

DEVELOPING PROPER MEALTIME BEHAVIORS OF  
THE INSTITUTIONALIZED RETARDED<sup>1</sup>

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The institutionalized mentally retarded display a variety of unsanitary, disruptive, and improper table manners. A program was developed that included (1) acquisition-training of a high standard of proper table manners and (2) maintenance procedures to provide continued motivation to maintain proper mealtime behaviors and decrease improper skills. Twelve retardates received acquisition training, individually, by a combination of verbal instruction, imitation, and manual guidance. The students then ate in their group dining arrangement where the staff supervisor provided continuing approval for proper manners and verbal correction and timeout for improper manners. The results were: (1) the trained retardates showed significant improvement, whereas those untrained did not; (2) the trained retardates ate as well in the institution as non-retarded customers did in a public restaurant; (3) proper eating was maintained in the group dining setting; (4) timeout was rarely needed; (5) the program was easily administered by regular staff in a regular dining setting. The rapidity, feasibility, and effectiveness of the program suggests the program as a solution to improper mealtime behaviors by the institutionalized mentally retarded.

Mentally retarded residents of institutions display a wide range of disruptive, unsanitary, and improper table manners. The prevalence of the problem is indicated by the large number of reports describing possible solutions (Barton, Guess, Garcia, and Baer, 1970; Bensberg, Colwell, and Cassel, 1965; Bensberg and Slominski, 1965; Henriksen and Doughty, 1967; Larsen and Bricker, unpublished; O'Brien, Bugle, and Azrin, 1972; Patterson and Overbeck, 1968; Spradlin, unpublished; Whitney and Barnard, 1966; and Zeiler and Jervey, 1968). Training may be considered as having two components: (1) acquisition-training of proper self-feeding

skills, or (2) procedures for motivating continued performance of previously acquired skills. Previous reports with detailed procedure and data specification have emphasized one or the other with little or no procedure specification or data for the non-emphasized portion of the program (Barton *et al.*, 1970; Henriksen and Doughty, 1967; Zeiler and Jervey, 1968). Therefore, a need exists for an overall program that provides such specification for both aspects of training. Another characteristic of previous acquisition-training reports that present procedural and data specification has been an emphasis on training the correct use of the spoon with little or no mention of acquisition-training procedures for other eating skills (O'Brien *et al.*, 1972; Zeiler and Jervey, 1968). This limitation may have been required by the extreme level of retardation of the students in these studies, but in any case, a training program concerned with a variety of acceptable eating skills is needed. Also likely necessitated by the extreme level of retardation has been an emphasis on the use of manual guidance as an acquisition-training procedure to the virtual exclusion of other

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methods such as verbal instruction or imitation. An overall procedure that includes verbal instruction and imitation as well as manual guidance might increase the efficiency of training with residents who are not quite as retarded. Normal institutional procedures for motivating proper mealtime behavior usually emphasize the use of verbal reprimands for errors or removal of the resident from the meal. An attractive and alternative strategy, such as used by Henriksen and Doughty (1967), would be also to provide continuous positive reinforcement for the correct mode of eating.

The present study evaluated a more comprehensive program by including an acquisition-training phase as well as a maintenance phase, by providing detailed procedural description and data results for each of these phases, by training a great variety of proper eating skills in addition to the use of the spoon, by incorporating verbal instructions and imitation rather than remaining limited to manual guidance, and by relying primarily on the use of positive reinforcement during maintenance rather than on verbal reprimands or removal from the meal. In addition, the present study included a within-subjects experimental design, as have previous reports, but also included a control group providing a between-subjects analysis of the effects of the mealtime program.

#### EXPERIMENT I: A MEALTIME BEHAVIOR PROGRAM TESTED IN A CONTROLLED SETTING

Experiment I was an evaluation of a mealtime behavior program designed for use in normal institutional dining settings but was tested in a controlled setting that permitted more standardization and uniformity of the procedure. Only persons directly involved in the program were present, thereby eliminating the many distractions that would be present in a normal dining room. In addition, the same persons were scheduled to perform the same procedures daily, thereby reducing the variability that would be

caused by daily assignment of different attendants. Also, in order to avoid the inherent variability in responding resulting from the normally great variety of different meals, the same standard meal was used throughout the experiment.

