted and observed again approximately two months after her last observed teaching session. Data were collected over three observations for each subject-program combination to assess for maintenance. Feedback was not provided during this period and was not requested by any of the subjects.

### Data Analysis

#### Quantification of Data

Separate tactics were used to quantify data collected on each of the three dependent measures: Prompting Sequence Components, General Teaching Components, and resident progress. The tactics used for each of these measures are described below.

The percentage of Prompting Sequence Components used correctly during a session was calculated by dividing the number of components performed correctly (while teaching the two task steps specified) by the number of opportunities to use a component response correctly, multiplied by 100%. For example, a subject may have administered the prompting components for one step in the following manner. She may have: (1) delayed the first prompt by five seconds; (2) used verbal instruction correctly; (3) delayed the next prompt by five seconds; (4)

used demonstration correctly which, let us assume, produced a successful response by the resident; and (5) rewarded the resident's response properly.

In the above example, the subject performed five Prompting Sequence Components correctly from the five teaching opportunities presented for that task step. Because the resident completed the task step following the demonstration, the only opportunity that remained at that point was to provide a reward. Had the delivery of the reward been omitted by the subject in the above example, she would have scored four correct out of five opportunities.

A percentage was calculated for each teaching session, derived from the total number of components used correctly by the subject during a session over the total number of opportunities presented during the session multiplied by 100%. This figure represented performance on both the initial and repeated practice trials for both steps taught during the session. To demonstrate this calculation, if the subject performed correctly four out of five components on the initial trial on the first task step, and five out of five on the repeated practice trial for that step, her score to that point would be nine correct out of ten opportunities. Added to that score would be a similarly derived figure for both trials on the second task step for

that session. If, on the second step, she performed correctly three out of five and four out of five components for the initial trial and the repeated practice trial, respectively, her score for the second task step would be seven out of ten. The score for the entire session would be sixteen out of twenty. That figure, multiplied by 100%, yields 80%, her score for the session.

Quantification of data collected on subjects' use of the General Teaching Components was performed as follows. The mean percentage of correct use of each component was computed for each subject during each phase. These individual means were then averaged over all four subjects, yielding a group percentage for each phase.

To enable a clear evaluation of the differences in the subjects' use of each of the General Teaching Components, only the initial efforts of each subject was included in the analysis. Thus, data from the handwashing and toothbrushing programs implemented by Subjects 1 and 3, respectively, were excluded on the basis that their performance while conducting those programs might reflect skills generalized from previous programs over which feedback had been provided.

Progress made by residents during their participation in the self-care programs was assessed by conducting probes during each experimental phase for each resident. The



percentages of task analysis steps performed at each prompting level, during each phase, and by each resident, were then calculated.

### Visual Inspection

Time series graphs depicting the subjects' performance on the Prompting Sequence Components were constructed for each subject-program replication. The graphs were then inspected visually to assess for variability and trends within phases, and for changes in variability, level, and slope between phases.

Separate bar graphs were used to display changes in the group means and in the ranges of individual subject means across phases for each of the General Teaching Components. Time series graphs were used to show changes in the skill levels of each resident as measured through probes across the three experimental phases.

## CHAPTER III

### RESULTS

#### Prompting Sequence Components

Figure 1 presents a graphic display of the percent of Prompting Sequence Components used correctly by subjects 1 and 2 in the programs they conducted. Data for subjects 3 and 4 are presented in Figure 2. Recall that the Prompting Sequence Components refer to the sequential teaching responses listed in Step 3 on the observational checklists (Appendices K and L) and defined in Appendix M. Each data point represents that particular subject's responses for one teaching session during which the program was completed once.

Mean levels and ranges (in parentheses) of correct use of the Prompting Sequence Components by the subjects across phases, and for all six replications, are reported below. For Subject 1 (bedmaking), the mean percent of components used correctly was 37% (0-66.7%) during baseline, 86.4% (55-100%) during the feedback phase, and 77.5% (75-80%) in the follow-up phase. For Subject 1 (handwashing), the mean was 60.7% (20-100%) in baseline, 91.6% (66.7-100%) during the feedback condition, and 90% (80-100%) at follow-up. Subject 2 (operating faucet) performed at a mean level of 77.5% (50-100%) during baseline, 91.5% (77.8-100%) during the intervention, and 76.9% (55.6-100%) during follow-up.

Figure 1. Percentage of Prompting Sequence Components performed correctly by Subjects 1 and 2.

