NORMALIZATION OF INSTITUTIONAL MEALTIMES FOR PROFOUNDLY RETARDED PERSONS: EFFECTS AND NONEFFECTS OF TEACHING FAMILY-STYLE DINING

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Benefits have been reported for certain institutionalized populations when mealtimes are arranged under normal, family-style conditions. In this study, we evaluated a program for teaching family-style mealtime skills to institutionalized persons with skill deficits greater than those targeted in previous research—the profoundly retarded. Results showed that the program, involving forward chaining with a less-to-more intrusive prompting sequence and contingent reinforcement, successfully taught four profoundly retarded persons several family-style skills. Also, systematic measures supported the durability of the skills, social validity of the behavior changes, acceptance of the program by staff trainers, and no detrimental changes in health-related variables associated with food consumption. However, results also indicated that beneficial corollary changes (e.g., increased peer communication) previously reported with higher skilled populations did not occur. These results suggest that with more seriously handicapped populations, multiple changes should not be assumed when normalizing institutional conditions; rather, specific skill training will probably be necessary.

DESCRIPTORS: normalization, social validation, mealtime behavior, institutions, retarded persons

In recent years the concept of normalization has had a major impact on the delivery of services to mentally retarded persons in this country (Whitman, Scibak, & Reid, 1983, chap. 1). The normalization principle has been applied in a variety of activities, including the altering of institutional living conditions (Maloney & Ward, 1979, chap. 10). For example, much attention from a normalization viewpoint has focused on changing institutional mealtime processes (Whitman et al., 1983, chap. 5).

The attention given to mealtime regimes has stemmed primarily from the recognition that institutional practices have traditionally been quite dissimilar from the manner in which people have

their meals in normal homes (e.g., VanBiervliet, Spangler, & Marshall, 1981). Frequently, institutional staff perform many of the meal-related activities for clients that people in family-type settings do for themselves (e.g., serving the food to the clients). Such a situation disallows residents the opportunity to acquire skills that would be necessary if they eventually ate their meals in a more normal, noninstitutional setting. Also, corollary benefits that can result from eating with others in a family-style format are less likely to occur. For instance, when compared to typical institutional approaches, family-style processes can result in increased peer communication during the meal (VanBiervliet et al., 1981), more socially acceptable table manners (Melin & Gotestam, 1981), and a situation in which clients are viewed as more responsible persons (VanBiervliet et al., 1981).

To date, the benefits of family-style mealtime regimes have been demonstrated with relatively skilled institutional populations, such as moderately/severely retarded persons (VanBiervliet et al., 1981), psychiatric patients with intellectual levels

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ranging from mildly retarded to gifted (Doke, Feaster, & Predmore, 1977), and geriatric residents who most likely had eaten in a family-style format prior to institutionalization (Melin & Gotestam, 1981). Whether benefits would be realized with more seriously handicapped residents such as the profoundly retarded is unclear.

It seems particularly relevant that the effects of family- versus institution-style dining be evaluated with profoundly retarded persons because they have become more representative of institutional populations (Scheerenberger, 1982). Hence, the most beneficial manner of arranging institutional meal-times with these individuals warrants investigation (cf. Reid, 1983; Reid, Wilson, & Faw, 1983). Similarly, because regulatory standards for residential facilities (e.g., ACMRDD, 1978) promote adherence to the normalization principle, it seems desirable to determine objectively exactly how clients benefit from alterations that are made with the purpose of normalizing service delivery. In this respect, serious concern has been expressed about human service agencies adopting practices to coincide with the opinion of the apparent professional majority (i.e., providing *normalized* services) without scientific evidence to document that the practices actually increase client benefits (McCarver & Cavalier, 1983).

The purpose of this investigation was to evaluate whether or not multiple benefits would result for profoundly retarded persons when changing from a traditional institution-style mealtime to a more normal family-style format. However, before conducting such an evaluation, it was necessary to demonstrate a method for directly teaching these individuals family-style eating skills. Despite considerable research on teaching mealtime skills to retarded persons (see Reid, 1983; Reid *et al.*, 1983; Whitman & Scibak, 1979, for reviews), we found no published research that experimentally evaluated a program specifically for teaching *family-style* eating skills to *profoundly retarded* persons. In this regard, the research previously cited on family-style eating involved participants for whom either minimal or no training in family-style skills was required.

