THE TRAINING OF MEALTIME BEHAVIOUR IN THE SUBNORMAL

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Imitative learning has been established as a means of promoting behaviour change in adults and children (Bandura and Walters, 1963; Berkowitz, 1962). While experimental demonstrations have been confined largely to the imitation of aggressive behaviour, field study data (Gray and Kastelen, 1969) suggests that other classes of responses may also be acquired readily through the observation of social models.

In the field of mental retardation, Tizard and Loos (1954) found that severely retarded subjects learned an occupational task faster and more efficiently when they were teamed with less severely retarded peers. Utilizing a similar paradigm, Kliebhan (1967) demonstrated that greater production of a better quality could be obtained by moderately retarded adolescents if they were able to observe and imitate an experimenter's confederate possessing efficient work skills.

Although Turnure and Zigler (1964) have found that familial retardates are sensitive to cues provided by an adult in imitative learning tasks, there is evidence to suggest that perceived similarity to a model with a similar background is also advantageous in promoting observational learning (Stotland and Patchen, 1961). Few attempts, however, have been made to investigate the effectiveness of using peer models in the field of mental retardation.

Gardner (1969) has suggested that most maladaptive behaviours are the result of either failure or lack of opportunity to learn because of the ambiguous and inconsistent reinforcements supplied by the natural environment. Headrick (1963) claims that operant conditioning, because of its effects on behaviour independent of the higher reasoning processes and language, lends itself well to training the subnormal. Lindsley (1964) also contends that individuals who have a limited response repertoire, and consequently less response competition, are more susceptible to operant conditioning procedures than those with a larger assortment of maladaptive responses. In a study undertaken by Cameron and Crozier (1971) the effectiveness of this method was demonstrated in training a group of severely retarded mongoloid children in a variety of self-help skills. Likewise, Gorton and Hollis (1965) report considerable success in teaching similar skills and social graces in a cottage programme for retarded girls through the application of reinforcement principles. Other evidence is cited by Bensberg et al (1965) who devised a programme based on the effectiveness of behaviour shaping techniques to promote similar skills in a population of severely retarded institutionalized patients.

The following series of experiments were aimed at facilitating the acquisition of adaptive eating behaviours in a group of retarded young adults. This study is based on the rationale that retarded subjects may learn appropriate eating skills more easily by the combined application of operant conditioning and imitative learning within the context of the evening meal. The basis of this study is that both techniques might accomplish more effectively what neither observational learning nor operant conditioning could provide alone.

Method

It is characteristic of most institutionalized individuals that they are not exposed to sufficient adequately trained models to learn socially appropriate eating skills. One of the major factors that promotes this is the fact that staff often eat separately or in a different area from their charges.

The social model on the present study was a trainee in the Vocational and Rehabilitation Research Institute's (V.R.R.I.) residential programme. He possessed desirable social eating behaviour as measured by his supervisors and was held in high regard by his peers. The competence of the model is obviously of paramount importance in training such skills in currently non-imitative individuals. As this prerequisite was more than adequate in the selected model, and bearing in mind that models are regarded as having prestige when the imitation of their behaviour consistently leads to a rewarding state of affairs, all that is necessary is to structure the environment so that imitation of the model has a high probability of occurrence.

Trainees were selected for the study by a Supervisor's Rating Scale which incorporated specific eating skills from a variety of sources including: the Institute's current Restaurant Training Programme, the Adaptive Functioning Index—Residential Checklist (Marlett, 1971) and the Progress Assessment Chart 2 (Gunzburg, (1974). The Rating Scale was designed to cover a wide range of behaviours associated with table etiquette and adaptive eating skills. It was not the intention of the experimenters to train the subjects to become paragons of the table arts but merely to encourage behaviours that would be more acceptable to the community at large. Alternatively, it was hoped that those behaviours that were likely to draw undue attention to the trainees would be extinguished. For example, many of the trainees were in the habit of sprawling at table and cramming large quantities of food into their mouths before they had swallowed the previous mouthful.