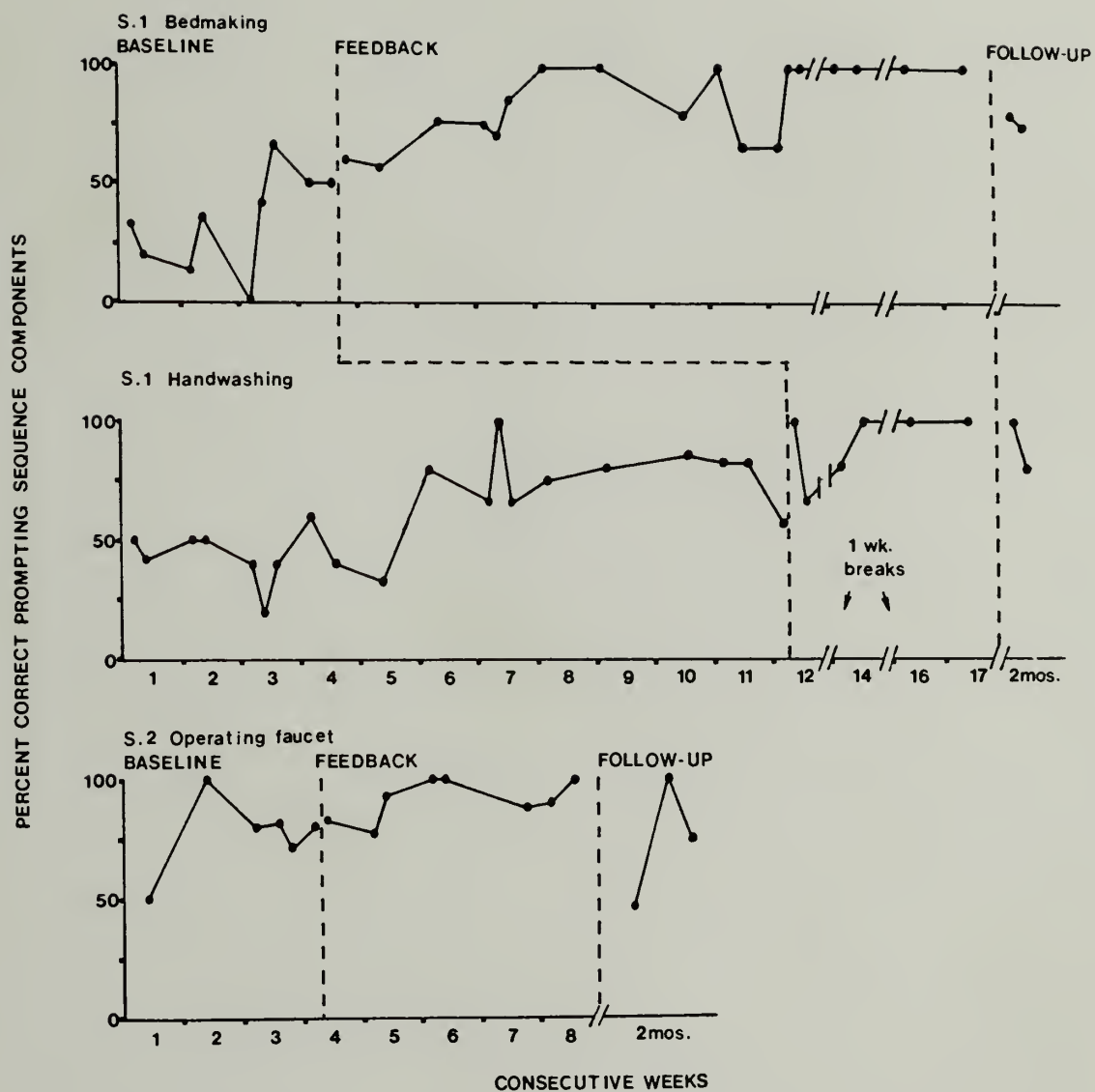
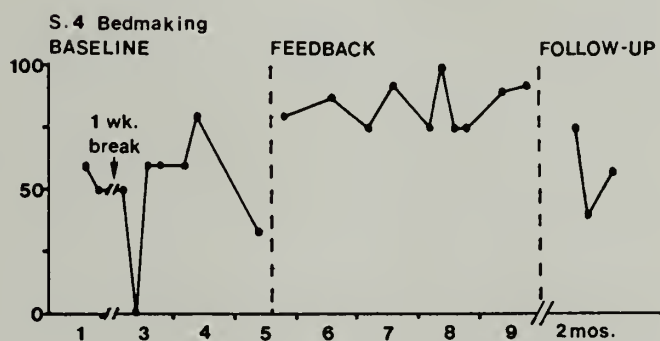
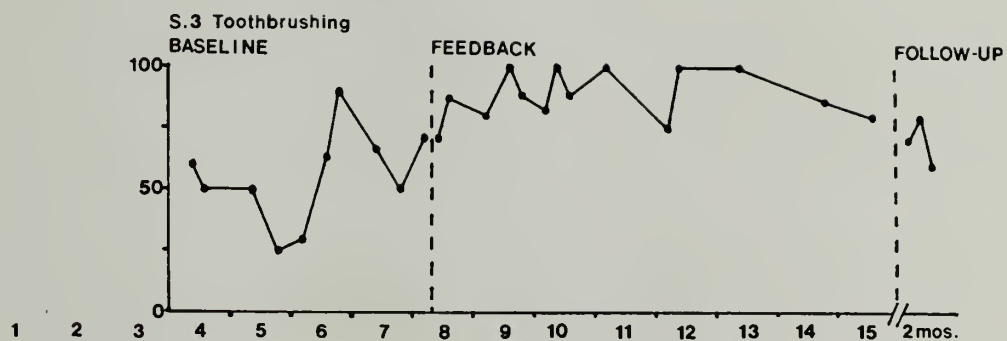
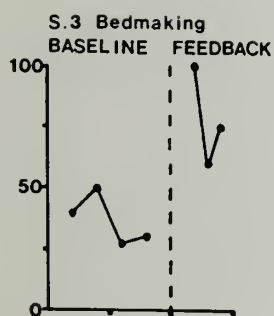


Figure 2. Percentage of Prompting Sequence Components performed correctly by Subjects 3 and 4.



PERCENT CORRECT PROMPTING SEQUENCE COMPONENTS



CONSECUTIVE WEEKS

For Subject 3 (bedmaking), the mean was 38.3% (30-50%) in baseline and 80% (60-100%) during the feedback phase. Recall that this bedmaking program was discontinued and followed immediately thereafter by a bedmaking program. Follow-up measures were, therefore, not collected for bedmaking. For Subject 3 (toothbrushing), the mean was 55.6% (25-100%) in baseline, 87.1% (71.4-100%) during feedback, and 70.5% (60-80%) during follow-up. Finally, for Subject 4 (bedmaking), the mean was 50.4% (0-80%) during baseline, 83.6% (75-100%) during feedback, and 56.5% (37.5-100%) at follow-up.

These statistics are useful in helping to interpret the effect of the intervention for three of the replications - Subject 2 (operating faucet), Subject 3 (bedmaking), and Subject 4 (bedmaking). However, accelerating trends, evident in some of the data series from the remaining replications, necessitate using caution when attempting to evaluate the precise contribution of the intervention based on changes in phase means and ranges alone. Therefore, a verbal description of variability and trends in the data from each replication, both within and between phases, is presented below.

For Subject 1 (bedmaking), a weak, highly variable accelerating trend is evident in baseline. During the intervention, an accelerating, but much less variable,

trend is evident from the end of week 4 through week 9. At this point, Subject 1's performance appeared to reach a ceiling and, except for some decrements during weeks 11 and 12, remained high and stable throughout the intervention phase. Follow-up data reflect only a slight decay in performance. The baseline data for Subject 1 (handwashing) indicate no improvement through week 5, followed by a change to a much higher and more stable level of performance beginning at week 6. During the feedback phase, performance reached the 100% level for four out of the six sessions. As with her performance in the bedmaking program, the performance of Subject 1 remained at a relatively high level in the follow-up phase.

The performance of Subject 2 during baseline was variable for the first two sessions and became relatively high and stable throughout week 3 and in the first session of week 4. During the feedback condition, her performance improved to a slightly higher level. Inspection of follow-up data reveal less consistent performance over three sessions.

For Subject 3 (bedmaking), low and stable performance was noted over four teaching sessions during baseline. By contrast, her level of performance during the intervention was markedly higher, although somewhat variable, over three consecutive sessions. Baseline data for Subject 3

(toothbrushing) reflect a highly unstable series in which a weak accelerating trend is noticeable. During the feedback condition, her correct use of the Prompting Sequence Components improved and became substantially less variable, ranging from 71.4% to 100%. Follow-up measures reveal a slight decay in her performance to a level approximately halfway between baseline and feedback levels.

The baseline series for Subject 4 (bedmaking) is marked by a spuriously low data point at session 4. The probable explanation for this subject's poor performance during that session is the fact that she was feeling sick on that day. The end of baseline is marked by a high data point (80%) resulting from the subject's performance during session 8, followed by a low point (33.3%) from session 9. In contrast to this variability in baseline, performance became high and stable (between 75% and 100%) during the intervention phase. Follow-up measures, however, indicate that performance declined to near the baseline level.

Overall, the performance of all the subjects on the Prompting Sequence Components reached higher levels during the feedback condition and generally became less variable relative to baseline levels. Visual inspection of several of the baselines revealed high variability and weak positive trends.