To comprehensively evaluate the training program here, data were collected on variables that have been noted as being important, but often neglected, when evaluating training programs with the profoundly retarded (Whitman *et al.*, 1983). Specifically, measures were included on the durability of treatment effects (Whitman & Scibak, 1979), trainer acceptance of the training program (Kazdin, 1980), social validity of the behavior changes (Wolf, 1978), and trainer compliance with the assigned experimental procedures (Peterson, Homer, & Wonderlich, 1982).

METHOD

Participants and Setting

Four ambulatory residents of a state facility for the developmentally disabled participated. The two boys and two girls were profoundly retarded based on measures of intellectual and adaptive functioning (Grossman, 1977). Ages were from 16 to 19 years, most recent IQ estimates were all below 16, and periods of institutionalization ranged from 5 to 15 years. All participants performed basic self-help skills such as eating with a spoon and fork with staff supervision but did not perform more advanced self-help skills such as hair combing. The youths rarely engaged in functional vocalizations although each could manually sign the labels for certain objects when prompted by staff. Receptively, residents sporadically complied with simple requests (e.g., "come here"). All participants intermittently engaged in mild self-injury such as face slapping, and two residents exhibited high rates of stereotypic behavior (e.g., body rocking).

These residents were selected for the study because they lived on the unit within the institution where the lowest functioning ambulatory residents resided and where meals were not served family-style. Also, these residents were deemed by institutional staff to be likely candidates for transfer to another living unit with higher-skilled residents where family-style eating did occur.

The setting consisted of the dining room on the living unit in which the residents ate their meals with seven or eight other residents. The room con-

Table 1
Target Primary Behaviors

Component	Steps	
Premeal	*1. Go to preparation table (within 1 in.) 2. Pick up spoon and fork 3. Put them on plate 4. Pick up napkin 5. Put it on plate 6. Pick up plate	7. Carry plate to table 8. Sit down 9. Take spoon and fork off plate 10. Put them within 6 in. of plate *11. Pick up napkin 12. Put napkin on
Meal	*1. Hold bowl with BOTH hands 2. Place bowl within 1 in. of plate *3. Grasp serving spoon 4. Grasp bowl with one hand without hand in food while spoon is in bowl 5. Serve food to plate	6. Replace spoon *7. Grasp bowl with both hands 8. Pick up bowl 9. Place in neighbor's hands or place within 6 in. of neighbor's plate
Postmeal	1. Pick up spoon and fork 2. Put spoon and fork on plate 3. Stand up 4. Pick up plate 5. Carry plate to preparation table	6. Put plate, spoon, and fork in bin 7. Unfasten napkin 8. Take off napkin 9. Put napkin in proper container

* The steps at which successive subcomponents start.

tained three dining tables with chairs and one smaller table used for holding plates and utensils.

Behavior Definitions

Primary behaviors. The primary dependent variables were resident behaviors necessary to eat in a family-style format. To determine relevant behaviors in this respect, the following steps were taken. First, based on observations of the supper meal of mildly and moderately retarded clients of a local group home, the experimenters task analyzed family-style eating. Second, the experimenters observed each other progress through a mealtime and made refinements on the preliminary task analysis. Third, to provide additional social validity for the targeted skills (Kazdin & Matson, 1981), a copy of the task analysis was given to the director of the group home for his review regarding the importance of the targeted behaviors. The director indicated that all identified skills were important.

As a result of this process, three main components to family-style eating were identified; premeal, meal and postmeal, involving 12, 9, and 9 discrete steps, respectively (see Table 1). Additionally, the premeal and meal components were di-

vided into two and three subcomponents, respectively.

Secondary behaviors—resident variables. Four sets of secondary resident behaviors were targeted because they have been identified as being likely to be affected when changing from an institution-style to a family-style process, or because they have been identified as potential health-related problems associated with eating by retarded persons that warrant monitoring when implementing mealtime programs, or both. Specifically, behavior definitions were established to evaluate possible increases in communication during mealtime (VanBiervliet et al., 1981), improvements in mealtime messiness (Melin & Gotestam, 1981), detrimental acceleration in rate of eating (Favell, McGimsey, & Jones, 1980), and undesired changes in resident body weight (Barton, Guess, Garcia, & Baer, 1970).