All the trainees living in residence at the V.R.R.I. during November 1972 were rated by their supervisors on the Supervisor's Rating Scale for Specific Eating Skills. The rater was required to circle one of four categories that referred to the rate of emission of that response whether it was adaptive or non-adaptive. From this measure only those individuals who were categorized as being most deficient in adaptive responses were considered for the experimental study.

Prior to the application of the experimental conditions, each subject tentatively selected by the manner described above came under the scrutiny of the experimenter (P.E.). Those who were considered to possess sufficient elements of the adaptive behaviour were eliminated from the experiment. This process was essentially a check on the reliability of the Supervisors' ratings due to the variability of behaviour from day to day associated with the trainees.

Although four experiments were undertaken in the present study they followed a set format which will be discussed in detail by referring to Experiment One.

Experiment I

Three males and two females possessing a variety of handicaps (mongolism, cerebral palsy, economic and social deprivation) were finally selected to participate. Their ages and Peabody Picture Vocabulary (Test A) scores are shown in Table 1.

This experiment, as were the others, was undertaken in a dining room which was separated from the central dining facility used by the residents. Blinds and curtains were drawn to ensure privacy and the doors locked to minimise interruptions.

Procedure

At the first meeting the subjects were video-taped in order to ascertain the length of time, in seconds, they complied with the criterion behaviour. The desired behaviour in this instance consisted of keeping both feet on the floor while seated at the table. A Concorde Video-tape Portapack was used to record a 10-minute sample of each person's behaviour.

After a base rate of this behaviour was recorded, the training programme was instigated at the next evening meal. Money was used as the reward and the trainees were informed at the outset of this session that they could earn money if they were successful in imitating the behaviour of a peer model. It was also mentioned that correct responses would be rewarded with cents, i.e., one cent for each satisfactory attempt.

The model was seated opposite the subjects at a distance of approximately 10 feet where his behaviour could be easily observed. The experimenter commented that the model possessed very desirable eating behaviour, and in this particular instance they were to "Watch what John does." "Look at the way he keeps both feet on the floor while he is eating." "Very good, John!" After these comments had been made the subjects were informed that if they could keep their feet on the floor as the model was doing they would be rewarded with cents. Each trainee was then reinforced for the first compliance with the stipulated behaviour. Henceforth they were rewarded with one cent on a fixed interval schedule of 30 seconds provided their feet were in the required position. If their feet were not placed in the manner specified at the termination of this interval they were not rewarded. Liberal use of social reinforcement was made in conjunction with the presentation of the primary reward. The virtue of the model's behaviour was extolled with the following comments: "That is excellent." "You are doing a really fine job of keeping your feet on the floor." "Keep it up."

At approximately one-minute intervals the subjects were urged to observe the model, who was then praised for his impeccable eating habits and especially his ability to keep his feet on the floor. "Very good, John." "Now the rest of you try to copy John."

A fixed interval schedule of 30 seconds was continued for the first two sessions with the remaining three sessions consisting of a variable interval schedule of monetary reinforcement and social reward.

Once the five training sessions were complete the trainees were again videotaped during the next evening meal which was served in the same room. As in the baseline condition, a 10-minute sample of the trainees' eating behaviour was recorded. Two independent raters who were currently employed as supervisors at the Institute viewed both the pre- and post-tapes. Once they had been instructed as to what constituted adaptive behaviour, they recorded the number of seconds the trainees complied with the criterion behaviour.

In order to evaluate inter-rater reliability throughout the experiments, a Kendal Coefficient of Concordance (Siegel, 1956) was used. Reliability coefficients were uniformly high and ranged from $+0.9$ to $+1.0$.

The remaining three experiments followed essentially the same format as the first, although the number of training sessions varied depending on the complexity of the criterion behaviour. Similarly, the reinforcement schedules also varied as the behaviours were shaped with successive approximations being rewarded when the adaptive behaviour was considered difficult to acquire. As the trainees were selected from the total residential population on the basis of their lack of adaptive behaviour, each experiment usually contained different subjects. The following description contains a summary of the features associated with the remaining experiments.