### General Teaching Components

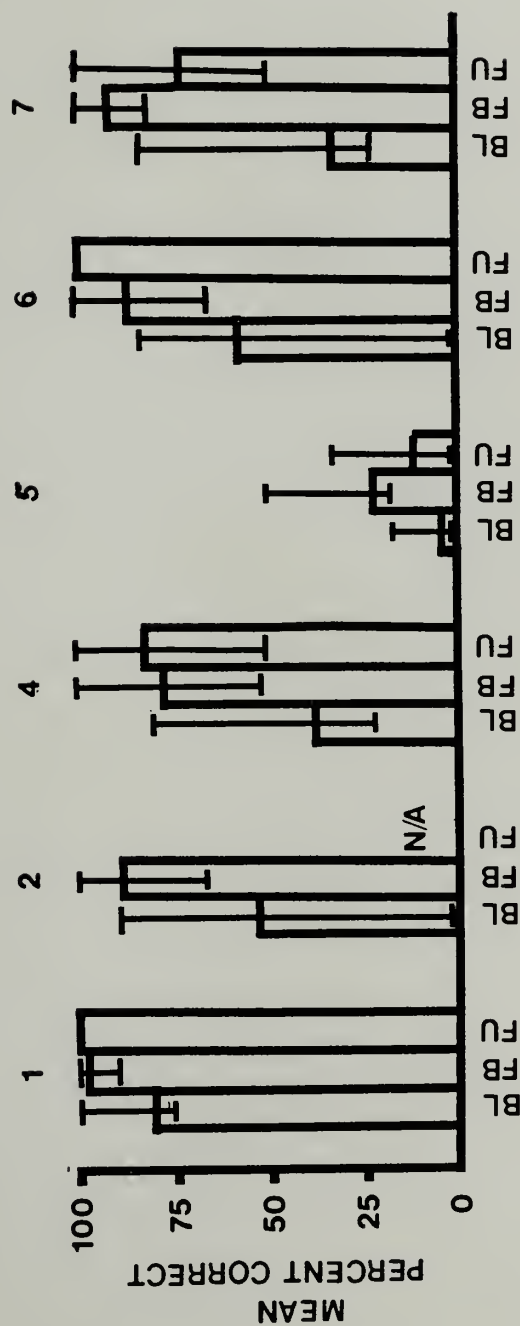
Figure 3 presents the means and ranges for the subjects' use of the General Teaching Components across experimental phases. Feedback resulted in mean increases in the subjects' combined performance for all components. For Component 1 (has materials ready), the mean was 82.6% in baseline, 97.5% for the feedback condition, and 100% during follow-up. Means for Component 2 (offers request to begin program) were 51.4% in baseline and 89% during feedback. Follow-up measures were not taken on this component because, during the intervention phase, residents invariably came to respond to more natural discriminative cues, obviating the need for subjects to provide a specific oral request. For Component 4 (follows task analysis steps in sequence), the mean was 39% during baseline, 77% during feedback, and 83% for follow-up. For Component 5 (repeated practice), performance increased from a mean of 4.2% during baseline to 23% during the feedback phase, but fell to 11.1% at follow-up. For Component 6 (delivers rewards after last step) the mean was 59% in baseline, 87% during feedback, and 100 during follow-up. Finally, for Component 7 (records correctly), the mean was 33% in baseline, 92% during feedback, and 73% during follow-up.

Examination of the ranges across conditions reveals marked reductions in intersubject variability from baseline



Figure 3. Mean percentage of General Teaching Components performed correctly by all subjects. Bars represent the group means (for the four subjects) for each of the six components during baseline (BL), feedback (FB), and follow-up (FU) phases. Components corresponding to each number are labeled below the graph. Ranges of individual subject responses for each phase are shown by range bars. Follow-up data for Component 2 was not taken (N/A) because all residents, by that time, had come to respond to more natural cues to begin their programs.

## COMPONENT NO.:



## GENERAL TEACHING COMPONENTS

1. Materials ready
2. Request to begin program
4. Task analysis steps followed in correct sequence
5. Repeated practice step(s) completed
6. Rewards resident after last step
7. Records correctly

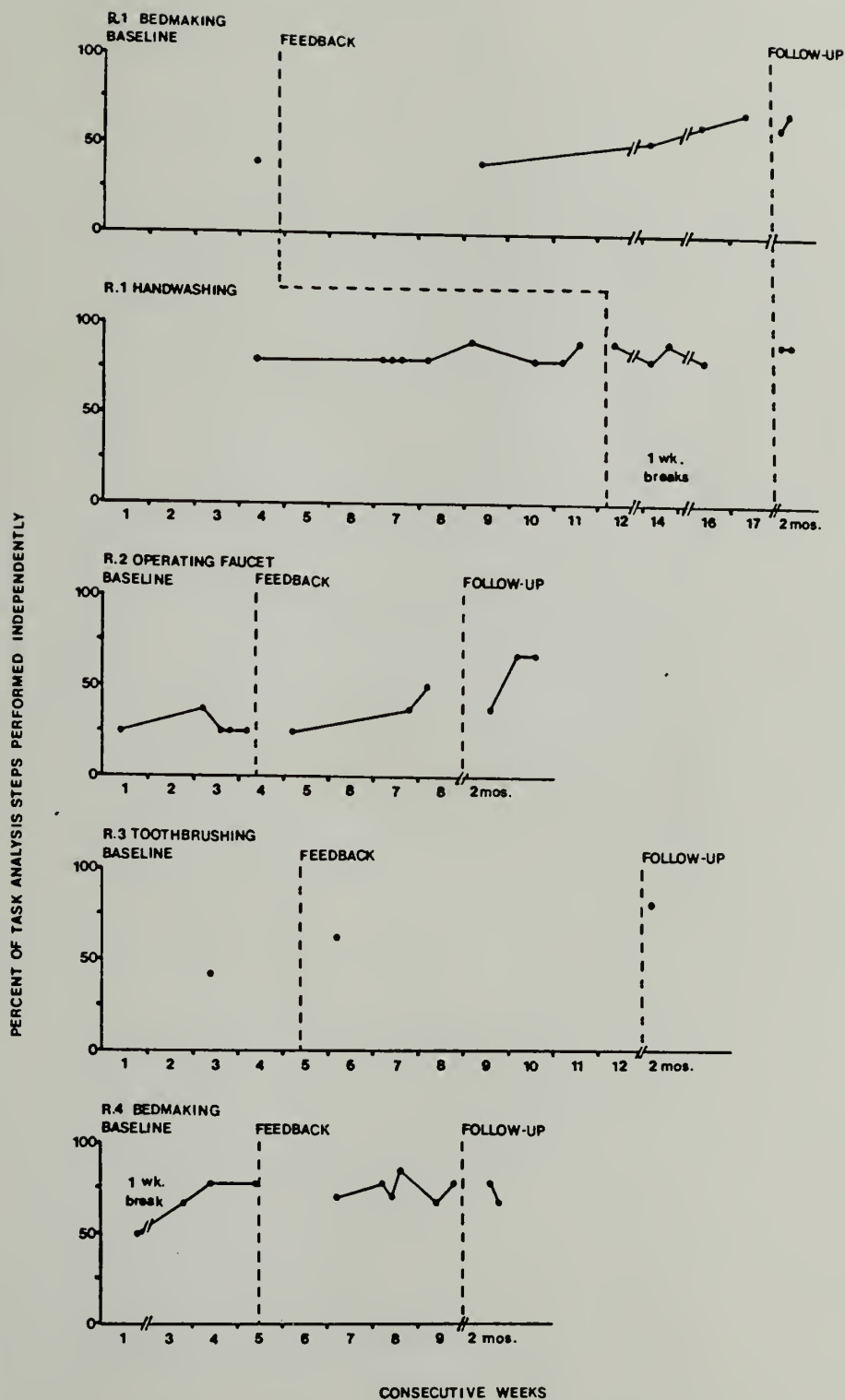
to feedback, with the exception of the repeated practice component. Variability became non-existent during follow-up for Components 1 and 6 as all subject achieved levels of 100%. Variability stayed approximately the same for Component 4, decreased slightly for Component 5, and increased for Component 7. For Component 1, the range of correct performance was 75-100% during baseline, 90-100% during feedback, and, as all four subjects scored 100%, their performance did not vary among themselves at follow-up. Performance on Component 2 ranged from 0-88.8% in baseline and, decreased to 66.7-100% in the feedback condition. For Component 4, the range was 0-80% during baseline, 52.9-100% during feedback, and 50-100% during follow-up. Subjects' use of repeated practice (Component 5) ranged from 0-16.6% in baseline. When provided with feedback, two subjects administered repeated practice more frequently while the others used it rarely or not at all. Thus, the range widened to 0-50%, during feedback, but narrowed to 0-33.3% during follow-up as the subjects' use of repeated practice became even less consistent. For Component 6, the range was 0-83.3% in baseline, 66.7-100% in the feedback condition, and 0%. Lastly, for Component 7, the range was 0-83.3% during baseline, 66.7-100% in the feedback condition, and 50-100% in the follow-up phase.