The definitions used for resident *communication* were identical to those used by Schepis, Reid, Fitzgerald, Faw, van den Pol, and Welty (1982) and consisted of two categories. First, vocalizing was defined as any vocalization directed toward another resident excluding apparently nonvolun-

tary sounds (e.g., coughs). Second, because each resident was receiving training in manual signing, signing was defined as a manual gesture directed to a resident that included all critical components for any of 17 predetermined signs (see Schepis *et al.*, 1982). The 17 signs were targeted because staff had previously reported the signs to be useful in typical interactions with residents, including during mealtime, and these signs were representative of those for which residents were receiving training as part of their overall habilitation plans.

The definitions pertaining to *mealtime messiness* were derived from those used by Barton *et al.* (1970). Inappropriate or messy behavior was defined as: (a) dropping food, including food falling from the resident's mouth or utensil (while the utensil was not touching the plate), spilling liquid from a cup, and liquid dripping off the resident's chin; (b) eating nonfinger foods without utensils; and (c) eating food from any surface other than the plate.

For the third secondary measure, *rate of eating*, a bite was defined as food being delivered into the mouth via a utensil. Separate bites were distinguished by requiring the utensil to make contact with the plate in order for a bite to be initiated. Finally, for the fourth measure, *body weight*, readings were made from a hospital balance scale.

Secondary behaviors—trainer variables. To assess the degree to which the institutional staff implemented the training procedures as intended, intermittent probes on trainer behavior were conducted. Three categories of trainer behavior were defined: (a) appropriate instruction—the trainer waits for the resident to make eye contact or to orient his or her face toward the trainer before giving a request to do something and the trainer says the resident's name and specific behavior; (b) appropriate prompt—the trainer waits 3–5 s between instructions for the resident to complete a response and gives instructions and prompts using the appropriate less-to-more intrusive sequence (see *Family-style training*); (c) appropriate consequence—the trainer praises or provides an edible immediately after an appropriate target behavior

and blocks or verbally corrects inappropriate behavior.

Observers and Observation Systems

Observers included the experimenters, institutional staff, and practicum students. Observer training involved written and vocal instructions, practice observations of videotapes or nontarget residents or both during mealtime, and experimenter feedback.

Resident behavior. A separate observation/probe system was established for each type of primary and secondary behavior. For the primary behaviors, an observer recorded whether or not each step comprising the three components (Table 1) occurred independently during resident assessments. An independent step was scored only when the step occurred in the appropriate sequence relative to other component behaviors without being preceded by an instruction to do that specific behavior. For steps after the first step in a component to occur independently, they also had to be initiated within 5 s of the preceding step.

The probe system used with communication behaviors was identical to that reported by Schepis *et al.* (1982). Briefly, one resident was observed for three consecutive 1-min intervals during which the observer recorded the occurrence of target vocal and signing behaviors on a partial interval basis. Respective nonoccurrences were recorded at the end of each 1-min interval. After observing and recording the behavior of one resident for three intervals, the procedure was then repeated sequentially for the remaining residents. Each resident was observed during three meals before and three meals after family-style training.

The probe system used with mealtime messiness consisted of a partial interval system for the occurrence of inappropriate behavior. One resident was observed for three 10-s intervals, with each interval separated by a 5-s record interval. Respective nonoccurrences were recorded following each 10-s observation interval. Other residents were then observed in random order with the same format until the sequence was repeated at least three

times. Each resident was observed during at least five meals before and after family-style training.

To monitor eating rate, each resident's eating throughout an entire meal was individually observed for at least three meals before and after training. Each bite of food was recorded continuously within consecutive 1-min intervals. Finally, body weights were measured for each resident at least monthly.

