*AN ECOBEHAVIORAL EXAMINATION OF A
SIMPLE STRATEGY FOR INCREASING MEALTIME
LANGUAGE IN RESIDENTIAL FACILITIES*

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Typically in large residential facilities for retarded persons, meals are served in an institutional style that does not appear to encourage appropriate peer interactions. An ecological program alternative is serving meals in a family style. The present study was designed to examine both the feasibility of serving family style meals and the effects of family style meal service on mealtime language. Five retarded young adult male residents, who had some conversational skills and appropriate table manners, participated in this study. The experimental design involved a multiple baseline analysis across meals (dinner, lunch, and breakfast). Observers coded the youths' mealtime verbalizations according to the type, content, and direction of the verbalizations and they recorded the length of the meals. The analysis of the verbalization data indicated that during family style meals the participants spoke substantially more often than during institutional style meals. Increases in peer-directed conversation about the meals primarily accounted for the verbalization changes. Family style serving also resulted in the youths spending more time with their meals. In addition, social validation measures suggested that the family style procedures were preferred by the consumers (participants, staff, and concerned community members).

DESCRIPTORS: language, retardation, ecological, institutional, adolescence

As greater numbers of mentally retarded persons are reintegrated into the communities, increasing importance is being placed upon teaching these persons appropriate social skills (Brody & Stoneman, 1977). One social activity that is experienced by all persons independent of where they reside is eating. "Eating is one of the most social things we do. Around this activity, man has evolved a complex set of behaviors that mark the species as a social animal" (Perske, Clifton, McLean, & Stein, 1977, p. XVIII). Mealtimes are times in which people sit to-

gether with others with whom they live or work in order to share on a common, hopefully pleasurable, experience. With this in mind, mealtimes appear to be naturally ideal times for helping socially deficient persons develop appropriate ways to interact with peers. Unfortunately in the case of some residential facilities serving retarded persons, meals are often eaten in silence with little or no appropriate social behavior occurring (Azrin & Armstrong, 1973; Henriksen & Doughty, 1967).

Currently, most training centers serving retarded persons have extensive programs underway to teach appropriate mealtime behaviors. For those individuals who have previously acquired the basic proper mealtime behaviors such as utensil usage, it is important to establish an environment that both maintains the skills and is conducive to a pleasant social dining experience. At the present time, most meals that are served in large residential centers for retarded individ-

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uals are served in some variation of a manner that can be called "institutional style." Basically this involves the staff placing individual portions of food onto specialized trays which are then delivered to the residents. Informal observations have indicated that under these conditions the residents generally attend only to the food that is situated before them and that they rarely interact with one another appropriately. One means of changing the mealtimes so that they will be more of a social event is through ecological programming (Hart & Risley, 1976). This approach stresses physical and human environmental arrangements that set the occasion for the occurrence of desired behaviors. Ecological programming as described by Hart and Risley (1976) and the ecobehavioral approach as described by Rogers-Warren and Warren (1977) attempts to combine the ease of the implementation and maintenance of changes which are characteristic of ecosystem interventions with the analysis techniques and the concern with the individual that are characteristic of applied behavior analysis.

An ecological program alternative to institutional style meal service is serving meals in a family style. Family style meal service involves the dietary staff placing food in serving bowls and platters and the residents passing the food around the table, taking their own individual portions (Dankert, 1977). This type of meal service would seem to ensure that a certain amount of peer interaction occurs (e.g., the passing of the food) and it would also seem to set the occasion for a certain degree of peer-directed language (e.g., requesting food). Family style meal service also appears to be more congruent with the current philosophy of using the most normative environment for treatment (Wolfensberger, 1972) because, in the community, meals are more often served family style rather than institutional style. In addition, family style meals appear to be a step toward permitting residents to exercise a greater degree of control over their environment.