### Resident Progress

Graphs showing levels of independent responding by the residents during their participation in the self-care programs are presented in Figure 4. Residents 1, 2, and 3 made progress in their abilities throughout the feedback phase. These improvements continued through to follow-up. Skill acquisition by Resident 4 was less marked. She improved during baseline but remained at approximately the highest level achieved during that phase throughout the feedback and follow-up phases.

Figure 4. Percentage of task step performed independently by each resident. Data are from probes conducted during baseline, feedback, and follow-up phases.





## CHAPTER IV

### DISCUSSION

The results of this study suggest that feedback, used as a primary training intervention, resulted in: (1) improvements in both general and specific teaching skills employed by all the subjects, and (2) reductions in variability in the performance of all subjects using those skills. Weak accelerating trends during baseline in the use of the Prompting Sequence Components, observed for several of the subject-program replications, suggest that variables other than the intervention may have exerted some influence over the behavior of those subjects. The fact that the subjects volunteered to participate probably indicates that they were motivated to perform well. Therefore, they may have responded more positively to the written instructions and demonstrations provided prior to baseline. Still, reductions in variability and/or changes in level achieved in virtually all the replications during feedback, relative to baseline, demonstrate the existence of a functional relationship between the intervention and the specific teaching skills used by the subjects.

While changes in the subjects' use of the General Teaching Components were, in general, found to endure (and in some cases increase), follow-up measures of the application of the Prompting Sequence Components showed

that those skills failed to maintain at the same levels achieved during the intervention. Residents all made progress toward independence during the study, but did so at a somewhat slower rate than might have been predicted based on their level of functioning and skill repertoires. An interpretive discussion of these results is presented below, as are implications for practical applications and future research.

The manner in which subjects used a specific sequence of prompts and delays (Prompting Sequence Components) was considered the most important aspect of teaching performance investigated in this study. All subjects improved their overall levels of performance during the feedback condition, relative to their individual baseline levels. For two of the replications, Subject 1 (bedmaking) and Subject 3 (bedmaking), improvements were in the form of reduced variability in performance and in a more systematic trend of skill acquisition to a high level.

Written instructions, reviewed orally with each subject prior to baseline, failed to produce the high and stable levels of performance observed during the intervention phase. Although this study did not directly evaluate the effects of written instructions, others have demonstrated definitively that instructions alone result in transient effects at best (Quilitch, 1975; Lattimore et

al., 1984). It is possible, however, that written instructions combined with other variables, such as reactivity to the observers and the fact that the subjects volunteered to participate, accounted for the increasing baseline trends noted above. A greater number of baseline observations, coupled with preset criteria for determining stability, would have likely resulted in a more clear backdrop against which to assess the impact of the intervention.

Other points related to the individual replications conducted in this study warrant discussion. First, recall that Subject 1 conducted two programs (bedmaking and handwashing) with one resident. The handwashing program was always conducted on the same day, immediately after feedback had been given on implementation of the bedmaking program. Data collected over an extended baseline period for handwashing showed acquisition of prompting sequence skills by Subject 1 beginning at week six of the phase (see Figure 1).

The most likely explanation for this covariation is that skills acquired by Subject 1 during the feedback phase for the bedmaking program generalized to the handwashing program. Given the contiguous temporal arrangement of the implementation of the two programs, feedback on the first may have functioned as an antecedent, affecting performance

on the second. Furthermore, these results are quite similar to those found by Kissel and colleagues (1983) who achieved generalization of their subjects' use of verbal instruction and physical guidance across two untreated programs. Several factors were offered by the authors as possible explanations for their findings: (1) during training, staff observed videotapes which showed various examples of how teaching skills could be used and thus may have begun to acquire a teaching response class; (2) staff were instructed to use their skills across other program situations; (3) common task-related and physical stimuli in the work setting may have promoted generalization; (4) feedback, which ensured mastery of teaching skills in one situation, may have satisfied the necessary conditions for the emission of those skills in untrained conditions, and finally; (5) the fact that subjects participated voluntarily may have had a positive bearing on their subsequent behavior (Kissel et al., 1983, p. 412).

Whereas the generalization observed with Subject 1 may have been due to one or several of the factors listed above (and/or others), it is promising to find that at least one staff member, under certain conditions, employed teaching skills across a different program without having received extensive feedback. When feedback was provided on the handwashing program, however, the performance of Subject 1



rose to 100% for four out of six sessions. Furthermore, with respect to generalization, it is probable that the highly variable and slightly accelerating trend during baseline for Subject 3 (toothbrushing) reflected the generalization of skills acquired under feedback conditions in the bedmaking program she had administered previously.

Feedback also resulted in positive changes in those aspects of teaching labeled General Teaching Components. Whereas baselines were marked by high intersubject variability, all subjects improved during the intervention to acceptable levels (refer to Figure 3) on all component steps, except the repeated practice step.

To summarize the subjects' performance on these components, all were reasonably well prepared with program materials during baseline but became more organized and consistent during the intervention. Requests of the resident to begin the session were also more consistent under the feedback condition and became unnecessary as other aspects of the environment (time of day, other activities which routinely preceded the presentation of the program, and so on) acquired discriminative properties. Although following the task analysis steps in order improved, relative to baseline, there was still room for subjects to respond be more directive in maintaining that order when residents performed tasks out of sequence.

Subjects also provided more clearly discriminable rewards (upon completion of the session), and their accuracy in recording resident responses improved dramatically as well.

Inclusion of the repeated practice component produced some unexpected but interesting findings. When requested to repeat a step, three of the four residents frequently reacted emotionally, with responses ranging from escape to verbal and/or physical expressions of agitation. For example, on one attempted repeated practice trial, Subject 1 pulled back the bedspread Resident 1 had just finished folding over her pillow. The resident responded by walking abruptly over to and sitting on a chair in the corner of her bedroom for several minutes before she agreed to resume making her bed. Responses such as this were unquestionably aversive to the subjects, as evidenced by their general avoidance of the step and comments to the experimenter. In response to the subjects the experimenter restated the importance of reinforced practice for skill acquisition, but also suggested that the subject refrain from using repeated practice when she felt it would be detrimental to the outcome of the session. The consequence of this combination of adverse resident behavior and somewhat ambiguous feedback from the experimenter was that some subjects never did use repeated practice and others used it sporadically.

Developing fluency through repeated practice is an important objective in teaching mentally retarded individuals to perform a skill independently (Young, West, Howard, & Whitney, 1986). It is possible, however, that the learning histories of many older institutionalized residents cause them to respond to the demand to behave independently in a manner that is punishing to staff. Providing residents with a rationale for practicing a skill (for those capable of understanding it) and making potent reinforcers contingent upon practice of one or two difficult steps, may help to correct this problem. For bedmaking and other home care skills, it should be possible to allow residents the opportunity to gain practice by assisting staff in their daily routines. Such an approach has been shown to be of benefit to residents and staff alike (Thomas, Lukeris, Palmer, & Sulzer-Azaroff, 1977).