Trainer behavior. Probes of trainer behavior were conducted during 25 training sessions. These probes included observations of each of the seven trainers as well as training sessions involving each resident during each mealtime component trained. Probes consisted of observations of a trainer presenting trials throughout the entire session according to the definitions described earlier. A trial began when an initial verbal instruction was provided and ended when the resident completed the target behavior or when the trainer presented a consequence (see *Family-style training*). The staff trainers were unaware of the specific behavior categories that were being coded, although they were aware of being observed.

Reliability

Resident behavior. Reliability observations of all behaviors occurred via two observers simultaneously but independently making observations. As a control against observer drift (Kazdin, 1977), two observers were not trained until at least half way through the project, and then they were trained using the same procedures as used in the initial observer training. For the primary behaviors, reliability checks occurred on 29% of all observations and during each experimental condition for each resident. Overall, occurrence, and nonoccurrence reliabilities for independent responding were calculated by dividing the number of agreements by number of agreements plus disagreements and multiplying by 100. An agreement was scored only if both observers made the same recording on a specific step. Overall reliability for independent steps was at least 93% (mean 97%) for each of the four residents for each of the three behavioral

components. Occurrence reliability averaged 92% for the premeal and meal components and 65% for postmeal. The lower figure for the postmeal component was due to a low frequency of recordings, in which the number of disagreements deflated the average. For instance, throughout all reliability checks there was only one occasion on which there was more than one disagreement between observers on the occurrence of independent responding. Nonoccurrence reliability for independent responding averaged 87% for the premeal component, 94% for mealtime, and 96% for postmeal.

Reliability checks for observations of communication and messiness occurred during at least 33% of all observations including before and after family-style training. Reliability was assessed on an interval-by-interval basis. For communication, there were no disagreements regarding the occurrence or nonoccurrence of manual signing or word vocalizing throughout the study. For mealtime messiness, using the same formula as with independent responding, overall reliability for inappropriate eating averaged 93%, occurrence averaged 83%, and nonoccurrence 87%.

For rate of eating, reliability checks occurred on over 20% of all observations, including checks for each resident as well as before and after training. Because the observation system used to monitor rate consisted of a frequency count within continuous 1-min intervals, a different method was used to assess reliability than that used with the other observation systems. Specifically, the number of agreements and disagreements between observers regarding the number of bites per 1-min interval were assessed. On 79% of all intervals, the observers did not disagree on the total number of bites, on 18% they disagreed by one bite, and on 3% (5 out of 151 intervals) they disagreed by two bites.

Trainer behavior. Reliability checks for observations of trainer behavior were conducted on over 25% of all observations and reliability was evaluated on a trial-by-trial basis. For the occurrence and nonoccurrence of appropriate instructions, there

were only two disagreements between observers across all trials for all checks. For appropriate prompts, there were only four disagreements during the entire study, and for appropriate consequences, three disagreements.

Experimental Procedures

Baseline. Baseline consisted of 5–10 min assessments of resident skills in performing the three mealtime components. Each resident was assessed individually in the dining room at a time prior to the regular supper meal. Assessment began with the premeal component by the assessor escorting the resident into the dining room and stating “(Name), it’s time for supper.” After the initial statement, the assessor waited 5 s. If the resident independently performed a behavior within the first subcomponent of the premeal component within the 5 s, the assessor then waited 5 s for the resident to initiate another step. As long as the resident independently completed subcomponent steps, the assessor did not interact with the resident. If the resident failed to complete a step independently within 5 s of the assessor’s initial statement or following a given step, then a verbal directive to complete the subcomponent was provided, e.g., “(Name), set the table.” This directive was provided a maximum of one additional time if the resident failed to perform an independent step of the first subcomponent within the allotted 5 s.

If all steps to the first subcomponent were completed by the resident, the assessment on the second subcomponent began without any statement by the assessor. However, if 5 s elapsed without any steps performed within the second subcomponent by the resident, then the assessor told the resident “(Name), get yourself ready.” This directive could be provided only once during the second subcomponent. If the resident did not progress through the first subcomponent, the assessor blocked the resident’s view of the dining table while an assistant set the table to prepare for assessment of the second subcomponent. The assessor then escorted the resident to the table, guided him or her in sitting down, and initiated the assessment of the second subcomponent with the directive

“(Name), get yourself ready.” The assessment continued until all remaining subcomponent steps were completed or 5 s elapsed with no initiation of a step by the resident following the one directive or a preceding step.

