

MODIFICATION OF CONSTANT FACIAL MANIPULATIONS IN A MODERATELY SUBNORMAL MAN

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INTRODUCTION

Over the past 15 years, research in the field of applied behaviour analysis has repeatedly demonstrated that many forms of maladaptive behaviour can be eliminated relatively easily and at little cost to both the client and his family. However, the same research has unfortunately shown that an initial change in behaviour in one setting is not always maintained over time and often fails to generalise to other settings. In other words, there is little basis to trust "natural" maintenance and generalisation of treatment effects and it appears that a systematic programming strategy is called for in many cases (e.g. Gunzburg, 1974; Clarke and Clarke, 1975). Several technologies of maintenance and generalisation of treatment effects have been put forward (for a review, see Stokes and Baer, 1977). One of the better known emphasises the importance of teaching behaviour modification procedures to significant persons in a client's environment in order to ensure that the technologically imposed contingencies do not compete with those present in the natural environment (Tharp and Wetzel, 1969; Willems, 1974).

In the present study intervention was planned with three major considerations in mind, all aimed at maximising the chances of sustained treatment effectiveness: (1) to disrupt the daily routine of the subject and of the centre which he attended as little as possible; (2) to ensure that behaviour change would be obtained in the course of normal interaction with the environment, and not during specially set-up treatment sessions; and (3) to ensure that the members of staff of the centre, and not the psychologist, would take full responsibility for implementing the intervention programme. A triadic model of therapeutic intervention (Tharp and Wetzel, 1979) was thus adopted. In this operational scheme, behaviour modification is effected in the natural environment through a person, or group of persons (mediators), who occupy some normal role relationship with the target individual. The professional does not deal directly with the target but instead advises the mediators in ways of intervening with him and records progress.

METHOD

Subject

John is a 21 year-old, moderately subnormal man. He is physically a tall, normal looking adult. Despite a fairly large vocabulary, which enables him to make himself understood with little difficulty, his grammar is poor and his speech generally absent. Although he may have suffered from cerebral anoxia at birth, and has been labelled at various times during his childhood as suffering from "cranial abnormality," "hyperkinesis," "psychosis," and "autism," no formal diagnosis has ever been given to his handicap. Its aetiology remains therefore uncertain. Observations indicated that at the time of intervention he showed moderate hyperactivity but no psychotic or autistic features.

Main problem

John's main problem before intervention, as interviews with his parents and teachers, and direct observation, indicated, was that he used to hold his hands to his face in a typical manner (i.e. right index behind right ear, left index behind left ear, thumbs along lower jaws, and third, fourth and fifth fingers in or around mouth). This behaviour pattern, which first appeared when John was approximately six years of age, continued with little or no change until intervention. At the time of intervention, the behaviour was reflexive and almost continuous; it could be somewhat reduced but not eliminated by giving John a manual task. However, in such cases, he would almost invariably attempt to complete the task with one hand only, covering the free side of his face by leaning his head against his shoulder.

Although John was supposed to be sensitive to particular noises, extensive audiometric testing, carried out on several occasions over the years and just prior to intervention, revealed that this was unlikely. In view of this evidence, it was assumed that his specific behaviour pattern was a "bad habit" rather than a behaviour of significant survival value, and that his "sensitivity" to particular noises had developed following some unpleasant associations with certain specific objects which had later generalised.

The disadvantages resulting from this behaviour pattern should be obvious: it not only made John look severely subnormal, thus adding to his social handicap, but also made it very difficult for him to learn any new manual task as his hands were always occupied and had become weak over the years. Intervention was aimed, not at extinguishing John's facial manipulations totally, but rather at bringing them within a "normal" range. Following several recordings, at the training centre where intervention took place, of facial manipulations in other moderately subnormal persons not involved in a manual task, a criterion of no facial manipulations for 50 out of 60 seconds (or 83.3 per cent of the time) or more was said to represent "normal average facial manipulations" in this social context and defined as the aim, or "success" criterion, for the present study.