Follow-up measures on the General Teaching Components indicate that correct use of most components stayed roughly the same, with some decreases in accuracy of recording and application of repeated practice. By experimentally evaluating the subjects' performance on each of the General Teaching Components separately, as opposed to grouping them together and calculating the percentage of components performed correctly, it was possible to isolate these two areas of difficulty.

One finding from this study which requires discussion is the decay in the subjects' use of the Prompting Sequence Components observed during follow-up. One possible explanation for these results is that external consequences, in the form of monitoring and feedback by the experimenter, were not adequately faded with a systematic shift to more natural contingencies. As noted previously, it is frequently the case that resident progress is not sufficiently rapid or complete to function as a reinforcer and thus maintain or continue to improve staff teaching behaviors. Clearly, it is important to identify and investigate other variables that will promote the maintenance of teaching skills once the primary training intervention is discontinued.

Continued monitoring and feedback by supervisors has been suggested as one way to maintain the quality and quantity of program delivery (Realon et al., 1983). One problem with this tactic is it's cost, in time, to supervisors. On the other hand, building monitoring and feedback into the job description of supervisory and professional staff would help to ensure that deficiencies in program design are identified and remedied. For instance, asking a staff member to use a prompting sequence which produces high error rates and/or occasions negative emotional behavior by the resident, is likely to create an



unproductive and potentially punishing situation. Certainly, remediating such problems is critical to resident progress and staff morale and, as such, represents an important use of the supervisor's time.

The development of self-control offers another procedural consideration in planning and promoting maintenance (Stokes & Baer, 1977). Accordingly, teaching direct care staff to manage their own work performance has received attention in recent staff training and management research. Burgio, Whitman, and Reid (1983) found that when they taught direct care staff to set daily performance goals, monitor and graph their behavior, and use self-praise, all staff increased the number of appropriate interactions they had with residents. Follow-up measures taken over a period of six weeks to assess maintenance, however, showed intersubject variability. Whereas seven staff increased or maintained the number of appropriate interactions relative to intervention levels, three staff were found to decrease from previous levels.

Kissel and associates (1983) included training in self management as a final phase designed to promote maintenance of teaching skills that had been taught during a prior condition of training and feedback. Specifically, staff were taught to self-record, graph, and interpret both their own and resident responses. Staff continued to perform at



very high levels during the maintenance phase. However, experimenter feedback on self-management skills was provided during the maintenance phase, precluding a clear evaluation of the maintenance of teaching skills in the absence of external influence. Had it been possible, follow-up measures taken several months following the withdrawal of experimental personnel would have provided a much clearer assessment of skill maintenance in the natural environment.

Self-control programs have thus far produced promising results and continued research is warranted, especially with responses such as teaching, for which there may be few natural reinforcers, and possibly some punishers. However, as conveyed by Reid and Whitman (1983) in their review of institutional staff management procedures, some degree of involvement by supervisors will probably need to be included to make self-control programs maximally effective. Evidence suggests that supervisors and professional staff can be effective providers of feedback (Page et al., 1982; Lattimore et al., 1984). Further research should include investigations in which supervisors, serving as experimental subjects, are trained to operate on-the-job feedback systems. Aspects of performance could be pinpointed and assessed at multiple levels, from resident to supervisor.

The schedule of feedback used to train staff to become more effective teachers is another area which may hold answers to questions concerning maintenance. Alavosius and Sulzer-Azaroff are currently completing an investigation into the effects of intensive and spaced feedback on the maintenance of safe resident transfer, body positioning, and feeding skills used by institutional direct-care staff. Preliminary results indicate high skill maintenance several months following on-the-job verbal feedback, but few or no differences between subjects who received intensive versus spaced feedback. It could be that proper use of the skills the experimenters targetted, once learned, would come into contact with natural positive and negative reinforcers which might be sufficient to maintain correct performance. For instance, an individual using proper client transfer techniques is likely to feel less physical stress during the transfer and, in the long run, avoid painful and debilitating back injuries. Another aspect of the behaviors selected is that they are practiced routinely by staff every day, allowing for repeated practice of the skills between feedback sessions. By contrast, fewer natural reinforcers exist, in general, to support using teaching skills with severely retarded institutionalized residents over time. It is also unfortunate to note that daily applications of teaching skills by staff does not occur

frequently enough to allow for substantial practice. Replication of the procedures used by Alavosius and Sulzer-Azaroff with teaching skills as the dependent measures might reveal schedule differences not found in their study.

Another critical area of discussion concerns the slow rates of resident progress observed in this study. Several factors may help to account for these findings. First, cancelled teaching sessions due to staff shortages, absences, and other events, limited significantly the amount of practice that residents engaged in. Second, the consequences offered to residents may not have functioned as potent reinforcers in some cases, thereby failing to motivate learning. Resident 2, for example, was not consistently responsive to social praise. Edibles introduced later also had little effect, possibly due to the fact that the program could only be conducted soon after lunch. Another possibility is that the program task steps selected may have, in some cases, exceeded the current abilities of the student, thereby requiring a breakdown of the steps into more attainable subcomponents.

Finally, the prompting sequence used may not have been the optimal teaching strategy for some of the residents. Instructional sequences which progress from least to most intrusive prompts, such as those used in this study, have been found to produce high error rates and occasion escape

and other emotional behavior in pilot work by Luyben, Funk, Morgan, Clark, and DeLulio (1986). These researchers went on successfully to teach a soccer kick to three mentally retarded adults using a maximum (full physical guidance) to minimum (verbal instruction) prompting strategy. This strategy substantially reduced error rates and resulted in beneficial practicing of steps.

In the current study, residents 1 and 2 responded emotionally to the many errors they made in response to verbal and demonstration cues. As would be expected, these responses both frustrated and confused their teachers. An alternative maximum to minimum prompting strategy may have reduced many of the aversive components experienced by some of the residents and subjects. Clearly, thorough, individualized assessments of the abilities and skill deficits of mentally retarded learners will help to ensure that instructional procedures that are chosen will be acceptable and effective.

In summary, performance feedback was used as the primary procedure to train four direct-care staff members to correctly administer a broad set of general and specific teaching behaviors while teaching self-care skills to a developmentally delayed resident. In all six subject-program replications, subjects improved their teaching during the intervention condition. Moderate declines in

performance were noted, however, during follow-up observations conducted approximately two months after the termination of the intervention. Although some of the improvements found during the intervention phase followed ascending and/or highly variable baselines, changes in both level of performance and in the form of reduced variability indicate that feedback was a powerful controlling variable. Given the number of direct replications in which positive changes were noted, and the experimental controls that were arranged, a functional relationship was determined to exist between the intervention and enhanced teaching performance of the subjects.

Based on the current findings, directions for future research were suggested. Procedures aimed at establishing staff self-control, and the role of supervisory staff as providers of feedback, were identified as two areas which warrant further investigation, separately and in combination. Schedules of feedback used in training need to be investigated further with an eye toward maintenance, speed of skill acquisition, and cost. In terms of the procedures used to teach self-care skills to developmentally delayed individuals, empirical demonstrations of alternative prompting strategies would provide a broader base from which educators could design more individualized programs.