#### METHOD

##### *Subjects*

The staff of a ward for the mentally retarded in a State hospital designated those residents who they felt were in need of improvement in mealtime behavior. Because the study was performed in another building, non-ambulatory residents were excluded. Also, residents who were on special diets that would limit the range of food to be eaten were excluded. Eleven residents were so selected, six males and five females. As listed in the hospital records their mean age was 31 yr and mean IQ was 39 with a range from 16 to 75. They seldom used utensils other than the spoon, spilled food on themselves and their surroundings, and often displayed grossly improper table manners such as handling food, stealing food from other residents, eating food previously spilled on the chairs, the floor, *etc.* Ten of the residents were roughly paired on the basis of pre-test scores, sex, and IQ, and were randomly assigned to one of two groups, as was also the eleventh resident: Training Group (N = 6) and No-training Group (N = 5).

##### *Mealtime Responses*

The response classification for the mealtime behaviors is presented in Table 1. The responses were classified into three categories: "Self-Feeding Responses", "Preparatory-Feeding Responses", and "Other Inappropriate Responses". A Self-Feeding response was any response that moved food from the container in which it was served. To be correct, each Self-Feeding response required two characteristics: the response be appropriate for the type of food being moved and the response be performed in a proper manner.

Table 1

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 Correct Self-Feeding Responses

Spoon Response: Moving appropriate food from the container (*e.g.*, pudding, soup) with the spoon held in one hand, by the handle, right side up and without spilling, except back into the container from which the food was taken.

Glass Response: Moving the glass with one hand and without spilling.

Fork Response: Moving appropriate food from the container (*e.g.*, meat, beets) with the fork held in one hand, by the handle, right side up and without spilling, except back into the container from which the food was taken.

Hand Response: Moving appropriate food from the container (*e.g.*, bread, cookies) with one hand and without dropping the food or any part of it.

## Incorrect Self-Feeding Responses (illustrative)

Eating potatoes with hands

Spilling iced tea

Eating bread with a fork

Picking up meat with hands

Eating butter with a spoon

Moving the glass with both hands

Eating pudding with a fork

Spilling beets from the fork onto the table

Moving potatoes with the spoon upside down

Eating green beans with a spoon

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## Correct Preparatory-Feeding Responses

## Meat Cutting:

1. Separation of the meat with the fork held in one hand, by the handle, sideways and the meat separated by the lower side of the fork.
2. Separation of the meat with the knife held right side up, by the handle, in one hand and the fork in the other with the use of the knife for cutting and the fork for holding.

Napkin Response: Movement of the napkin to wipe food off the person, a utensil or the table, or placed in the lap or suspended from the collar.

Butter Transport: Movement of the butter with the knife from the pat to the bread or any vegetable.

## Incorrect Preparatory-Feeding Responses (illustrative)

Cutting meat with a spoon

Moving butter to the bread with a fork

Placing the napkin in the shirt pocket

Cutting meat while holding the meat with the knife and slicing with the fork

Dunking the napkin into food on the plate

Slicing meat with the knife without the meat being held with the fork

Chewing on the napkin

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## Other Inappropriate Responses (illustrative)

Any other response that would be determined improper if performed by a customer in a restaurant.

Drizzling: Food being removed from the mouth without being placed in a spoon (*e.g.*, dripping pudding from mouth, removing chewed meat from mouth into hand).

Licking: Licking food from anything other than spoon, fork or lips (*e.g.*, licking fingers, plate, table top).

Oversize bites: Filling mouth with food such that chewing could not be done with the mouth closed.

Touching food: Any contact between hands and food that was not a self-feeding response (*e.g.*, shoving beets onto fork with fingers, patting jello with hands).

Other examples: Throwing utensils, placing a foot on the table, rubbing spilled food on the skin, eating food previously spilled onto the floor, stealing food from another's tray, screaming, pushing the table forward, holding meat with hands while cutting.

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For the meal in Experiment I, the appropriate response for each food was listed. Otherwise, the trainer would determine this before each meal. Any response that moved food from the container in which it was served in any manner other than defined as correct in Table 1 was scored as an incorrect Self-Feeding response. Correct Preparatory-Feeding responses are also presented in Table 1. For the two types of "meat-cutting" responses, the trainer decided before each meal which one or whether both were appropriate for the meat in that meal. Incorrect Preparatory-Feeding responses were any responses that separated the meat, moved the napkin, or transported the butter in any manner other than those defined as correct in Table 1. Other Inappropriate Responses were additional incorrect responses that were neither Self-Feeding nor Preparatory Feeding responses and for which there was no correct performance.

