The "Mini-Meal"—A Method for Teaching Eating Skills to the Profoundly Retarded

ABSTRACT. Reinforcement procedures have been shown to be effective in eliminating mealtime problems of the profoundly retarded. The present study extended those efforts by designing an overall "Mini-Meal" program that eliminated some of the unresolved training problems. One major deficit in evaluating previous training procedures is the absence of a comparison with a different "best effort" training procedure. The present study compared the new "Mini-Meal" program with an intensive control program. It was found that (1) all 11 residents in the Mini-Meal program learned to eat properly in an average of 5 training days; whereas, only 4 of 11 residents trained by the control program learned to eat properly; (2) after training, the residents continued to eat properly under a special motivation program; (3) after training, the residents ate as well as the hospital employees.

Previous Efforts

The institutionalized retarded often eat in a grossly improper fashion, partly because of their failure to learn how to eat properly, and partly because of inadequate motivation (O'Brien, Bugle, & Azrin, 1972). Intensive learning and motivation procedures have recently been developed and successfully used for teaching proper eating habits to the retarded (see Barton, Guess, Garcia, & Baer, 1970; Bensberg, Colwell, & Cassell, 1965; Berkowitz, Sherry, & Davis, 1971; Groves & Carroccio, 1971; Henrikson & Doughty, 1967; Whitney & Barnard, 1966). The major technique used in the acquisition phase of training has been manual guidance (see Larsen & Bricker, unpublished); whereas the major technique in the motivation phase has been removal from the meal (time-out) when errors were made.

In a report by O'Brien and Azrin (1972), a method was developed that required only two meals on the average, when applied to residents whose average IQ was about 40. When the method was used in the same study with a second group of retardates whose IQ averaged about 30, training required an average of 5 days.

In a subsequent study by Surrett, Azrin and Sulzer (1972), the same procedure was attempted with a group of still lower functioning retardates who had an average social age of 3.4 years, and who also actively resisted training. Ten out of 34 of these retardates were sufficiently unmanageable and showed so little progress, that training seemed futile and was discontinued after 3 days for those residents. Subsequent to the study, the training procedure was modified in several ways to discover how these "unmanageable," "untrainable" residents might be trained. The difficulties encountered in training these residents indicated some of the problems that had not yet been solved completely by previously described studies.

What Is Needed?

An overall mealtime training program is needed that will be applicable to the lower level retarded; will require only a few days rather than weeks; will include a method of motivating proper eating after training as well as during training; will achieve a level of mealtime behaviors that is indistinguishable from that of normals rather than be satisfied with teaching only proper use of the spoon; and will be more effective than a "best effort" training procedure. Of special importance is this question of relative effectiveness compared with other training procedures, since previous studies have failed to provide a comparison with other procedures in which the trainers apply an equally concerned effort. The present study, in addition to evaluating the effectiveness of a new program, compared the program with a control program using profound retardates who were "unmanageable" and severely lacking in proper functioning.

Population

All residents of a state institution ward were included, except for three whose physical problems (such as paralysis) prevented normal eating. Of the 22 residents,
the average age was 38 years, average IQ 15, average Vineland Social Age 2.6 years, and the average Vineland Social Quotient was 10. None could dress or bathe themselves and only one could speak; one was confined to a wheelchair; one was totally deaf and one partially blind; two had paralysis in one hand. Eighteen received tranquillizers daily for behavior problems. None of the residents ate normally, and the staff considered them so incompetent and dangerous to themselves that knives and forks were not available to them; the only utensil offered was a spoon.

Response Definition, Recording and Experimental Design

Correct self-feeding responses were recorded in the same manner described by O'Brien and Azrin (1972). Briefly, a self-feeding response was scored as correct when food or liquid was moved from its container to the resident's mouth without error, using the appropriate utensil in the correct manner with no spilling or other deviations such as oversize bites, eating spilled food, pushing food with fingers, throwing food or utensils, stealing, or drooling. Pre- and posttraining error scores were obtained while the residents were eating as a group. An observer recorded the residents in succession noting whether the first response in a 10 second interval was correct or incorrect. Reliability of recording was ascertained by having a second independent observer record on three randomly chosen meals. Ninety-six per cent agreement was obtained.