Assessment of the second component, mealtime, began when the assessor held a bowl of food within reach of the resident, who was seated at the table. The assessor then waited 5 s for the resident to initiate a step of the first subcomponent of mealtime behaviors. If a step did not occur, the assessor gave the directive “(Name), take the food.” Assessment of the first subcomponent of mealtime behaviors was terminated when the resident completed both steps of the first subcomponent or failed to initiate a step within 5 s of the directive or following the preceding step if the directive had already been provided. For the second and third subcomponents of the mealtime component, the assessment procedure was the same as with the first subcomponent. That is, the resident was given the opportunity to initiate the steps independently and a maximum of one directive was provided for each of the two subcomponents if needed.

The same assessment procedures as described for the premeal and meal components were used for the postmeal component. However, because there were no subcomponents for the latter component, a maximum of three directives, e.g., “(Name), let’s clean up.” could be provided during the assessment. Hence, for each of the three main components, a maximum of three directives could be provided by the assessor contingent on the resident’s performance.

As noted earlier, baseline assessments occurred at a time separate from the normal supper period. Assessments during the actual meal were prohibited because the residents ate institution-style in which food was delivered to the dining room on compartmentalized food trays and the staff set the table. During assessments, snack foods such as dry cereal were provided in the serving bowls. Throughout all assessments, no feedback was provided to the residents regarding their performance on the target steps although praise was presented for attending to the assessor.

Family-style training. Residents were trained individually (three experimenters and four staff participated as trainers at various times) in the dining room at a time separate from the regular supper. The training strategy initially involved two trainers and consisted of a general instruction, a specific instruction, modeling with a specific instruction, and manual guidance with a specific instruction, with the application of these procedures contingent on resident performance. Target steps were trained in a forward chaining format and contingent reinforcement was provided for appropriate performance.

A training session was initiated by the primary trainer escorting the resident to the dining room and stating that it was time to eat. If the resident failed to initiate the first step of the table setting subcomponent independently within 3 s, the trainer provided a general instruction that identified the subcomponent the resident should be working on, e.g., "(Name), set the table." If the student did not initiate the appropriate step within 3 s the trainer provided a specific instruction to perform the behavior, e.g., "(Name), go to the preparation table." The resident was given 3 s to initiate the target behavior, otherwise a modeling procedure began. The modeling involved the primary trainer giving the secondary trainer a specific instruction to perform the behavior that the resident had failed to initiate and then the secondary trainer completing the step. The primary trainer attempted to guide the resident's attention to the model as the latter performed the behavior. The primary trainer gave the model a small snack and descriptive praise following performance of the target step. The primary trainer then repeated the specific instruction to the resident. If the resident did not initiate the behavior within 3 s, a specific instruction was provided and the primary trainer manually guided the resident's movements, in a manner similar to that described by O'Brien, Bugle, & Azrin (1972), to complete the step.

The first time a resident completed a step at a given prompt level (e.g., with a specific instruction) a contingent snack was provided along with descriptive praise. If the resident later required a

more intensive prompt (e.g., manual guidance) to complete that same step, then no snack or praise was provided. If the resident later performed that step with the same level of prompt that had been used previously, he or she was given praise only. Hence, contingent snacks were provided only when the resident completed a step for the first time at a given prompt level (or if the resident completed the step independently following the general statement that it was time to eat).

When a resident demonstrated a training step two consecutive times independently following the statement that it was time to eat, training was introduced on the next subcomponent step. Throughout the training sequence, if the resident failed to complete a step earlier in the chain that had previously been mastered, then the trainer conducted the prompting sequence as a remedial procedure with that step until the resident performed the earlier step one time independently. When inappropriate behaviors occurred, the trainer manually interrupted the action and provided corrective verbal feedback. After each training session, the trainer spent a few minutes with the resident in a preferred activity, such as going for a walk. Additionally, once a resident reached the final step of the mealtime component, that resident was allowed to consume the snack that he or she served on the plate.