#### *Recording and Reliability*

The mealtime behaviors of the residents as presented above were recorded during all phases of the program. During the Pre- and Post-Tests, the observer recorded every response on a tape recorder. During the Acquisition-Training Phase, each response was similarly recorded by the trainer. During Maintenance meals and the Follow-Up meal, however, more than one resident was present, thereby negating the possibility of recording each response of each resident. During such group conditions, the observer used a time-sampling recording procedure whereby a different resident was observed each 15-sec period in a predetermined order. The observer recorded the first response begun and completed within that 15-sec period. If no response occurred, such was recorded and the observer advanced to the next resident. In addition, during the Maintenance and Follow-Up meals, the trainer recorded each incorrect response he observed.

To increase the validity and reliability of recording, several procedures were executed. Dur-

ing most of the study, one or both of the experimenters were present within the setting. During the pre- and post-test, two observers sat at one side of a table directly opposite from the side on which the resident was eating. To ensure their independence from one another, the observers were separated by a room divider and each wore earphones supplying masking noise. To minimize recording "bias", the observers selected were persons who normally worked in a different setting, had no other involvement with the residents in the study, and had no knowledge of whether the residents were in the Training or No-Training group. To test for the reliability of recording, both observers were present on one-third of the pre- and post-tests. The per cent agreement by these two independent observers was 99.5 for Pre-Tests and 98.5 for Post-Tests. A review of a sample of the recorded tapes of the Acquisition-Training sessions resulted in the experimenter's perfect agreement with the records of the trainer. An analysis of the different records kept by the trainer and the observer during Maintenance and Follow-Up meals showed that the observer only once recorded an error that the trainer himself had not recorded.

#### *Procedure*

The sequence of the procedure was a Pre-Test meal for both the Training and No-Training groups, Acquisition-Training of proper mealtime responses for the Training Group, meals under the Maintenance procedure for the Training group, and a Post-Test and Follow-Up meal for both groups.

#### *Pre-Test*

Before Acquisition-Training, the residents were administered a Pre-Test meal. Each resident, individually, sat at a table and the food was served before him with utensils placed in a proper manner. He was simply instructed to begin eating and allowed to do so until the food had been eaten or 1 hr had elapsed, whichever occurred first.

### *Acquisition Training*

Training meals were scheduled once daily. The types of responses scheduled for training were the Self-Feeding and Preparatory-Feeding responses (Table 1) that were not observed to have been performed correctly at least once during the pre-test (*e.g.*, eating with a fork, drinking from a glass, cutting meat, placing a napkin in the lap). Acquisition-Training meals included only one resident and one trainer in a room devoid of extraneous factors that might distract residents.

To motivate correct responding by the students, verbal praise was given for each correct response. To decrease incorrect responses, such responses were prevented from getting food into the mouth. An Interruption-Extinction procedure was performed for each incorrect response and consisted of the trainer's saying "No!" and returning the food to the container or wiping the hand or utensil with a napkin, if necessary. The timeout described below (removal of food for 30 sec) was not used during Acquisition Training.

The trainer provided three types of assistance in the following sequence: (1) Instruction Only, (2) Imitation + Instruction and (3) Manual Guidance + Instruction. A trial began when the trainer instructed the student to perform one of the responses and the trial ceased when an error occurred or when food was brought to the resident's mouth. For each type of response trained, Instruction Only was used on the first trial. Instruction Only consisted of the trainer's telling the student exactly how to perform the response and included verbal praise for doing so, suggestions for improving the skill and was, generally, responsive to what the student was doing. An example of the trainer's use of Instruction Only to assist a correct fork response would be as follows: "John, eat some beets. Pick up the fork. Hold it by the handle—move your hand further back . . . good! Now, get some beets on the fork. Hold your hand up higher. Now push . . . good! Now bring the fork to your mouth. Good!" Assistance by Imitation + Instruction included in-