Design

In co-operation with the three members of staff in charge of the programme (principal, language teacher, and instructor), John's morning and afternoon work periods, which correspond to the work periods of all trainees at the centre, were divided into six identical 15-minute units each as follows: Unit 1 - Language development; Unit 2 - Off-task; Unit 3 - Manual task; Unit 4 - Off-task; Unit 5 - Manual task; Unit 6 - Off-task. These work units were thus of three types:

(a) **Language development:** During these periods, John's language teacher pursued the work she had been doing with him prior to intervention, which consisted in helping him to acquire a basic survival language and learn to read isolated words and simple sentences. This took place in a separate room and with the help of a Bell and Howell Language Master 717CX. From day 3 of intervention, John was introduced to a series of 10 language cards which had all been built on the following model: "Mr/Mrs (Name of a member of staff) says: Keep your hands down John" and which had been pre-recorded by the member of staff concerned. These cards, together with seven other cards bearing a related message (e.g. "I will keep my hands down," "If I touch my ears today, no Language Master," "I must not pull my nose"), were used everyday throughout intervention.

(b) **Manual work:** During these periods, John's instructor or principal worked with him continuously on a manual task, always aimed at developing a specific skill lacking in his repertoire (e.g. fine finger movements, hand grip); this task was performed at John's usual place of work and varied from day to day.

(c) **Off-task:** During these periods John was allowed to rest in the workshop. These breaks were introduced to enable the psychologist to monitor his behaviour when his hands were not occupied by any specific task and because it was felt, before intervention began, that he was not able to concentrate for more than 15 minutes at a time.

Procedure

Recording method: The time John spent with his hands up to his face was recorded at regular intervals throughout the day, during both on- and off-task periods:

On-task: Throughout intervention, facial manipulations were recorded for 15 minutes during Units 1 and 3 (morning only). This was done on a time-sampling basis (observation - 60 seconds; recording - 5 seconds) using three stopwatches, one running continuously and giving the overall timing, the other measuring the number of seconds John had each hand to his face. Fractions of a second were recorded as a whole second in his disfavour. Recording began as soon as John had switched on the teaching machine, or had the object of the task in his hands.

Off-task: Throughout intervention, recordings of off-task behaviour were made at the following times: for 5 minutes during Units 2, 4, and 6, and before lunch, and for 10 minutes during the period between lunch and the afternoon activities. This was done on a continuous basis, using the three stopwatches as described above. Recording began just 5, or 10 minutes before the following activity.

Thus John's facial manipulations were recorded for one hour every day, 30 minutes on-task, and 30 minutes off-task. Although sitting in the background, the observer was always in full view when recording on-task behaviour. To compensate for a possible "halo" effect, however, when recording off-task behaviour he was only in full view for 15 minutes, observing from behind a makeshift one-way mirror for the other 15 minutes.

Intervention: Intervention lasted for 19 days and was set up as follows:

Baseline (Day 1 and 2): The time John spent with his index fingers behind his ears was recorded for two days before any member of staff, or his parents had been given any instruction to modify their behaviour towards him, and before John himself had been instructed to keep his hands down. All other facial manipulations were ignored.

Treatment 1.1 (Days 3 to 7): The time John spent with his index fingers behind his ears was recorded as it was during baseline, but on the morning of day 3 all members of staff were instructed: (a) to tell John, whenever they saw him with his hands up to his face, "John, keep your hands down," this in a firm but friendly manner, to model the appropriate action at the same time, and to praise him by saying "Good" as soon as complied; (b) in case of non-compliance, to take his hands off his face, again in a firm but friendly manner, but without praising him; (c) to praise him

warmly whenever they saw him with his hands down; (d) to ensure that he was never allowed to do something that he enjoyed (e.g. looking at a coloured magazine, listening to records) with his hands to his face; and (e) in case of non-compliance, to deprive him of the activity for one minute after having explained to him in a few words why this was being done.

John's parents were given the same instructions on the previous evening and asked to apply them from the morning of day 3. John himself was instructed to keep his hands down and warned that he would be deprived from the language development sessions (the activity he enjoyed most) in case of non-compliance. This warning was obviously repeated several times everyday.

Treatment 1.2 (Days 8 to 14): John reached the criterion of no facial manipulations on day 7. Therefore, during this period the instructions to all concerned remained the same as in Treatment 1.1 but the recording criterion was made more stringent. From day 8 all facial manipulations were recorded. "All facial manipulations" was defined as all hand to face or neck contact from the shirt collar upwards.