Twenty-two residents were divided randomly into an experimental and control group on the basis of several pretraining measures. The control procedure provided training at regular meal times for no more than 45 minutes each meal. The control trainers were three attendants who volunteered for the effort and were instructed to use whatever methods they considered best to achieve the training criteria. The new procedure divided each regular meal into 3 "Mini-Meals," not to require more than 15 minutes each, thereby making the daily training time comparable to the control procedure. The criteria for successful completion of training was that the resident use correctly three times in succession (1) a napkin, (2) the spoon, (3) the fork, (4) the knife for buttering, (5) the knife for cutting, (6) drinking from a glass with one hand, and (7) make three or less errors during a standard test meal. A commercially available "TV dinner" was given at noon when the trainers believed a resident could achieve the criteria at a standard test meal. In order to compare the level of eating errors displayed by the residents from this study with those observed in normal individuals, an error score for an equal number of employees was obtained in their dining room during two meals. An error score for the residents who had completed training was also obtained for the same two meals so that the eating skills required would be identical for both groups.

The Intensive Mini-Meal Procedure

The following rules served as the guiding principles for the Intensive Mini-Meal procedure:

1. Mini-Meals. Divide the regular meals into smaller portions and serve hourly throughout the day. This procedure allows several students to have many sessions each day. It also minimizes satiation at the end of each meal.

2. Graduated Guidance. Gentle manual guidance should be used to insure that a response is completed correctly. The trainer is always careful not to make the response for the student; his hands should never be limp in the trainer's grip. The trainer never uses more restraint than is necessary to stop an error, then holds the student until he can be gently guided.

3. One Food-One Utensil. Introduce each utensil separately and during any one training meal have only one type of food present that is appropriate for the utensil. Only after each of the utensils has been mastered individually should combinations be introduced that require the presence of more than one utensil. This prevents unnecessary confusion and distractions during initial training.

4. Standards of Excellence. The standards of eating excellence required should be increased gradually. It is important early in training that once the student grasps and loads the utensil, the food reaches his mouth immediately, regardless of any minor spilling that may occur.

5. Hand-on-Lap. Require the student to keep his free hand motionless in his lap unless both hands are needed above the table, e.g., for cutting. A feeding trial is never started until the student is either holding his hand in his lap voluntarily or offering no upward resistance to the trainer's gentle restraint of that hand. This procedure reduces the likelihood of food-grabbing.

6. No Coaxing. If the student does not readily follow instructions to eat properly, manual guidance should be used to complete the response. Verbal cajolery or nagging may provide attention for bad manners and, therefore, should be avoided.

7. No Incorrect Responses. During training, the student is prevented from making gross errors by physically interrupting inappropriate attempts to get food in the mouth, e.g., without a utensil. If the student is allowed to bring food to his mouth with his hands during initial training, he will be reinforced for these inappropriate behaviors and the food-grabbing attempts may then persist throughout training.

8. No Distractions. Training is conducted in the dining room at times other than regularly scheduled meal times so that only the student and the trainer are present, thereby minimizing the outside distractions to the student.
9. **Hand-to-Shoulder Fading and Constant Contact.** Begin guidance by having the trainer mold his hand around the student's and guide an entire response. As the student grasps the utensil himself, guidance is progressively reduced at the hand to a gentle touch. The focus of guidance is then faded up the arm to the shoulder, elbow, upper arm then shoulder and upper back, always maintaining light touch unless more guidance is required. This constant contact serves as a reminder to the student that inappropriate responses will be prevented.

10. **Praise Initial Efforts.** Provide generous verbal and tactual reinforcement for the early grasping and loading components of the eating chain, e.g., say "good," accompanied by a pat on the back as soon as the student picks up the utensil, and again when he moves it to the plate, etc. These social reinforcers help bridge the delay between the early components of the feeding sequence and his getting food in his mouth.

11. **Variety of Reinforcers.** Do not rely on a verbal "good" as sufficient to motivate the student. Verbal praise should be pleasant and enthusiastic; tactual contact should be generous, ranging from rubbing the shoulders and back to giving the student a hug when he does well; and facial approval should also be used, especially with deaf students.