struction and, in addition, the trainer performed the skill while instructing the student to do so. The student was also told to watch the trainer and to do what the trainer was doing. An example of Imitation + Instruction to train a meat cutting response would be as follows: "John, cut your meat. Pick up your fork, like this. No, use your other hand and hold it by the handle. See, like this. Good. Now watch. Pick up the knife by the handle, like this. Good. Now, take the fork, hold it like this over the meat . . . Good. Now into the meat. Good. Pick up your knife by the handle, like this. Good. Now bring it over to the meat, like this. No, John. Watch me. Bring it over . . . Good. Now cut like I am. Good!" The training method of Manual Guidance + Instruction consisted of the trainer's using verbal instruction and in addition, the trainer held one or both hands of the student and manually guided the student through the correct performance of the skill. Initially, the trainer guided each step in the skill. As the student improved, the trainer gradually reduced the amount of assistance provided. When an error occurred on any trial, the following trial was assisted. The type of assistance for the following trial was changed to the next type in the sequence with more assistance or remained at Manual Guidance + Instruction. If an error occurred on a non-assisted trial, the next trial was assisted with the type of assistance last used. When any trial was performed correctly, the trainer returned all utensils to their appropriate placement and simply told the student to perform the skill and provided no assistance. When the student performed a response correctly on three unassisted trials in succession, that type of response was considered learned and training of that response ceased. Each resident continued in Acquisition-Training until all responses scheduled met this criterion. On the next meal, the resident ate under the Maintenance procedure.

### *Maintenance*

The Maintenance procedure was designed to ensure that the resident continue to use the

proper eating skills he learned, rather than the improper skills displayed before Acquisition Training. Motivation to do so was provided by verbal praise, reprimands, warnings and, if necessary, removal of the food from the resident's reach for 30 sec.

All students who had completed Acquisition Training ate together, seated on one side of a long table in a dining room. The trainer began each Maintenance meal by explaining the Maintenance procedure and the correct skill to use with each type of food. Throughout the meal, the trainer continuously walked around the table observing the residents and providing verbal praise for proper table manners. When an error was observed, the trainer said "No!" explained the error, and instructed the resident as to the correct performance of the skill. The trainer reminded the resident that if that error occurred again, his food would be removed. If the same error did occur, the trainer removed the food from the reach of the resident (timeout) for 30 sec, after which it was returned. The trainer was, therefore, constantly interacting with the residents, by praising them for correct performance, explaining errors, and instructing them as to improvements.

#### Post-Test

When a resident had completed Acquisition Training and three Maintenance meals, he was given a Post-Test the following day. The No-Training residents were scheduled for Post-Tests in a manner ensuring that the average time from Pre- to Post-Test was the same for both groups. The Post-Test was always identical to the Pre-Test.

#### Follow-Up-Meal

The students of the Training Group later returned to the experimental setting and ate one meal together with Maintenance in effect. On the following day, the No-Training subjects ate under identical conditions without Maintenance. This comparison evaluated the residents under more normal eating conditions and, with Main-

tenance for the Training Group, was analogous to their future normal eating conditions.

## RESULTS

Figure 1 presents the Pre-Test, Post-Test, and Follow-Up meal scores for the residents of both the Training and No-Training groups. The scores presented are the percentage of the total mealtime responses that were recorded as incorrect. The Training Group improved from a Pre-Test score of 33% errors to a Post-Test score of 6% errors, a statistically significant improvement ( $P < 0.025$ ), Wilcoxin Matched-Pairs Signed-Ranks Test, Siegel, (1956). (This and all subsequent statistical tests are one-tailed due to a prediction of improved scores resulting from the program.) The No-Training Group, however, showed no improvement and scored 29% errors on both Pre- and Post-Test. Analysis of the individual residents showed that all six residents of the Training Group improved from Pre- to Post-Test. The difference between the Post-Test score for the Training and No-Training groups was also statistically significant ( $P <$

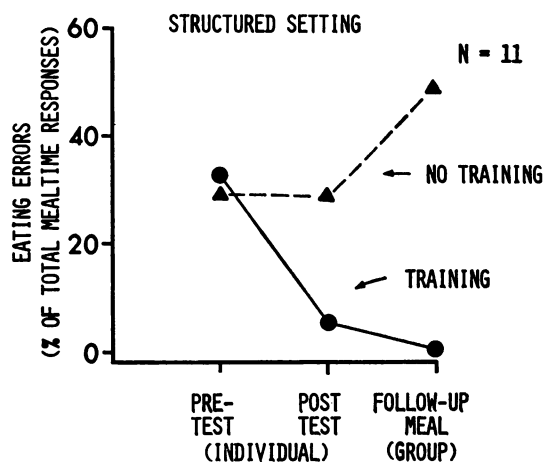


Fig. 1. The percentage of mealtime responses performed improperly by institutionalized mental retardates in the structured setting of Experiment I. During the Pre- and Post-Test, each retardate ate one meal alone. The Training Group received Acquisition Training and at least three Maintenance meals between the Pre-Test and Post-Test. Two weeks after the Post-Test, both groups ate one Follow-Up Meal in a more normal group dining setting, with the Training Group under the Maintenance procedure.