After 2 weeks of individual training with two residents on the first component, it appeared that the modeling procedure was counterproductive because residents did not respond to the modeling in terms of performing a step following the model's demonstration. Also, this procedure required two staff trainers. The modeling strategy was discontinued and all additional training involved only one trainer.

The number and duration of training sessions conducted for each resident to reach criterion (i.e., completing all steps independently on at least two consecutive attempts) on a given component varied across residents and components (Table 2).

Posttraining. The posttraining condition consisted of assessments of resident skills conducted in a manner identical to baseline.

Table 2
Training (in min) Required to Reach Criterion

Resi- dent	Premeal		Mealtime	
	No. of ses- sions	Length of sessions mean (range)	No. of ses- sions	Length of sessions mean (range)
Rick	17	8 (5-15)	6	9 (4-15)
Terry	87	11 (1-37)	43	6 (3-16)
Ann	48	4 (1-10)	8	5 (2-8)
Rob	19	5 (2-11)	17	4 (2-7)

Follow-up. Follow-up observations were conducted during actual supper meals at periods ranging from 6 to 16 weeks following completion of the posttraining condition. During these meals, conditions were the same as during baseline assessments with the following exceptions. First, the actual supper food was used. Second, once a resident set the table and sat down, food was not placed on the table to begin the mealtime component until all four residents were at the table. Third, residents were not allowed to begin eating until all residents had served themselves. Finally, the postmeal component was not assessed because residents had not been trained on that component and it was believed that the probability of potential disruption (e.g., spilled food) during the actual supper regime was too prohibitive.

During the interval between the posttraining condition and follow-up observations, the daily supper meal was provided to the residents by their regular institutional caregivers in a family-style format. The caregivers were familiar with the family-style process because they had participated in training the residents. Family-style eating was initiated when the last two residents completed the posttraining condition. At that point the supervisor requested that the staff use the family-style format, and the supervisor provided the necessary dishes and utensils. Previously, it would have required more staff time to serve the food from the serving bowls, pass the food between residents, etc. (i.e., in contrast to the efficiency of the compartmentalized food tray delivered to each resident) because

the residents did not have these skills. Also, prior to that point, there was essentially no "community" within which to use the family-style skills in that a given resident would not have the skills to receive a serving dish, for example, even if another resident did have the skills to pass the dish.

Experimental Design

To evaluate effects of the training program on the residents' family-style eating skills, a multiple probe design across behaviors and residents was used. Training was first initiated with Rick and Terri (each trained individually) for the premeal component, then with Rick and Terri for the mealtime component, next with Ann and Rob for premeal, and finally with Ann and Rob for mealtime. Training was not conducted with the postmeal component, which served as a control over time and repeated assessments. To evaluate effects of the training program on the secondary resident behaviors, probes were conducted during actual meals prior to training and after family-style training.

Social Validity and Acceptability Measures

To determine the social validity of the changes in the residents' mealtime skills, eight institutional employees who were not involved in the project (e.g., secretaries) viewed two videotapes of the residents during actual supper meals; one filmed before family-style training, showing the institutional-style format, and one after training showing the residents eating family-style. Before viewing the tapes, a brief explanation was provided in terms of watching two different mealtime situations and comparing the observed activities for evaluation purposes. Each tape was shown for 5 min, with half of the persons viewing the pretraining tape first and half viewing the posttraining tape first. Raters were not informed that one tape was pretraining and one was post. Before viewing the tapes, they were asked to read a 6-item questionnaire that was modeled after that reported by VanBiervliet *et al.* (1981) and then to complete the questionnaire after watching the tapes. Three of the questions pertained to family-style skills directly targeted by the training program (resident

independence in serving, setting the table, and passing food). The other three questions pertained to characteristics previously reported as benefits when changing from an institution-style to a family-style mealtime as described previously (eating neatly, interacting with peers, and appearing as more responsible persons), although not targeted by the training program in this study.