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## A P P E N D I C E S

A P P E N D I X    A  
INFORMED CONSENT FORM

Direct service staff play a vital role in teaching developmentally disabled persons skills that are important for daily living. These may include dining, home care, dressing, or personal hygiene skills for example. Staff members may become more effective in teaching residents these skills when provided with training which includes on-the-job practice.

This research project will investigate the effectiveness of a specific method for guiding staff members in improving their teaching skills. If you choose to participate, you will be likely to benefit by bettering your skills for teaching residents.

For your information, the project will consist of several phases. First, you will be invited to collaborate with the appropriate program staff (RTL), and me, to choose one or two skills you would like to work on teaching to a resident. Second, after receiving a set of general instructions on how to implement the teaching program(s), you will be observed by me and/or Ms. Cathy Carr, my research assistant, actually doing so. Third, I will provide you with a training workshop lasting approximately one hour. Finally, following this training, you will again

be observed conducting the programs. At this time, however, you will personally receive information from me on those things you did well during the session. This information may also include constructive suggestions for how you might do some things differently next time.

The data collected during our observations will not be used in your performance evaluations, but a summary of your participation in the project will be provided to you upon completion of the study. The data will be used by me in partial fulfillment of requirements for the Master of Science degree, and perhaps for presentation at professional conferences and/or for publication in professional journals. Please be informed that participants' names or any identifying characteristics are never made public in research such as this.

The project will last for four to five months and would require approximately one to two hours per week of your time during regular work hours. Your participation is totally voluntary. Therefore, while I hope you would plan to participate for the duration of the study, you should feel free to withdraw at any time. If you have any questions at all regarding this project, feel free to call me at either of the numbers listed below.

I have read the above and agree to participate in this study. I understand that I may withdraw at any time.

Richard K. Fleming

Office phone: 545-0794

Home phone: 253-7476

\_\_\_\_\_  
Name (please print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



A P P E N D I X    B  
INFORMED CONSENT FORM

As a doctoral student in psychology at the University of Massachusetts, and as an individual with a strong personal commitment to the care and education of developmentally disabled persons, I have planned and am soon to conduct a staff training research project at Belchertown State School. This form is intended to inform you as to the nature of the project and to seek your consent, as parent(s) or as a legal guardian, for the participation of your son/dqughter or ward in the project.

Specifically, the project will investigate the effectiveness of an on-the-job training program intended to guide direct care staff in improving their use of teaching skills with the residents they serve. Direct care staff who volunteer to participate will receive approximately two hours of initial instruction, followed by four to five months of on-the-job supervision occurring approximately one hour per week for each staff member. Staff will work on teaching residents to perform functional living skills more independently. Depending on the skill level of the individual they work with, staff members might teach that individual to make a bed, fold and put away his or her clothes, or perhaps improve money management skills.

Observations of direct care staff made by me and a research assistant, Ms. Cathy Carr, will be conducted as quietly and unintrusively as possible. If a resident verbalizes discomfort due to the presence of observers, or clearly gestures an indication of the same, this will result in the termination of the session and any other sessions in which discomfort is expressed.

Whereas the primary participants in this study are staff members, the ultimate outcome of such a project is gauged by the improvement of the individuals they serve. Residents are likely to benefit from the improved teaching skills used by staff. As such, records of resident progress are proposed as a collateral measure. The data collected will be used by me in partial fulfillment of requirements for the Master of Science degree, and perhaps for presentation at professional conferences and/or for publication in professional journals. Please understand that staff or resident names, or any other identifying characteristics, are never made public in projects such as this.

In summary, your consent will allow for staff participants in this project to teach functional living skills to your son, daughter, or ward. It will allow me and one other observer to unintrusively collect data on the

individual resident's progress in those skills being taught. Your consent is totally voluntary. Therefore, while I hope that participation would extend for the duration of the project, you should feel free to withdraw your consent at any time. Each parent or guardian will receive a summary of the project once it is completed. If you have any questions at all, feel free to call me at either of the numbers listed below.

I have read the above and agree to allow \_\_\_\_\_ to participate in this project. I understand that I may withdraw my consent at any time.

Richard K. Fleming

Office: 545-0794

Home: 253-7476

\_\_\_\_\_  
Name (please print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## A P P E N D I X    C

## INSTRUCTIONAL SET A

One of our goals in working with the residents here is to teach them as many independent daily living skills as possible. This will help their development as human beings, leading to a better life in their present setting or in a community setting. You have chosen a resident to work with and a skill, or set of skills, you would like to teach him or her. We have agreed that you will teach this skill(s) four times per week in thirty minute sessions. For each skill, I have given you a list of specific responses (a task analysis) the resident must acquire and be able to complete on his/her own before we could agree that the resident performs the skill independently.

There are several training skills that have been found to be very effective in assisting residents to learn independent living skills. They are: (1) verbal instruction, (2) demonstration (or modeling), (3) physical guidance, and (4) reward. Let's review how these are defined, and I'll demonstrate how to use each.

1. Verbal instruction refers to a statement that directs or asks the resident to complete a specific program step. It should have an action verb and a specific object upon which to act. An example would be "Pull the sheet up." Note that "pull" is the action verb and "sheet" is the object upon

which to act. You may also gesture (by pointing with your hand or nodding your head for example) as you give verbal instruction.

2. Demonstration refers to any motion made by you which either fully models the desired response or otherwise approximates the desired response. Demonstration should be used with verbal instruction, so that the resident knows just what it is you are demonstrating. For example, let me show you how to demonstrate pulling a sheet up. (Demonstration).

3. Physical guidance refers to any physical assistance given by you which helps a resident to complete a specific response. It should also be paired with verbal instruction. Again, I'll demonstrate. (Demonstration).

4. Reward refers to something the resident likes which you can provide at the end of a successfully completed step. This might be praise or a pat on the back for example. For example, I might say "Very nice job!" after a resident successfully performs a step.

It has been found to be very effective to use these teaching skills in the sequence above for the specific step(s) you are concentrating on for the session. Also, by waiting five seconds before delivering a prompt, you will allow the resident a chance to respond before you have to move to the next prompt. For example, if I were teaching



the step "Pull up the sheet.", I would first wait to see if the resident did the step on her or his own. Next, I would deliver the verbal instruction "Pull up the sheet." Then I would wait five seconds for the resident to respond before moving on to demonstrating how to pull up the sheet along with giving the verbal instruction once again. Again, after waiting for the resident to respond, I would move on to providing physical guidance (paired with verbal instruction). This would ensure that the resident successfully completed the step. Reward is provided immediately following the resident's completion of the step, at whichever prompting level is needed.

You may find that some residents are not accustomed to such a teaching approach and may need some time to get used to it. By rewarding a resident for completing a step after a given prompt, he or she should become more comfortable in attending to that prompt. If a resident continues to have a problem with the prompting strategy, we can make adjustments in the teaching approach.

Now that we've reviewed the specific teaching skills above, let's review how the whole teaching session will run. You will have this data sheet (provide a copy of the data sheet) which lists the materials you will need, the request to begin the program (e.g., "Mary, let's make your bed now!"), the task analysis, and an area in which you can

record whether the resident responded independently (I), after verbal instruction (V), after demonstration (D), or only after physical guidance (P) was given. Because the completion of the task is probably the most natural reward for the resident, you are asked to concentrate your teaching efforts on the final two steps of the program that the resident does not already perform independently. That is, do your best to use the teaching strategies listed above for those two steps, and record the resident's response for those two steps. Also, because repeated practice will most help the resident to fully acquire independence on each step, you are asked to teach each of these two steps two consecutive times each. We'll refer to these two steps as the "training steps". To ensure successful completion of all the steps before the training steps, use sufficient guidance to guarantee fairly rapid completion. As the resident comes to perform each training step independently, we will move up the task analysis, identifying a new training step, until the entire task is performed independently.