Experiment II

The deficit behaviour identified in this experiment was defined as slouching in a chair with the head unduly close to the food whilst engaged in eating. Invariably this behaviour resulted in the trainees moving their heads towards their cutlery

rather than conveying their food to their mouths. As in the previous experiment a baseline was established at the next evening meal where the behaviour of two males and two females was video-taped and subsequently rated by two independent judges. Adaptive behaviour consisted of the subjects maintaining a straight back position with the head not tilting more than approximately 25 degrees from a perpendicular back position while they raised food to their mouths. On the second session the experimental conditions of modelling and reinforcement were introduced. During the first two training sessions the subjects were rewarded with one cent and lavish social approval for each adaptive behaviour emitted. The following two sessions involved the maintenance of appropriate behaviour on a fixed interval schedule where the next successful attempt that occurred after a time lapse of 30 seconds was reinforced. In the remaining four training sessions this schedule was replaced with an intermittent reinforcement schedule where the trainees were required to participate longer to earn the rewards.

Experiment III

In the foregoing experiment it was observed that many of the trainees ate too fast and often conveyed food into their mouths without swallowing the previous mouthful. The maladaptive behaviour in this case was classified as "eating too quickly," which consisted of the continuous placing of food in the mouth so that the mouth was constantly full, and often too full. It was assumed that this behaviour could be extinguished if the subjects were required to swallow the food they had in their mouths before they took another mouthful. Trainees considered to be most deficient in this specific behaviour were selected from the Supervisor's Rating Scales. Each subject participated in the experiment for 10 training sessions. During the second meeting baselines were established for each subject by video-taping a four-minute close-up sample of this behaviour which was subsequently rated by the two raters used previously.

Throughout the first four training sessions each correct response was rewarded immediately it occurred accompanied by liberal use of praise and encouragement. At intervals of approximately one minute the experimenter urged the trainees to pay attention to the model. The ensuing three sessions were conducted on a fixed interval schedule where the next correct response that occurred after this interval was reinforced. During the last three training sessions reinforcement was administered intermittently.

After the training sessions had been completed the subjects were again video-taped in order to obtain a post measure that could be compared with the initial sample of their behaviour.

Experiment IV

In the previous experiment it was observed that three of the trainees ate their food with their mouths open. It was decided to train the same subjects, two males and a female, plus another female identified by the Supervisor's Rating Scales, to chew their food with their mouths closed. For the criterion behaviour to be deemed acceptable, the lips had to be kept together during the chewing and swallowing process.

The subjects were subjected to the baseline procedure where a four-minute sample of their behaviour was recorded. Eight training sessions were undertaken with approximations to the desired behaviour being reinforced in the prescribed manner for the first two sessions. During the following three meetings each correct response was rewarded. For the remaning sessions reinforcement was applied on an intermittent basis. One trainee attended irregularly and eventually withdrew.

Results

The data contained in Table 1 indicates that all five subjects displayed a dramatic increase in the amount of time spent keeping their feet on the floor while eating in Experiment I. From a baseline of not conforming with the criterion behaviour almost perfect compliance was obtained for each individual in the post-test measures. In the baseline condition the specified behaviour was measured from the time the subjects placed the first portion of food in their mouths.

It can be seen from Table II that the four subjects in Experiment II exhibited a reversal of their previous behaviour in favour of maintaining an upright position and conveying food to their mouths with their utensils. In the pre-test measures it can be regarded that few adaptive behaviours were recorded by the raters on each subject. However, the post-test suggests that the treatment was effective as the number of maladaptive behaviours were substantially reduced and the frequency of appropriate responses increased.

From Table III, which contains the data for Experiment III, it is evident that initially the emission rate of the criterion behaviour (eating too quickly) is high compared with adaptive behaviours. As a result of the applied treatment it is apparent that adaptive behaviours come to the fore with a corresponding diminution of aberrant behaviours.

TABLE 1

Baseline Condition (criterion time secs.)

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N-A**	A	N-A
S1	19	M	51	0	600	0	600
S2	20	M	74	0	600	0	600
S3	23	F	83	0	600	0	600
S4	34	M	67	0	600	0	600
S5	20	F	54	0	600	0	600

Post Test (criterion time secs.)