To assess staff acceptance of the training program, the four staff who functioned as trainers were requested to complete a brief questionnaire. The questionnaire consisted of six questions pertaining to: the amount of interference the program caused with other responsibilities, whether it would be helpful to the staff to implement the program with other residents, how important the family-style skills were to the residents, how enjoyable the program was to conduct relative to other programs, how useful the program was in teaching the residents to set the table, and how useful the program was in teaching residents to serve and pass the food. There were three response choices for each question (e.g., very useful, somewhat useful, not useful). To ensure staff anonymity, each person returned the form to the supervisor's mailbox.

RESULTS

Primary Behaviors

Results of the assessments of family-style eating before and after residents participated in the training program are presented in Figure 1. For the first two residents, Rick and Terri, percentage of steps completed independently during pretraining assessments of the premeal and mealtime components was very low, averaging (mean) less than 9%. Following training, each resident increased his or her mean percentage of steps completed independently to above 76% for each component. Terri's performance during posttraining assessments on the mealtime component was initially variable but then stabilized at a mean of 98% for the last four assessments. For the control component, postmeal, there were small increases in percentage of steps completed independently after Rick and Terri had received training in the premeal or mealtime

components, although the increases never reached a level near the posttraining levels for the two trained components.

Results for the second two residents, Rob and Ann, were very similar to those for the first two. Again, levels of independent steps during pretraining assessments for the premeal and mealtime components were low, averaging below 17%. Posttraining means increased to above 92%. For the postmeal component, there was no consistent change in Rob's performance whereas Ann gradually increased her independent responding, particularly after she had received training first on the premeal component and then again on the meal component.

Follow-up assessments conducted during actual supper meals indicated all residents maintained their independent performances at levels well above pretraining levels and within the ranges for posttraining. For the premeal component, follow-up averages for Rick, Terri, Rob (one assessment only), and Ann were 88%, 88%, 100%, and 100%, respectively. For the mealtime component, respective averages were 92%, 86%, 78%, and 100%.

Secondary Behaviors

Resident variables. For *communication*, there was no occurrence of any word vocalization or manual sign by any of the four residents during any of the actual meals that were observed. For mealtime *messiness*, there were no consistent differences in the residents' inappropriate eating before versus after family-style training. Averaged across all observations, inappropriate eating occurred during 40% of the observation intervals prior to training, compared to 47% after training. Concerning the third secondary variable, *rate of eating*, there were also no apparent changes. Before training, residents ate at an average of 3.7 bites per minute whereas after training the average was 3.9. Finally, for the fourth secondary resident variable, results indicated resident *body weights* remained generally stable. By the end of training, two residents had remained within 1 lb of their weight at the beginning of baseline and two residents had gained 2 lb.

PERCENT INDEPENDENT RESPONSES

Trainer variables. The trainers consistently used instructions and consequences in an appropriate manner. Specifically, across all observations appropriate instructions and consequences occurred during 96% and 98% of the trials, respectively. For use of appropriate prompts, trainers were consistent during most of the trials but not as consistent as with instructions and consequences. Across all probes, appropriate prompts occurred during 69% of all trials.

Social Validity and Acceptability Measures

Comparisons of the pre/post videotapes of supper meals by naive persons indicated the following. First, for the skills specifically targeted in the study (serving food, setting the table, and passing food), all persons rated the activities in the posttraining tape as showing superior performance. Second, for the activities not directly targeted in the study, the ratings were inconsistent. For the two respective questions pertaining to mealtime neatness and social interactions, 63% of the raters (one more than half) rated the posttraining tape as superior. For the question concerning the situation in which the residents are treated as more responsible persons, 88% of the judges rated the posttraining tape as superior.

Results of the acceptability questionnaire indicated that generally the program was acceptable to staff. Three staff reported it would be very useful to implement the program with other residents and one said it would be somewhat useful (no staff reported that it would not be useful). Also, all four staff said it was very useful in teaching the participating residents to set the table and to serve and pass the food. Regarding how important it was for the residents to master family-style dining skills overall, all four said it was very important. When comparing this program to other training programs on the unit, three staff persons said it

was more enjoyable to conduct and one individual said it was no different than other programs. In contrast to these generally positive responses, when questioned on the amount of interference the program caused with other staff responsibilities, two staff reported the program interfered very much, three said it interfered a little, and one said it did not interfere (two persons marked two answers and wrote on the form that interference with other responsibilities increased when they were short-staffed).