A few investigations have used ecobehavioral

strategies to examine the usefulness of family style meal service for alleviating social problems surrounding mealtimes in institutions. Doke, Feaster, and Predmore (1977) examined the effects of family style meal service in a psychiatric treatment facility for adolescents. When the meals were served cafeteria style, the youths ate their meals quickly with little social interaction. Then they usually left the dining room and congregated in the "break room" where they frequently misbehaved. A family style dining arrangement was selected as a possible solution to this problem. The results indicated that the youths spent considerably more time in the dining room when they ate family style than when they ate institutional style. The investigators also reported that the family style program was simple to implement and it required little in the way of special training for the staff members. In a nursing home for elderly citizens, Risley, Gotula, and Edwards (Note 1) compared the social interactions and the food consumption that occurred during family style meal service and during institutional style meal service. This comparison of meal styles showed that family style service was capable of increasing socialization, including conversation, among the residents without affecting the normal food consumption patterns.

Not all situations, however, that are intended to set the occasion for the "natural" flow of social interactions have had the desired effects. Liberman (1972) reported a cooperative meal situation that did not result in an increase in conversation. Each patient was given only part of the lunch ingredients and each was instructed to work with the others in order to make lunch. Conversation did not occur and the patients were able to make their lunches using only nonverbal and physical cues. Even though this lunch situation did not cause language to occur, the investigator reported an increase in a variety of other socializations.

The present study was designed to examine both the feasibility of serving family style meals in an institution for retarded individuals and the

effects that family style meal service has on language usage during mealtimes.

METHOD

Participants and Setting

Five mentally retarded young adult males participated in this project. All the participants were residents of the same living unit at a residential training center for retarded persons in a mid-western state. The center accommodated about 450 individuals. The participants ranged in age from 16 to 23 yr with a mean age of 20.7 yr. They had spent from 3-16 yr at the training center with an average length of stay of 9.5 yr. Additionally, all the youths were classified as being moderately or severely retarded in both adaptive behavior and measured intelligence. These individuals were asked to participate partly on the basis of their speech being clear enough to be understood by an independent observer. All the participants, except R. J., had moderate conversational skills. R. J. was typically quiet and withdrawn, even though in highly structured environments (e.g., his classroom), he answered simple questions and he made simple requests. All the participants also exhibited appropriate mealtime behaviors prior to the onset of this project. In addition, the living unit staff reported that these individuals probably had been served food in a family style manner before they were admitted to the training center and during home visits. The judgments concerning a specific individual's eligibility to participate in this project were jointly made by the members of their living unit's treatment team and the experimenters.

The project was conducted in the dining room in which the participants had eaten for over 6 mo. This was a large room in which approximately 32 residents (two living units) ate at the same time. The participants ate at a separate rectangular table, two on one side and three on the other side. Each participant sat in exactly the same place in both the institutional style and the family style conditions. Other than stopwatches and videotape equipment used for data collec-

tion, several different-sized serving bowls, platters, and utensils were the only items needed for family style dining.

Institutional Style Serving Procedures

The majority of the training center residents were served their meals in an institutional style: The dietary personnel dished out the food onto individual resident cafeteria trays, which were then placed on hot carts, and delivered to the dining rooms. When the residents entered the dining hall, one to four of the youths would place the forks, spoons, knives, napkins, and glasses on the table in front of each resident's seat. This job rotated among all the residents of the living unit approximately on a day-to-day basis. A living unit staff member then called out the residents' names one at a time, and the residents picked up their individual food-filled trays and returned to their seats. After all the residents were seated, a mealtime prayer was said. Following the prayer, the residents would begin to eat. As the residents finished their meals, they returned their trays to the cart. While the residents were eating, one to three living unit staff circulated throughout the dining hall prompting neat table manners and in general making sure that the meal ran smoothly. Each living unit was allowed approximately 30 min in which to finish the meals, as another living unit would then come in for their meals.