12. **Correction for Errors.** Spilling errors that were excused early in training must be corrected by the student once he has demonstrated use of a particular utensil. The guiding principle is that the individual undo or correct the wrong that his error created. For example, the trainer should never clean spills; the student is required to do this himself. Any misbehaviors such as throwing utensils or food are also immediately corrected by the student rather than removing him from the dining room. The only occasion for dismissal from training is satiation.

13. **Positive Practice.** If an error occurs, the student is required to practice the correct form of the response after he has made the correction so that he will know how to deal with this problem during subsequent meals. For example, if he spills food from his overflowing utensil, he is given several practice trials in loading very small amounts of food on the utensil.

14. **Multiple Trainers.** Two trainers should be present on the first day of training and until the student can easily be managed by one trainer. One trainer guides the utensil hand, the other trainer guides the student's lap hand and/or head in order to assure that initial training is accomplished without errors.

15. **Simple-to-Complex.** Begin the training program with simple responses such as drinking from a glass and using a spoon, then gradually progress to the more complex responses such as meat cutting. This rule also applies within categories of complex responses in that meat cutting and bread buttering are divided into subparts which are added as training progresses.

16. **Continuous Reinforcement.** The trainer should talk continuously throughout training, pleasantly describing to the student what is occurring and praising each effort toward completing the self-feeding response. This insures that the training situation will be reinforcing for the student and provides the opportunity for the student to develop a receptive vocabulary for what he is learning to do.

17. **Continuity of Training.** Once the student enters training he should not eat any unsupervised meals since his incorrect eating will be reestablished during the unsupervised meals. Arrangements should be made so that trainers are available at each meal.

18. **Completeness of Training Meals.** During training, provide all the foods necessary for teaching each eating skill. For example, insure that there are always some meats available with which to practice meat cutting.

The eating skills were taught in the following sequence as dictated by the Simple-to-Complex Rule: use of the (1) napkin, (2) glass, (3) spoon, and (4) fork were taught by guiding the student to hold the utensil in the correct manner and then perform the appropriate action whether it be wiping, drinking, scooping, or piercing; (5) holding a knife correctly for transferring butter from the butter dish to the bread, then spreading the butter; and (6) cutting meat with a knife and fork, holding each utensil correctly, were taught by dividing the complex behaviors into smaller units. **Buttering:** The student was taught (using guidance) to pick up the knife, load it with butter, then direct this butter to a pre-cut, bite-sized piece of bread. At first any attempt to touch the butter to the bread was followed by a bite, then progressively more spreading was required; finally, the whole bread slice was introduced. **Cutting:** First the student was taught (using guidance) to pierce and immediately eat pre-cut, bite-sized pieces of meat with the fork tines facing down. Then the student pierced and ate these small bites as they were cut by the trainer (imitation). The student was then taught to pick up the knife, and each approximation to a sawing motion was completed by the trainer who immediately gave the cut piece to the student. Gradually more pressure for sawing was required from the student until he could separate the meat himself. The student ate "continental" style (i.e., fork remaining in one hand) to eliminate the switching of utensils.

When the student successfully performed each of the responses three times successively by himself, the full meal requiring all of the responses was given. If the change to the full meal setting resulted in excessive errors, the meal was introduced gradually; food items were added one at a time.

**Posttraining Supervision.**

Supervision should follow initial training to motivate the resident to use his acquired skills. After acquisition-training, the residents entered a supervision procedure based on the overcorrection principle and described
previously by Surratt, Azrin and Sulzer-Azaroff, (submitted for publication). This overcorrection principle states that deviant behavior can be eliminated by requiring the individual to correct the condition that his misbehavior created, as well as overpractice the correct behaviors (Azrin & Foxx, 1971; Foxx & Azrin, 1972; Foxx & Azrin, in press (a); Foxx & Azrin, in press (b)).

If a resident spills food or a beverage on his tray, the table, the floor or himself, he is required to get a clean rag from the wash stand and clean the soiled area. For positive practice, the resident has three trials of correct piercing of food with the fork, scooping small spoonful of food, or whatever the correct preventative response should be. During this correction procedure and all others in which the resident is required to practice a response, food is not allowed to reach the mouth until the end of the third trial.