0.001, Mann-Whitney U Test, Siegel, 1956). In the group Follow-Up meal, the Training Group scored 1% errors (five of the six students scoring 0) whereas the No-Training group scored 49% errors ( $P < 0.002$ , Mann-Whitney).

On the Pre-Test, the criterion for judging a type of response (*e.g.*, drinking from a glass, cutting meat) as not requiring Acquisition Training was that the student correctly perform that type of response at least once out of the many attempts. Even with this very liberal criterion, the students still required Acquisition Training for a mean of 2.5 response types of the total seven Self-Feeding and Preparatory-Feeding responses, with a range of one to four.

During Acquisition Training, the criterion of successful acquisition was reached in a mean of 1.8 meals per student. The range was one to four meals.

A trial-by-trial analysis of the Acquisition-Training phase showed that the Instruction-Only procedure was used for 80% of the assisted trials, Imitation + Instruction for 7% and Manual Guidance + Instruction for 13%. All of the responses trained improved on the Post-Test.

During the three Maintenance meals following training, the mean number of errors per resident per meal was 1.2. On the average, therefore, the trainer needed to warn a resident of the penalty only 1.2 times per meal. The mean number of timeout penalties used was 0.2 per resident per meal, or only once in five meals.

## EXPERIMENT II: THE MEALTIME BEHAVIOR PROGRAM TESTED IN A NATURAL SETTING

The present experiment attempted to evaluate the mealtime behavior program in a natural institutional dining room with its normal constraints and interfering incidents. Throughout the experiment, the normal hospital meals were used, rather than the standard meal used in Experiment I. In addition, the normal staff members conducted the program, rather than special trainers. Also, the program was conducted dur-

ing all three meals of each day, rather than one meal a day as in Experiment I.

## METHOD

### *Subjects and Mealtime Responses*

Twelve mentally retarded residents of the same State hospital were chosen by the ward staff as in need of improvement. Their mean age was 35 yr and mean IQ was 28 with a range of 10 to 45. Compared to the residents in Experiment I, in addition to their lower IQ, the residents of Experiment II engaged in more improper eating, were more frequently on special diets, and had a greater incidence of physiological disorders (*e.g.*, deafness, palsy, paraplegia). They were divided into six pairs roughly matched on the basis of pre-test score, age and IQ, and were randomly assigned to two groups, Training and No-Training. The scoring categories for the mealtime behaviors were identical with those in Experiment I.

### *Recording and Reliability*

During the Pre-Test, Post-Test, and Follow-Up meals, the same time-sampling recording procedure of Experiment I was used in which an observer observed each resident in rotation during successive 15-sec intervals. One observer was present at each of four tables, with three residents seated at each table. To assist the observers in separating the 15-sec periods, a clock was introduced to the dining room which sounded at intervals of 15 sec. (No responses of any resident were observed to indicate that the sound affected their behavior in any manner.) During Acquisition Training, the trainer recorded the type of response for which criterion had been completed, the type of response under training, the general progress, the type of assistance used, and the results of the last trial for each training meal. During Maintenance, and the restaurant analysis, the trainer recorded each error observed throughout each meal.

Assurance of the validity and reliability of recording was obtained in several ways: for the

Pre-Test and Follow-Up meals, the experimenter and one trainer from Experiment I walked about the dining room observing the responses of the students and the corresponding recordings of the observers. During Acquisition-Training meals, one trainer from Experiment I observed the procedure and recording of the staff trainer at each meal. Any disagreements, which were very few in number, were resolved by discussion and, ultimate consensual agreement. During all Maintenance meals before the one-month Follow-Up meal, there was supervision of the staff trainer at all meals and random checks by the experimenter during one-third of them. For the remaining Maintenance meals, random observations were made by the area supervisor, the observers in Experiment I, and the experimenter for about one-sixth of the meals. In addition, the experimenter discussed the procedure and recorded data each day with the staff supervisor.