In summary, when conducting a session, you should prepare all materials (including the program data sheet), use the request to begin the program (listed on the sheet), provide sufficient assistance to help the resident to perform steps leading up to the training steps, conduct the

training steps as specified above, and record the resident's responses for those training steps. Occasionally, we will check the resident's level of independence for each step in the program.

As you know, I will be observing both you and the resident. Occasionally, I will be accompanied by an assistant. Please try to relax and pretend I'm (we're) not here. Just do the best you can. Are there any questions?

A P P E N D I X    D  
INSTRUCTIONAL SET    B

One of our goals in working with the residents here is to teach them as many independent daily living skills as possible. This will help their development as human beings, leading to a better life in their present setting or in a community setting. You have chosen a resident to work with and a skill, or set of skills, you would like to teach him or her. We have agreed that you will teach this skill(s) four times per week in thirty minute sessions. For each skill, I have given you a list of specific responses (a task analysis) the resident must acquire and be able to complete on his/her own before we could agree that the resident performs the skill independently.

There are several training skills that have been found to be very effective in assisting residents to learn independent living skills. They are: (1) verbal instruction, (2) demonstration (or modeling), (3) physical guidance (which may be broken down into physical prompts and full physical guidance), and (4) reward. Let's review how these are defined, and I'll demonstrate how to use each one.

1. Verbal instruction refers to a statement that directs or asks the resident to complete a specific program step. It should have an action verb and a specific object upon which

to act. An example would be "Pull the sheet up." Note that "pull" is the action verb and "sheet" is the object upon which to act. You may also gesture (by pointing with your hand or nodding your head for example) as you give verbal instruction.

2. Demonstration refers to any motion made by you which either fully models the desired response or otherwise approximates the desired response. Demonstration should be used with verbal instruction, so that the resident knows just what it is you are demonstrating. For example, let me show you how to demonstrate pulling a sheet up. (Demonstration).

3. Physical guidance refers to any physical assistance given by you which helps a resident to complete a specific response. For residents who require a great deal of physical assistance, we would like to pay special attention to the process of gradually fading from full physical guidance. Therefore, for those residents, we have subdivided physical guidance into the two separate prompting levels, defined below in the sequential order in which they should be used:

A. Physical prompt refers to an act in which your hand contacts the resident's elbow, wrist, or forearm and guides his or her hand toward performing the desired response. A physical prompt does not involve fully manipulating the



resident's fingers or hand(s). Instead, you might think of it as getting the resident started in hopes that he or she will complete the rest of the response independently. Verbal instruction should be given as you provide the physical prompt. Let me demonstrate how this would work if the resident was having trouble grasping a sheet to pull it up. (Demonstration)

B. Full physical guidance refers to your use of full hand over hand guidance to assist the resident in completing the step. Again, present a verbal instruction as you guide the response. Let me demonstrate with the same example - grasping and pulling up a sheet. (Demonstration)

4. Reward refers to something the resident likes which you can provide at the end of a successfully completed step. This might be praise or a pat on the back for example. For example, I might say "Very nice job!" after a resident successfully performs a step.

It has been found to be very effective to use these teaching skills in the sequence above for the specific step(s) you are concentrating on for the session. Also, by waiting five seconds before delivering a prompt, you will allow the resident a chance to respond before you have to move to the next prompt. For example, if I were teaching the step "Pull up the sheet.", I would first wait to see if the resident did the step on her or his own. Next, I would

deliver the verbal instruction "Pull up the sheet." Then I would wait five seconds for the resident to respond before moving on to demonstrating how to pull up the sheet along with giving the verbal instruction once again. Again, after waiting for the resident to respond, I would move on to provide the appropriate level of physical guidance (paired with verbal instruction). This would ensure that the resident successfully completed the step. Reward is provided immediately following the resident's completion of the step, at whichever prompting level is needed.

You may find that some residents are not accustomed to such a teaching approach and may need some time to get used to it. By rewarding a resident for completing a step after a given prompt, he or she should become more comfortable in attending to that prompt. If a resident continues to have a problem with the prompting strategy, we can make adjustments in the teaching approach.

Now that we've reviewed the specific teaching skills above, let's review how the whole teaching session will run. You will have this data sheet (provide a copy of the data sheet) which lists the materials you will need, the request to begin the program (e.g., "Mary, let's make your bed now!"), the task analysis, and an area in which you can record whether the resident responded independently (I), after verbal instruction (V), after demonstration (D), or

only after physical guidance (P) was given [or, physical prompt (PP) or full physical guidance (PG) if you have so broken down physical guidance]. Because the completion of the task is probably the most natural reward for the resident, you are asked to concentrate your teaching efforts on the final two steps of the program that the resident does not already perform independently. That is, do your best to use the teaching strategies listed above for those two steps, and record the resident's response for those two steps. Also, because repeated practice will most help the resident to fully acquire independence on each step, you are asked to teach each of these two steps two consecutive times each. We'll refer to these two steps as the "training steps". To ensure successful completion of all the steps leading up to the training steps, use sufficient guidance to guarantee fairly rapid completion. As the resident comes to perform each training step independently, we will move up the task analysis, identifying a new training step, until the entire task is performed independently.

In summary, when conducting a session, you should prepare all materials (including the program data sheet), use the request to begin the program (listed on the sheet), provide sufficient assistance to help the resident to perform steps leading up to the training steps, conduct the

training steps as specified above, and record the resident's responses for those training steps. Occasionally, we will check the resident's level of independence for each step in the program.

As you know, I will be observing both you and the resident. Occasionally, I will be accompanied by an assistant. Please try to relax and pretend I'm (we're) not here. Just do the best you can. Are there any questions?





A P P E N D I X F

PROGRAM SHEET - RESIDENT 1, HANDWASHING

Resident: Resident 1                      Trainer: Subject 1  
Program: Washing and drying hands    Date:  
Materials: Soap dispenser, towel, sink    Time:

Program request: "(resident's name), let's wash your hands."

Reward(s): praise, handclapping, pats, coffee, book

Enter I, V, D, P, or NC in the appropriate box based on whether (resident's name) completes the step: Independently (I), after a Verbal Instruction (V), after a Demonstration with Verbal Instruction (D), after Physical Guidance with Verbal Instruction (P), or if she refuses to respond - Not Completed (NC).

### Program Step

### Resident Response

Date:

1. Turn on hot water
2. Wet hands
3. Put soap on hands
4. Wash hands
5. Rinse hands
6. Turn off water
7. Pick up towel
8. Unfold towel
9. Dry hands
10. Throw towel in hamper

[illegible]



A P P E N D I X H

PROGRAM SHEET - RESIDENT 3, BEDMAKING

Resident: Resident 3

Trainer: Subject 3

Program: Bedmaking

Date:      Time:

Materials: fitted sheet, top sheet, pillow case, blanket, bedspread

Program request: "(resident's name), would you like to make your bed?"

Reward: praise

Enter I, V, D, P, or NC in the appropriate box based on whether (resident's name) completes the step: Independently (I), after Verbal Instruction (V), after a Demonstration with Verbal Instruction (D), after Physical Guidance with Verbal Instruction (P), or if she refuses to respond - Not Completed (NC).