Family Style Serving Procedures

When family style procedures were used, the dining hall staff brought table service, cartons of milk or juice and the food in bowls and platters to the dining hall on a hot cart. Upon entry into the dining hall, one or more of the participants picked up the plates, bowls, glasses, eating utensils, and napkins from the attendant's station and carried them to the table. One of the participants also picked up the food-filled serving bowls and platters and the cartons of milk and juice (juice was served only at breakfast) and carried them to their table. One or more of the participants then set the table. After all the residents of the

living unit were seated, a mealtime prayer was said. Following the prayer, the participants passed the serving bowls, platters, and beverages around the table and they removed individual portions as the food was passed. The participants began eating after everyone was served. The dietary personnel typically provided only as many servings as there were participants; however, when there was extra food the participants shared it. When the participants finished eating they shared in clearing and cleaning the table. Set-up and clean-up responsibilities rotated among the participants approximately on a day-to-day basis. As during the institutional style condition, one to three living unit staff supervised each meal. These staff members circulated throughout the dining hall during the meal, prompting neat table manners and in general making sure that the meal ran smoothly. Also, as during the institutional style condition, the entire living unit was allowed approximately 30 min per meal.

Prior to the onset of family style serving procedures, the unit staff and one of the experimenters met and discussed the procedures, and one of the investigators guided the participants through three mock family style meals in their living quarters. This consisted mainly of having the participants pass imaginary platters around a table, request the food, and thank the person that passed the food. These sessions lasted about 10 min each. After the family style serving procedures were implemented the experimenters gave frequent feedback to the staff and to the participants concerning the way in which the family style serving was being conducted. Their comments were directed only at the manner in which food was passed, not at the verbalizations made by the participants or staff.

Experimental Design and Data Collection

The basic research design for this study consisted of a multiple baseline across meals (dinner, lunch, and breakfast), specifically that variant of multiple baseline called multiple-probe design (Horner & Baer, 1978). The independent

variable consisted of the manner in which the meals were served. During all baseline conditions meals were served institutional style, and during all intervention conditions meals were served family style. Family style meal service was first introduced at dinner, then at lunch, and finally at breakfast. Approximately 4 mo after family style service was introduced, follow-up observations were made during all three meals.

Data collection procedures during baseline, intervention, and follow-up were identical. Data concerned the verbalizations made by the participants and the lengths of meals for each participant. Data were collected by two observers who sat approximately 5 to 6 ft. behind the participants' table. The participants were divided into two groups so that each observer was assigned to record data on either two or three participants during a meal. Each participant was observed for 3-min intervals during which time each verbalization spoken by the participant was coded according to its type, content, and direction. The observers alternated observing the two groups of participants so that each observer recorded data for each participant an approximately equal number of sessions. In addition, the order in which the participants were observed alternated each session so that each participant was observed during the first, second, and third 3-min interval approximately the same number of times. Depending on the duration of the meal, each participant was observed individually from 3 to 9 min per meal. Data recording was begun at the conclusion of the mealtime prayer and terminated as each youth left the table to remove his dishes. As participants left the table, the observers recorded the amount of time that person had spent with his meal.

Data were recorded on data sheets in which each minute was divided into six 10-sec intervals. Each verbalization was coded and recorded in the corresponding 10-sec block. As a means of maintaining the time reference, for each 10-sec interval in which no verbalization occurred a slash was placed in that block. The observers used stopwatches to keep track of time. Each

verbalization was only recorded once, in the interval in which it began. In terms of type, each verbalization was coded as to whether it was a response to another's verbalization (e.g., an answer to a question) or an initiation (initiations were any verbalization made by the participant that was not preceded for at least 5 sec by a question, request, instruction, or a comment from another person). If a verbalization was judged to be unintelligible by the observer, a simple mark was scored and no other codes were recorded for that verbalization. In terms of speech content, verbalizations were coded as requests for food or a meal utensil (e.g., "Please pass the peas"), comments about the meal (e.g., "This pizza is good"), or miscellaneous conversational speech (e.g., "It looks like rain today"). Each verbalization was also coded according to whom the participant was speaking (either staff member, self, peer, group of peers, or observer). The direction of the participants' verbalizations was determined by the use of an individual's name, by the proximity and face orientation of the speaker, by the contextual relationship of the verbalization to the previous verbalization, and/or by the general context of the verbalization. Sections of the verbalization coding rules were adapted from the verbalization coding rules developed by Rogers-Warren and Warren (1980).