#### *Procedure*

The general sequence of the procedure was similar to Experiment I. Both groups had a Pre-Test meal; the Training Group completed Acquisition Training and no fewer than three Maintenance meals; both groups had a Post-Test and an Immediate Follow-Up meal. Maintenance procedures were in effect for the Immediate Follow-Up Meal and all other meals subsequent to Acquisition Training for the Training Group. Similar testing meals were also scheduled at one month and three months following the Immediate Follow-Up Meal. In addition, normal customers in a restaurant were observed as they ate one meal, Restaurant Analysis.

#### *Pre-Test*

During the Pre-Test, the residents ate in their normal dining room, three residents at each table.

#### *Acquisition Training*

The Acquisition-Training procedure was virtually identical to that used in Experiment I except that one ward attendant trained one resident

at a time using the normal hospital meal and under the supervision of the trainer who had served in Experiment I. Another difference was that training of each response began by asking the resident to perform the response (*e.g.*, "Cut your meat.", "Eat with your fork."). If not performed correctly, the response was scheduled for Acquisition Training. In all, about 20 regular ward attendants served as trainers throughout the study.

#### *Maintenance*

The Maintenance procedure was the same as that used in Experiment I and was provided to students who completed training as they sat at four nearby tables in the dining room. One of the ward attendants performed the Maintenance procedure under the supervision of the trainer in Experiment I. Again, about 20 ward attendants served in this capacity throughout the study.

#### *Follow-Up Meals*

When the last of the six students in the Training Group completed Acquisition Training and three Maintenance meals, an Immediate Follow-Up Meal was given. This test was identical to the Pre-Test except that the six students of the Training Group were provided with Maintenance. Identical tests were scheduled at one month and three months following the Immediate Follow-Up Meal.

#### *Restaurant Analysis*

Two staff members who served as observers in both Experiments I and II had lunch at a local restaurant. Each observer chose two tables that he could easily observe and recorded the improper responses displayed by the customers who sat at these tables. In all, 12 customers served in this capacity, six for each observer.

## RESULTS

Figure 2 presents the scores of the Pre-Test and Follow-Up Meals for the residents of both the Training and No-Training groups. The er-



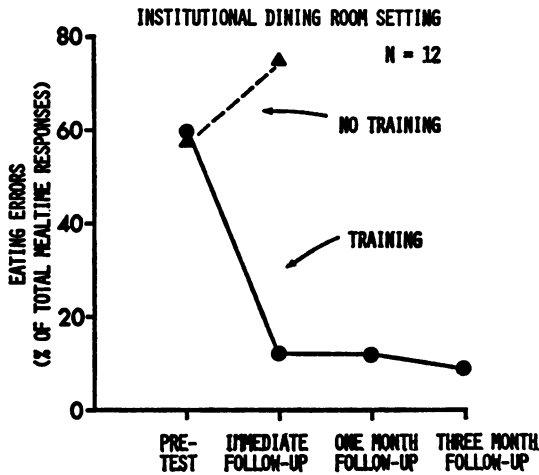


Fig. 2. The percentage of mealtime responses performed improperly by institutionalized mental retardates in their normal dining room setting. The Training Group received Acquisition Training and at least three maintenance meals between the Pre-Test and Immediate Follow-Up Meal. For the Training Group, Maintenance was in effect on all but the Pre-Test; Maintenance was never in effect for the No-Training Group. No recordings were taken of the No-Training Group after the Immediate Follow-Up Meal because the hospital staff had, independently, begun training them with the same program they had learned for training the Training Group.

rors of the Training Group improved from a Pre-Test score of 60% errors to the Immediate Follow-Up score of 12%. This improvement was statistically significant ( $P < 0.025$ , Wilcoxon). The No-Training Group, however, showed no improvement but rather increased errors from 59% to 75%. All six residents of the Training Group improved. The difference between the Immediate Follow-Up score for the Training and No-Training groups was statistically significant ( $P < 0.001$ , Mann-Whitney). On the One-Month Follow-Up Meal, the Training Group residents' score was identical to their Immediate Follow-Up score, 12% errors, and improved on the Three-Month Follow-Up score of 9 per cent errors. The No-Training residents were not available as such for the One-Month and Three-Month Follow-Up meals because the ward staff had, independently, begun training them with the identical program they had learned while training the training group.