Post-test (Days 15 to 19): The "success" criterion was reached on day 14 but the recordings were continued for five more days to insure the reliability of the findings.

Follow-up: Follow-up measurements to the criterion of Treatment 1.2 were taken after one week, two weeks, and four months following the end of intervention.

RESULTS

Results show (see tables 1 and 2) that, when off-task, John's facial manipulations decreased, during the 19 days of intervention, from an average of 92 per cent of the time (baseline) to less than 17 per cent (post-test). They therefore clearly indicate that the aim of intervention, or "success" criterion of no facial manipulations for 83.3 per cent of the time or less, was reached. It was reached on day 14 and John's off-task performance further improved from then on to reach an average of no facial manipulations for 90.2 per cent of the time during the post-test period. This average was not significantly inferior to his average on-task performance of 99.4 per cent for the language task, and 98.9 per cent for the manual task during the same period. These results are confirmed by the follow-up observations. After four months, John's off-task performance showed a further slight improvement. At that time he was able to refrain from engaging in facial manipulations for 95.9 per cent of the time.

That a true change occurred in John's behaviour is confirmed by looking at his on-task performance. This was at or above the "success" criterion from the first day of intervention and did not significantly change at any time during the treatment or post-test and follow-up periods. Thus off-task performance only changed, progressively approximating on-task behaviour.

Although, to compensate for a possible "halo" effect, when recording off-task behaviour the observer was always in full view for 15 minutes and observed from behind a one-way mirror for the other 15 minutes, no such effect was found. This makes it impossible to interpret the results purely in terms of experimenter effort. It is most likely that, when he was in full view, John was only aware of the presence of the observer, but not of his role.

TABLE 1.

Summary table showing number of seconds (out of 900 seconds) subject did not engage in facial manipulations (L = left hand; R = right hand). No data are available for day 13, when subject was deprived of all treatment activities following non-compliance.

	Day	Language Task		Manual Task		Off-task	
		L	R	L	R	L	R
Baseline	1	895	900	847	885	31	67
	2	680	820	857	894	74	118
Treatment 1.1	3	879	888	832	881	45	60
	4	896	899	863	892	36	62
	5	900	900	893	892	528	605
	6	899	899	891	900	531	633
	7	885	896	895	896	710	790
Treatment 1.2	8	882	876	872	890	658	672
	9	899	893	897	894	749	713
	10	865	878	889	898	601	534
	11	874	879	890	864	634	589
	12	898	876	873	852	696	586
	13			—	—	627	634
	14	890	889	891	883	775	739
Post-test	15	889	894	886	896	841	792
	16	891	892	897	880	784	764
	17	897	899	886	888	861	804
	18	899	897	891	891	862	810
	19	899	896	899	895	827	777
Follow-up	1 week	898	900	892	897	816	808
	2 weeks	899	899	898	883	839	805
	4 months	900	899	899	898	879	847

TABLE 2.

Summary table showing average (left and right hands) percentage of time subject did (On) or did not (Off) engage in facial manipulations.

	Language Task		Manual Task		Off-task	
	On	Off	On	Off	On	Off
Baseline	7.8	91.4	0.4	96.6	92.0	8.0
Treatment 1.1	0.7	99.3	1.9	98.1	55.6	44.4
Treatment 1.2	1.9	98.1	2.0	98.0	27.0	73.0
Post-test	0.6	99.4	1.1	98.9	9.8	90.2
Follow-up: 1 week	0.1	99.9	0.6	99.4	9.8	90.2
2 weeks	0.1	99.9	1.1	98.9	8.7	91.3
4 months	0.1	99.9	0.2	99.8	4.1	95.9

DISCUSSION

The data clearly indicate that John's facial manipulations decreased, from an average of 92 per cent of the time (baseline) to 4.1 per cent (follow-up), when off-task. These results are not the product of an experimenter effect and represent a true and lasting behaviour change.