Reliability

Interobserver reliability data were collected by having the two observers record data for the same two or three participants during a meal. Three reliability observation sessions were conducted prior to the meal service change and three observation sessions were conducted after family style meal service had begun. Interobserver reliability scores were determined for the number of verbalizations by dividing the smaller of the two scores obtained for the session by the larger and then multiplying this ratio by 100. This method yielded an average of 90%, range 80% to 100%, prior to the meal service change and each of the three reliability checks after the meal service change occurred was 94%. In addition,

point-to-point interobserver reliability scores were calculated. The method of calculating point-to-point reliability scores involved comparing the type, content, and direction codes for each recorded response by the two observers. The number of coded entries which the two observers agreed upon were divided by the total number of coded entries and this ratio was multiplied by 100. This method yielded an average of 85%, range 80% to 93%, prior to the meal service change and 88%, range 85% to 94%, after the meal service change occurred. In addition, the observers frequently recorded the length of the meal for the same participants. On all these occasions, there was never more than a 10-sec difference between the two observers' measurements.

RESULTS

The average number of verbalizations per minute for all five participants during baseline and intervention conditions are presented in Figure 1. Unintelligible utterances were not included in this figure. As can be noted, the average number of verbalizations per minute increased during family style meals for all three meals. In addition, the solitary dots on the right side of Figure 1 representing the follow-up data indicate that the increased rates of mealtime verbalizations during family style meals maintained fairly well over an extended period of time.

Although all the participants showed some increases in verbalization rates during family style meals there were individual differences among the participants. Figure 2 displays the average number of verbalizations per minute during each experimental condition for each participant. C. E., S. W., and P. S. had similar increases in verbalization rates during family style meals of typically at least a doubling of their verbalization rates during institutional style meals. R. J., who spoke rarely during institutional style meal-times, spoke at a fairly low but consistent rate during family style meals. Finally, B. H., who spoke relatively frequently during institutional

Fig. 1. Average number of verbalizations per minute for all five participants. Frequent gaps between adjacent data points are typical of multiple-probe design.

style lunches and breakfasts, did not appear to be affected by the change in serving style in regard to verbalization rates except during dinner. In general, however, verbalization rate increases appeared to occur specifically as a function of the usage of family style procedures.

One possibility concerning the "quality" of the verbalizations during family style meals is that an increase in the amount of speech directed toward staff and observers accounts for the increases in verbalization rates. Data concerning to whom the participants spoke during mealtimes

are presented in Table 1. As can be seen, each participant spoke more frequently to peers during family style meals than during institutional style meals. The participants rarely spoke to either staff or observers during mealtimes. In addition, each participant's average number of self-directed and group-directed verbalizations per minute during each condition was zero.

A second possibility concerning the "quality" of the verbalizations is that the observed increases can be accounted for simply by increases in the number of requests for food or food-re-

Individual Participants' Average Number of Verbalizations Per Minute During Each Experimental Condition*

		Institutional Style	Family Style		
C.E.	Dinner	.1	1.6	2.1	1.8
	Lunch	.3	1.6	2.3	1.0
	Breakfast	.5	.3	.5	2.5
S.W.	Dinner	.9	2.8	3.7	2.3
	Lunch	1.2	1.1	3.2	3.6
	Breakfast	1.7	.4	.9	2.0
P.S.	Dinner	.5	1.1	3.9	2.4
	Lunch	.2	1.6	2.2	3.5
	Breakfast	.9	.6	1.2	1.6
R.J.	Dinner	0	.4	1.0	.1
	Lunch	.1	0	.7	.5
	Breakfast	0	0	0	.5
B.H.	Dinner	.4	1.5	2.1	.7
	Lunch	1.7	1.1	1.7	1.3
	Breakfast	2.5	.7	2.6	1.8

*The solid black line indicates the time at which the meal was changed from institutional style to family style. The numbers to the left of this line represent the mean number of verbalizations per minute during the baselines (institutional style meals). The numbers to the right of the line represent the mean number of verbalizations per minute during the intervention conditions (family style meals).