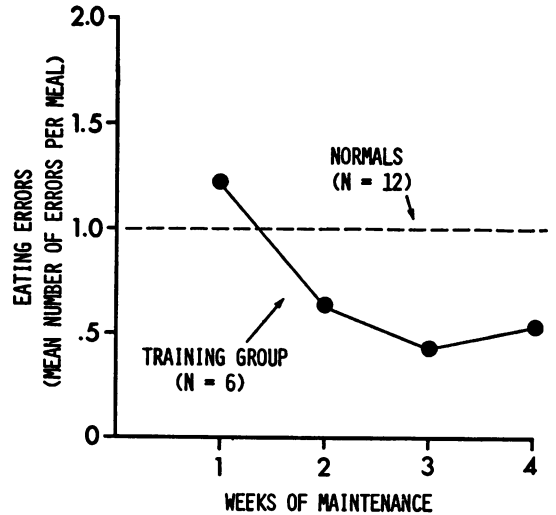


Fig. 3. The mean number of improper responses per meal performed by the Training Group of retardates and the mean number of improper responses performed by normals. The Training Group ate three meals daily in an institutional dining room under the Maintenance procedure and the normals ate one meal, as customers in a local restaurant.

Acquisition Training was required for a mean of 3.5 response types per student, with a range of one to six. Acquisition Training was completed in a mean of nine meals per student.

Figure 3 shows that the mealtime errors during the first four weeks of the Maintenance procedure decreased to a level of one error every other day per resident. The mean number of errors per customer per meal (dotted line) during the Restaurant Analysis was 1.0. The mean frequency with which the trainer needed to apply timeout was once every 12 meals, per resident.

## DISCUSSION

The mealtime training program produced a high standard of appropriate mealtime behaviors. The passage of time alone cannot account for the improvement because the time from Pre- to Post-Test was identical for the No-Training Group that showed no improvement. Other conditions that were similar for both groups were: sex, age, IQ, types of meals, dining room setting,

staff members present, times they ate, and other hospital programs unrelated to meals. The Acquisition-Training and Maintenance program itself is the one variable that differed systematically between the two groups. It can be concluded, therefore, that the improved table manners were produced by the Acquisition-Training and/or Maintenance program.

The variety of mealtime behaviors trained were of a high standard. The students learned to use a spoon and fork, cut meat with a fork and knife, use their napkin, choose the correct utensil for the different types of food, *etc.* Previous maintenance programs to reduce improper responses included concern with stealing food, eating without utensils, hitting other residents, *etc.* (Barton, Guess, Garcia, and Baer, 1970; Henriksen and Doughty, 1967). The present program was also concerned with eliminating such responses, but in addition, concerned itself with less-disruptive improper responses such as using a spoon instead of a fork to eat green beans, holding a glass with both instead of one hand, and using the napkin inappropriately. With the program, the residents made fewer errors on the average than normal customers in a restaurant, demonstrating the high standard of the skills trained.

Previously described acquisition-training programs have required more time than the acquisition-training portion of the present program. Zeiler and Jervey (1968) trained a child to eat with a spoon without assistance on 80% of the trials in 46 meals. Spradlin (*unpublished*) trained a child to eat with a spoon in 22 days. O'Brien, Bugle, and Azrin (1972) trained a spoon response to above 90% correct in 25 meals. Bensberg, Colwell, and Cassel (1965) trained five of six retardates to eat neatly with a spoon in seven months. Whitney and Barnard (1966) trained an adolescent to eat with a spoon without assistance in five days. As previously noted, the retardation level of the residents in the above studies may have been more severe than the level of most residents in the present study. That the level of retardation may be the determining fac-

tor is suggested in the findings of the present study that acquisition training required more than three times as many meals for the lower-level retardates in Experiment II than those in Experiment I. However, this comparison is confounded with other differences (*e.g.*, the lower-level residents had greater physical abnormalities and a greater number of responses requiring acquisition training; the trainers were learning to train during training meals; and the normal activity of the dining room was, at times, distracting to the student). But even under such circumstances, the lower-level residents of Experiment II completed acquisition training on the average in only three days.

The program was found to be administratively feasible in an institutional setting. Personnel requirements were minimal; at most, one staff member for the short-term period of Acquisition Training and one thereafter to supervise during each meal, as is normal practice. As the program continued in the institutional setting of Experiment II, it soon included 18 residents. Still, only one supervising staff member was needed at each meal. The training of a staff member to perform both Acquisition Training and Maintenance typically consisted of one or two short meetings, the reading of a seven-page description of the program (similar to that presented in the Method section) and, during two or three meals, performance of the procedures under the direct supervision of persons already trained. With such minimal demands, the program was effective, and, therefore, suggests itself as a feasible solution to the mealtime problems of the institutionalized mentally retarded.

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