Although a quick look at the results should convince the reader of their validity, a closer look may convince him further of the dramatic improvement that occurred from maladaptive towards normal behaviour. Table 1 shows that, from day 1 to 8, John had his right hand off his face for longer periods than his left, while, from day 9 to 19 (with exception of day 13), the opposite was true. We would suggest the following interpretation for this reversal: as John is right-handed, it is likely that, on average, he uses his right hand more often than his left. This, we believe, is what happened throughout intervention. During baseline and the first days of treatment, John was engaging in considerable facial manipulations with both hands, but had to use his right hand to "reach for the world" more often than his left. As treatment progressed, his facial manipulations were reduced considerably, although he had then to use his right hand to "reach for his face" (for scratching, fiddling with hair, etc.) more often than his left. If this interpretation is correct, it would truly indicate that John's facial manipulations, from maladaptive, have become normal, i.e. that he now refrains from such manipulations for most of the time but that, when he engages in them, he uses his right hand more often than his left because he is right-handed.

The results are further supported when one considers John's general behaviour during and following intervention. According to all members of staff and to his parents, the specific change demonstrated by the data was accompanied by a more general improvement in behaviour in several areas. To mention the most striking:

firstly, John now looks far more normal as he walks with his hands down to his sides, in his pockets, or behind his back; secondly, he used to "leap" or "jump" more than walk, shaking his upper limbs in a spastic-like fashion; this behaviour has been greatly reduced; thirdly, staff and some trainees alike report that John has become more aware of the presence of others and acknowledges this presence by shaking hands or saying "Good morning," something he never used to do, or even by telling them to keep their hands down if he sees them with their hands up to their face (!); finally, John has learned to eat with a knife and fork and to complete simple manual tasks successfully.

It should be obvious that improvement in John's behaviour was only achieved at the cost of members of staff and parents modifying their own behaviour (verbal and otherwise) towards him. This stresses the importance of the "human element" in this study and points to the only practical problem which we encountered: to avoid John reverting to his former habit in order to keep commanding a high level of attention, albeit negative, staff and parents had to learn to give him positive attention not so much for positive behaviour as for absence of negative one. It was most difficult to teach them to do so consistently. They learned very quickly to tell John to keep his hands down and to act appropriately in cases of non-compliance, but found it far more difficult to learn to praise him whenever they saw him with his hands down.

To conclude, we will look at the results in the light of the treatment approach that was adopted. These results support our "total" approach. Behaviour modification was obtained by "flooding" John from morning to night and in a consistent fashion with a single message, conveyed in three different sensory modalities: verbally, by telling him to keep his hands down, visually, by modelling the action and teaching him to read Language Master cards carrying related information, and through the sense of touch by physically taking his hands off his face when he failed to respond to a verbal command. This approach, by stressing the importance of integrating a therapeutic intervention within an on-going programme of activities, in fact turns the total environment into a therapeutic milieu and offers a method of treatment which is likely to succeed with mentally handicapped persons.

The results also underline the usefulness of a triadic model of intervention when behaviour is to be modified in the natural environment. In the present study this operational scheme placed from the start the responsibility for devising and implementing the therapeutic programme, and therefore for its success, not in the hands of the "expert," but rather in those of a team to whom the so-called expert acted as an adviser. Moreover, by drawing on the skills of the members of staff and on their first-hand knowledge of John, it enabled the team to develop a more complex and flexible programme than the psychologist would have been able to devise on his own. In turn, this and the fact that the team members had to put much work into setting up and carrying out the programme not only maximised its initial chances of success but also insured, so far as this is possible, that work with John would not stop when intervention ceased. Lastly, this approach, hopefully, gave the staff members an opportunity to become more familiar with the basic principles of behaviour modification and to devise means of incorporating them in their general approach to their work. If this is so, their participation in this study should have increased their confidence in their ability to deal with other persons exhibiting similar maladaptive behaviour.

SUMMARY

This paper describes a behaviour modification programme carried out to eliminate constant reflexive facial manipulations of 15 years duration in a 21 year-old moderately subnormal man. Intervention lasted 19 days. Results indicate that facial manipulations decreased in that period from 92 per cent of the time (baseline) to less than 17 per cent (post-test) — a figure representing “normal average facial manipulations” in the social context in which intervention took place. This improvement was maintained at a 4 months follow-up.

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