<u>Program</u>	<u>Step</u>
1	1
2	2
3	3
4	4
5	5
6	6
7	7
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9	9
10	10
11	11
12	12
13	13
14	14
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Resident Response

Date:

1. Put fitted sheet on bed
2. Put top sheet on bed
3. Straighten top sheet
4. Put blanket on bed
5. Straighten blanket
6. Tuck in bottom
7. Tuck in sides
8. Fold back blanket and sheet
9. Put bedspread on bed
10. Straighten bedspread
11. Fold down top of bedspread
12. Put pillow in case
13. Place pillow on top of bedspread
14. Fold bedspread over pillow

[illegible]



14. Brush teeth on remaining side completely

[illegible]

With plate turned teeth down,

15. Brush grooves (covering all surface area)
16. Brush flat surface completely
17. Rinse plate thoroughly
18. Insert plate into mouth and put materials away

[illegible]



Resident: Resident 4  
Program: Bedmaking  
Materials/preparation: bed stripped of top sheet, blanket, bedspread, pillow

Trainer: Subject 4  
Date: \_\_\_\_\_  
Time: \_\_\_\_\_

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Program request:  "(resident's name), let's make your bed."
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Reward: Specific praise about having made bed

Enter I, V, D, P, or NC in the appropriate box based on whether (resident's name) completes the step: Independently (I), after Verbal Instruction, after a Demonstration with Verbal Instruction (D), after Physical Guidance with Verbal Instruction (P), or if she refuses to respond - Not Completed (NC).

<u>Program</u>	<u>Step</u>
1	1
2	2
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100	100

Resident Response

Date:

1. Take pillows off bed
2. Put on top sheet
3. Straighten top sheet
4. Pull top sheet up (about equal with top of mattress)
5. Put blanket on
6. Straighten blanket
7. Tuck in sheet and blanket at bottom of bed
8. Put bedspread on
9. Line up bottom of bedspread
10. Line up one side of bedspread
11. Line up remaining side of bedspread
12. Fold back bedspread
13. Place pillow on top of bedspread at fold
14. Fold bedspread over

## A P P E N D I X K

## FEEDBACK FORM A

Resident: \_\_\_\_\_ Trainer: \_\_\_\_\_  
 Program: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Materials required: \_\_\_\_\_  
 Program request: \_\_\_\_\_  
 Rewards: \_\_\_\_\_

1. Materials ready Prior to giving program request, trainer prepares all materials so that resident does not have to wait more than 10 seconds. + -

2. Correct request to begin program Trainer uses request specified above (in training area/room). + -

3. Prompts are delivered correctly (by definition) and in proper sequence. Praise/reward provided.

Step	5 sec.	Verb. Instr.	5 sec.	VI & Demo.	5 sec.	VI & Ph. Guid.	Praise/ Reward
_____	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ o</span>
Resident:	I	V		D		PG	
repeated:	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ o</span>
Resident:	I	V		D		PG	

Step	5 sec.	Verb. Instr.	5 sec.	VI & Demo.	5 sec.	VI & Ph. Guid.	Praise/ Reward
_____	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ o</span>
Resident:	I	V		D		PG	
repeated:	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ -</span>	<span style="border: 1px solid black; padding: 2px;">+ - o</span>	<span style="border: 1px solid black; padding: 2px;">+ o</span>
Resident:	I	V		D		PG	

4. Program steps followed in sequence. + -

5. Repeated practice steps completed. + -

6. Rewards resident after last step. Delivers terminal reward item specified (or tells resident he/she will receive it) paired with praise. + -

7. Records correctly. Data sheet is filled out completely and correct data is recorded. + -

Comments: \_\_\_\_\_

# A P P E N D I X L F E E D B A C K F O R M B

Resident: \_\_\_\_\_ Trainer: \_\_\_\_\_  
 Program: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Materials required: \_\_\_\_\_  
 Program request: \_\_\_\_\_  
 Rewards: \_\_\_\_\_

1. Materials ready      Prior to giving program request, trainer prepares all materials so that resident does not have to wait more than 10 seconds. + -

2. Correct request to begin program      Trainer uses request specified above (in training area/room). + -

3. Prompts are delivered correctly (by definition) and in proper sequence. Praise/reward provided.

Step	5 sec.	Verb. Instr.	5 sec.	VI & Ph. Prmpt.	5 sec.	VI & Full Ph.Guid.	Praise/Reward
_____	+ -	+ - o	+ -	+ - o	+ -	+ - o	+ o
Resident:	I	V		PP		PG	
repeated:	+ -	+ - o	+ -	+ - o	+ -	+ - o	+ o
Resident:	I	V		PP		PG	

Step	5 sec.	Verb. Instr.	5 sec.	VI & Ph. Prmpt.	5 sec.	VI & Full Ph.Guid.	Praise/Reward
_____	+ -	+ - o	+ -	+ - o	+ -	+ - o	+ o
Resident:	I	V		PP		PG	
repeated:	+ -	+ - o	+ -	+ - o	+ -	+ - o	+ o
Resident:	I	V		PP		PG	

4. Program steps followed in sequence. + -

5. Repeated practice steps completed. + -

6. Rewards resident after last step.      Delivers terminal reward item specified (or tells resident he/she will receive it) paired with praise. + -

7. Records correctly.      Data sheet is filled out completely and correct data is recorded. + -

Comments: \_\_\_\_\_

A P P E N D I X    M  
RESPONSE DEFINITIONS

General Teaching Components

Materials ready - Prior to giving program request, teacher prepares all materials so that the resident does not have to wait more than ten seconds.

Correct request to begin program - Teacher uses request specified on program sheet.

Program steps followed in sequence - Teacher follows program task analysis steps in the order they appear on the program sheet.

Repeated practice step completed - Teacher prompts resident to perform a second time at least one of the two task analysis steps identified for that session.

Rewards resident after last step - Teacher delivers terminal reward item specified (or tells resident he/she will receive it) paired with praise.

Records correctly - Data sheet is filled out completely and correct data is recorded for both of the task analysis steps identified for that session.

Prompting Sequence Components

Initial five second delay - Teacher waits a minimum of five seconds, following the resident's completion of the

previous task step (or following the delivery of reward), before providing the first prompt for the current step.

Verbal instruction - A statement which directs or asks the resident to complete a specific program step. It must have an action verb and a specific object upon which to act.

Five second delay between prompts - Teacher waits a minimum of five seconds after the delivery of the previous prompt before providing the next prompt in the sequence.

Demonstration plus verbal instruction - Any motion made by the teacher which either fully models or approximates the movements of the desired response. Demonstration, to be correct, must be delivered with verbal instruction. Also, demonstration is not scored as performed correctly if it is delivered out of sequence.

Physical prompt plus verbal instruction - Any act in which the teacher's hand contacts a part of the resident's body to guide him/her to perform the desired response. A physical prompt does not include full manipulation of the resident's body part to help him/her perform the response. A physical prompt must be delivered with verbal instruction to be correct. Also, a physical prompt is not scored as performed correctly if it is delivered out of sequence.

Physical guidance plus verbal instruction - Any act in which the teacher uses full physical assistance to help the resident to complete a step. Physical guidance must be



delivered with verbal instruction to be correct. Also physical guidance is not scored as performed correctly if it is delivered out of sequence.

Reward - Refers to a statement or tangible item that the teacher provides to the resident contingent upon his/her successful completion of the program step.