Fig. 2. Individual participants' average number of verbalizations per minute during each experimental condition.

Average Number of Staff-Directed, Peer-Directed, and Observer-Directed Verbalizations Per Minute for Each Condition

		Staff-Directed			Peer-Directed			Observer-Directed		
		Dinner	Lunch	Breakfast	Dinner	Lunch	Breakfast	Dinner	Lunch	Breakfast
C.E.	Institutional Style	0	0	.1	.1	.2	0	0	0	0
	Family Style	.1	0	.1	.5	.5	.7	0	0	0
S.W.	Institutional Style	.1	.1	.1	.1	.2	.2	0	0	0
	Family Style	0	.1	0	.9	1.0	.6	.1	.1	0
P.S.	Institutional Style	0	0	0	.1	.3	.3	0	0	0
	Family Style	0	.1	0	.8	.8	.6	0	0	0
R.J.	Institutional Style	0	0	0	0	0	0	0	0	0
	Family Style	0	0	0	.1	.2	.1	0	0	0
B.H.	Institutional Style	0	.1	.1	0	.4	.4	0	0	0
	Family Style	.1	.1	.1	.4	.4	.5	0	0	0

lated items made by the participants. The data concerning the content of the participants' mealtime verbalizations are presented in Table 2. As might be expected, there were more requests for food made during family style meals than during institutional style meals. C. E., S. W., P. S., and B. H., however, had greater increases in comments about the meals during family style meals than either requests for food or miscellaneous conversational speech verbalizations. This demonstrates that for these participants the increased verbalizations during family style meals can be attributed more to increases in meal-related conversation than to increases in simple requests for food. In addition, family style procedures did not appear to produce any consistent changes in the

type of verbalizations (initiations and responses) made by the participants.

In general, every participant spent considerably more time, often twice as much time, with their meals when they were served family style rather than institutional style. On the average, C.E. spent 9.41 min with his meals when they were served institutional style and 17.97 min when meals were served family style. Likewise, S.W. averaged 8.89 min and 17.96 min, P.S. average 7.17 min and 14.43 min, R.J. averaged 9.54 min and 17.63 min, and B.H. averaged 11.82 min and 18.32 min. This increased time period coupled with an increase in verbalization rate resulted in substantially more mealtime language occurring during family style meals.

Average Number of Requests for Food, Comments About the Meal, and Conversational Speech Verbalizations Per Minute During Each Condition

		Requests for Food			Comments about the Meal			Conversational Speech		
		Dinner	Lunch	Breakfast	Dinner	Lunch	Breakfast	Dinner	Lunch	Breakfast
C.E.	Institutional Style	0	0	0	0	0	0	0	.2	.1
	Family Style	.1	.1	.2	.3	.4	.4	.2	.2	.2
S.W.	Institutional Style	0	0	.1	.1	0	.1	.3	.2	.3
	Family Style	.1	.1	0	.8	.9	.5	.1	.2	.1
P.S.	Institutional Style	0	0	0	0	.1	.1	0	.2	.3
	Family Style	.1	.1	0	.4	.4	.4	.2	.3	.1
R.J.	Institutional Style	0	0	0	0	0	0	0	0	0
	Family Style	.1	.2	.1	0	0	0	0	0	0
B.H.	Institutional Style	0	0	0	0	.1	.1	.1	.4	.5
	Family Style	.1	.1	0	.3	.2	.4	.1	.2	.2

DISCUSSION

The data clearly demonstrate that the youths spoke more frequently and spent more time with their meals when they were served family style. An analysis of the data showed that increases in peer-directed conversation about the meal primarily accounted for the observed increases. Other than the three brief 10-min practice sessions on passing food around a table, no special training in interacting with peers was required during the family style meals. The family style serving procedures appeared to set the occasion or evoke peer interactions during mealtimes. These changes in peer interaction levels maintained fairly well over time.