If the resident either holds a utensil or the glass incorrectly or uses the wrong utensil for a particular food, he is required to practice, respectively, the holding and lifting response, or picking the correct utensil and loading the appropriate food. When a resident takes oversize bites or pushes food into an already filled mouth, he must practice loading small amounts of food on the utensil and waiting several seconds between bites. Residents who touch or pick food up with their fingers must go to the wash stand to wash their hands, then practice using the utensil to load food. A resident who lowers his head to a point just above the food plate is required to sit up straight or even stand up and practice bringing food to his mouth. A resident who eats spilled food from the floor should be taken to a nearby rest room, have the contaminated food washed from his mouth with a cloth for one minute, then be returned to the table to practice using a utensil to transport food from the plate. Silverware that is dropped or thrown should be picked up by the resident and taken to the wash stand to be washed; a clean utensil is then retrieved and the resident is required to practice loading food onto this utensil.

If a utensil is thrown at someone, the resident should apologize (verbally or gesturally) and stroke gently the offended resident, then apologize to everyone else at the table. If a resident steals food from another resident, the offender should return the food to the victim (if it is not soiled) and give the victim something from his own plate; if the offender has finished his meal, he should be served more food which he then must give to the victim, as well as apologize for his offense. For residents who either play with their food (moving food around the plate without taking any bites) or get up from the table during a meal, these behaviors should be interpreted as satisfaction, and the resident is required to leave the dining room.

During each regular meal two staff members were present for supervision. When the residents began their meal, one supervisor walked around the tables pausing behind each resident, praising him for a correct eating response or administering an overcorrection procedure if an error occurred. Before moving on to another resident, the supervisor would scan the tables and move directly to any resident that was making an error; otherwise he would continue around the table. This supervisor spoke to the residents at all times; if a mistake had not been made, then a resident was praised for correct eating. The second supervisor, in addition to assisting the first supervisor, gave intensive supervision to a resident on his first day in the dining room after training to insure a smooth transition. This supervisor observed the resident until he made four or five successive correct eating responses, at which time he was included in the regular supervision sequence.

**Results**

Figure 1 shows that all of the Intensive Mini-Meal procedure residents were trained within 12 days, and averaging 5 days, whereas, after each Control procedure resident had been given at least 18 days of training, only 30% of these residents met the training criteria. Figure 2 shows that the mean percentage of eating errors for the group pretraining measure was 83%. The follow-up measures, reported at 4 week intervals for 28 weeks, show that those individuals who completed training improved from the pretraining level of 83% errors to a mean of 6% errors for the 8 posttraining measures. There was a statistically significant improvement between the pretraining and each of the posttraining measures (p<.005) by the Wilcoxin Matched-Pairs Signed Ranks Test (Siegel, 1956). The employees had an average of 8% errors on their meals, whereas the residents averaged 9% on the same meals.

**Discussion**

The Intensive Mini-Meal procedure was found to be effective with all residents who were given this method of training, and was more efficient than the Control procedure in training profoundly retarded residents in full range of eating skills in a short amount of time. The level of mealtime behaviors trained by the new procedure was comparable to those of normal individuals. Casual observation found the residents to be eating more slowly, no longer spilling food on the floor or on themselves, and changing utensils when appropriate. Those residents formerly eating only soft food diets because they frequently swallowed entire pieces of meat could now, with their new skills, be served the regular meals. After training, the residents could be supervised in their dining room by only one or two attendants. The training required an average of only 5 days per student.

**References**


The per cent of students from two mealtime skills training groups who completed training by days spent in training. The "Mini-Meal" procedure provided short, frequent training meals during which the students were guided through self-feeding responses to insure that inappropriate eating could not occur. Guidance was progressively reduced as the students initiated the eating skills themselves. The Control procedure consisted of a "best effort" program designed and administered by ward personnel during regular mealtimes.

FIGURE 1

MEALTIME TRAINING OF THE PROFONDLY RETARDED

Scores are given for a pretest and 8 follow-up tests. The first test was given 1 week after training and the other tests were given every 4 weeks thereafter. Once residents completed training, they entered a supervision program designed to motivate them to continue to use their newly acquired mealtime skills. The horizontal dotted line shows the mean percentage of errors made by hospital employees.

FIGURE 2


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