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N-A**	A	N-A
S1	19	M	51	600	0	600	0
S2	20	M	74	600	0	600	0
S3	23	F	83	600	0	600	0
S4	34	M	67	600	0	600	0
S5	20	F	54	597	3	593	7

*A=Adaptive
**N-A=Non-Adaptive
N=5

TABLE II

Baseline Condition (frequency of criterion behaviour)

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N-A**	A	N-A
S1	19	M	74	0	21	2	19
S2	20	F	55	0	19	0	20
S3	41	M	65	4	30	6	27
S4	23	F	83	0	33	0	31

Post Test

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N-A**	A	N-A
S1	19	M	74	25	3	25	2
S2	20	F	55	8	6	8	7
S3	41	M	65	21	0	21	0
S4	23	F	83	21	0	21	0

*A=Adaptive
**N-A=Non-Adaptive

TABLE III

Baseline Condition (frequency of criterion behaviour)

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N A**	A	N-A
S1	19	M	51	5	11	4	12
S2	19	M	37	2	21	2	21
S3	17	F	77	6	14	5	 16
S4	20	F	54	3	28	5	26

Post Test

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N-A**	A	N-A
S1	19	M	51	13	8	13	8
S2	19	M	37	11	1	11	1
S3	17	F	77	20	3	21	3
S4	20	F	54	18	12	18	12

*A=Adaptive
**N-A=Non-Adaptive

TABLE IV

Baseline Condition (frequency of criterion behaviour)

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N-A**	A	N-A
S1	19	M	51	0	40	0	42
S2	19	M	37	2	10	2	10
S3	17	F	77	0	12	0	12
S4	20	F	59	1	16	1	16

Post Test

Subjects				Rater 1		Rater 2	
	Age	Sex	IQ	A*	N-A**	A	N-A
S1	19	M	51	0	15	0	15
S2	19	M	37	2	9	2	9
S3	17	F	77	2	9	2	9
S4+	20	F	59	—	—	—	—

*A=Adaptive
**N-A=Non-Adaptive
+Withdrew

By referring to Table IV, which lists the data for Experiment IV, it is apparent that, although little improvement was observed in the number of adaptive behaviours, a sustantial decrease is noticed in the frequency of maladaptive behaviour. All candidates were observed to eat at a slower rate. It is felt that the criterion behaviour was perhaps too rigidly defined and may have been beyond the capabilities of some participants. The two mongoloid subjects experienced a great deal of difficulty in breathing while endeavouring to chew with their mouths closed. Respiratory defects in these individuals probably contributed to their lack of success.

It is interesting to note that the average length of time spent in consuming the evening meal in Experiment I was approximately 10 minutes. However, by the conclusion of the final experiment the average meal time lasted approximately 25 minutes, which seems to be more appropriate.

Summary and Conclusions

Four experiments were conducted to determine the effectiveness of simple modelling and operant conditioning techniques in the training of social eating behaviour in four groups of retarded subjects.

Generally it would appear that the combination of these strategies was effective in enabling the trainees at the V.R.R.I. to acquire these skills. From later observations it seemed that the trained behaviours generalized to a normal restaurant environment where most of the trainees exhibited appropriate eating behaviour despite the fact that they were no longer exposed to the reinforcement contingncies. It is suggested that the criterion behaviours should be broken down into small units and treated one at a time in the manner described. The time involved was not extensive for the actual training sessions. Various problems tended to complicate the task at hand, namely dietary considerations, menu planning, and for several weeks

the trainees' routine was interrupted. Some financial cost was involved, but the outlay seems feasible in terms of the outcome. Other desirable behaviours of a more peripheral nature were also observed to improve including: meal time punctuality, foresight in planning the necessary cutlery and appropriate interpersonal socializing skills. The use of monetary reward was perceived as meaningful by all subjects, and many of the trainees who were not selected sought permission to join the groups. Those who had completed their particular programme often expressed a reluctance to discontinue.

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