Possibly the increases in mealtime language usage were partially due to the fact that family style procedures created a situation in which interacting with peers became functional and important since some of the interactions resulted in the acquisition of desired items (food). Peer interactions may have also been strengthened during family style meals by the socially reinforcing manner (e.g., "Thank you") in which the peers reacted to being given the food. It was also possible, as suggested by Kirby and Toler (1970) that as a result of pairing the participants with primary reinforcers (food) the participants acquired conditioned reinforcing properties for one another so that they would be more inclined to interact with one another. Like the data from

Mayhew, Enyart, and Anderson (1978), the data from this project suggest that some of the observed deficits in social behaviors of these institutionalized retarded persons may in large part be due to the failure of their environment to strengthen and maintain their already existing social repertoires.

An alternative explanation for the increases in mealtime language is that the increases are the result of changes in staff behavior. That is, it is possible that during family style meals the staff members prompted and reinforced the participants in a more advantageous manner than during institutional style meals. For example, the staff members may have provided more positive praise statements contingent on desirable behaviors during family style meals. It appears that if such differential praise was occurring, this would be reflected in a corresponding increase in verbal responses to staff members by the participants. There were no substantial increases, however, in the number of staff- or observer-directed verbalizations during family style meals. In addition, the data recorders reported that they did not observe any systematic changes in staff behavior. Unfortunately, however, staff behaviors were not systematically measured in this study. Future research might be aimed at providing an analysis of the various components included in the family style procedures, particularly an analysis of staff-participant interaction patterns.

A second factor that requires more careful analysis is the effects that might be attributed to the participants' prior experience with family style serving arrangements in their homes and other settings. Most likely without such prior experiences much more extensive supervision and training by staff members would be required, making the implementation of family style serving considerably more difficult than it was in this project. What effects such extensive training would have on mealtime language needs to be examined.

In general, the family style procedures produced differential effects on the participants' mealtime language usage in relation to the com-

plexity of their verbal skills. Family style serving appears to have relatively minimal effects on the mealtime language of those persons who either talk frequently during institutional style meals or who have extremely limited social and verbal repertoires. Participants with minimal language skills, like R.J., would probably require specific training in order to develop a more complex mealtime social repertoire. Future research could be aimed at incorporating such language training within family style serving procedures.

The participants appeared to be meeting their nutritional needs during family style meals. As a very rough estimate of whether the participants were receiving enough food during mealtimes, weight measurements were taken each month. At the beginning of the project all the participants were at or below the weight norms for their heights and ages. All of the participants gained some weight, from 2.25 to 9 kg, during the 5-mo course of the project. The 9 kg gain by S.W. was viewed as a potential problem by the medical staff and he was placed on a reducing diet which was incorporated into the family style serving arrangements. After several months, he lost 4.5 kg and he returned to eating regular family style meals.

An informal assessment was carried out to shed some light on the social validation issues surrounding the different serving styles, such as the acceptability and normality of the two styles. "Consumer" satisfaction questionnaires were given to the six living unit staff who participated in the project, to 11 administrative professionals at the institution, and to nine members of a local chapter of the National Association for Retarded Citizens who watched videotapes of the participants eating in both styles, and the participants were interviewed. In general, the living unit staff reported that they preferred the family style meal service, that they recommended family style serving for similar residential units, and that family style serving was more interesting and enjoyable for the staff. In fact, the rest of the residents of the participants' living unit have since rapidly adapted to family style serving

without problems. Those who viewed the videotapes reported that they would rather be served meals family style, that the youths appeared to be treated as more responsible persons during family style meals, and that at their own homes they served meals in a family style. Only one of the participants, S.W., answered the interview questions in a consistent, understandable manner. He stated a strong preference for having his food served in family style. In addition, several youths who were not participating in this project expressed a desire to have their food served family style.

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