DISCUSSION

Results demonstrated that the training program was effective in teaching institutionalized, profoundly retarded persons to eat in a family-style format. All four residents showed total or near-total independence in preparing the setting for their meal and eating the meal with their peers. Where independence was slightly less than total, the residents typically completed a nonattempted step as soon as a staff member instructed them to do so; hence, minimal staff effort was required to obtain family-style eating after training. Such improvement was observed in structured assessments as well as during the regular supper meal and maintained throughout the 16-week follow-up period. Also, the skill increases were obtained without detrimental weight changes of the residents and without negative impact on residents' rate of eating.

The acceptance of training programs by persons who are expected to carry out the procedures has been an area of recent concern in applied behavior analysis (Kazdin, 1980). Results of the acceptability questionnaire in this study indicated that, overall, the staff were quite supportive of the training program. The questionnaire results were supported by informal experimenter observations that indicated the staff were still conducting the supper meal in a family-style format 7 weeks after the

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Figure 1. Percentage of steps of each of the three mealtime components (premeal, meal, and postmeal) completed independently by each of the four residents during each assessment for all experimental conditions. The top three panels present data for two residents (Rick and Terri) and the bottom three panels present data for the other two (Ann and Rob).

last formal follow-up check. The only negative feedback was that it was difficult for staff to manage their other mealtime responsibilities, particularly when their staffing pattern was lower than usual. Such results suggest that an extra incentive for staff who are working on certain normalization-type projects would be assistance in completing their more routinely assigned responsibilities.

In addition to the staff's acceptance of the training program, there was generally compliance with the requested training procedures. Trainers were almost perfect in their use of appropriate instructions and consequences, and used appropriate prompts on over two-thirds of the training trials. The lower compliance level with the prompts generally was due to trainers not precisely following the less-to-more intensive sequence (e.g., two specific instructions given instead of just one prior to using manual guidance). Because each resident acquired the target skills after the training procedures were implemented, despite less than 100% trainer proficiency, the program can be considered successful with some flexibility in implementation. As Peterson *et al.* (1982) discuss, such flexibility does not detract from the utility of the procedures provided the alterations are described. However, these results also support the conclusions of Peterson *et al.* in that more attention needs to be given to monitoring the independent variable in behavior analysis research in order to precisely analyze functional relationships.

The multiple probe design allowed for demonstration of functional control of the training program. In only one case with one resident (Ann) and one behavioral component (postmeal) was there significant improvement independent of the training program. A likely explanation for Ann's improvement in this instance was that because the postmeal activities were almost the same as those in the premeal component, except in reverse order, there was generalization across behaviors following training on the premeal component.

The ratings of the videotapes supported the effectiveness of the training program in that all raters scored the posttraining tape as reflecting superior performance on those skills that were directly

trained. Also, the ratings indicated a more general support for the family-style approach over the traditional format in that the former process was rated by all but one of the raters as depicting a situation in which residents were treated as more responsible persons. However, as with the more systematic behavioral measures, the videotape ratings did not show superiority of the family-style approach in terms of increased peer communication during the meal or improved mealtime neatness. These latter results are in contrast to results of previous research (VanBiervliet *et al.*, 1981, Melin & Gotestam, 1981). A likely explanation for the contradictory findings is that the earlier investigations involved higher-skilled clients with more advanced language and social skill repertoires. In this respect, VanBiervliet *et al.* indicated that they did not expect that the increase they observed in communication would occur with lower-skilled persons as a result of implementing a family-style regime.

If the differences in the results just noted are in fact due to the different subject populations investigated, then these findings suggest that caution should be taken when assuming multiple benefits for lower-skilled institutionalized individuals when normalizing certain service activities. A more appropriate assumption appears to be that participants will acquire and use only those skills that are directly trained via structured programs. This, of course, does not imply that there are not other, perhaps more difficult to measure, benefits of providing various institutional activities in a more normal manner such as residents appearing to be treated as more responsible persons. Nevertheless, we agree with others (e.g., McCarver & Cavalier, 1983) that continued research is warranted to determine the benefits that result when services are normalized, and specifically under what conditions those benefits do and do not occur.

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