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A Token Economy Ward Programme with Chronic Schizophrenic Patients

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The application of techniques of behaviour modification to chronic adult psychiatric in-patients has for the most part been directed towards individual patients, and to specific problems such as hoarding, eating, soiling or speech (Ayllon, 1963; Ayllon and Haughton, 1962, 1964; Ayllon and Michael, 1959; Bachrach *et al.*, 1965; Isaacs *et al.*, 1960; Mertens and Fuller, 1963; Kennedy, 1964; Sherman, 1965). In this country, Baker (1970, 1971) and Kassorla (1968) have reported on the use of operant conditioning in reinstating speech in mute schizophrenics. There have, however, been few British reports relating to groups of patients, for example in wards where nurses have been trained to function as 'behavioural engineers' (Ayllon and Michael, 1959); whereas Krasner and Attowe (1968) specified no fewer than 200 institutions and individuals in the U.S.A. currently involved in token reinforcement programmes, concerned with disturbed or autistic children, delinquent adolescents and the mentally handicapped; 22 projects involved chronic adult psychiatric in-patients.

At the time that our project started (1969) the only published description of a token economy unit on this side of the Atlantic was that of a group of six long stay patients in an Irish hospital (Fingleton and McCutchen, 1969). During the progress of our work, described here, interest in this country has increased, and other projects are now in being (Hall, 1973).

Although clinical psychologists are widely practising the 'behaviour therapies' (Desai, 1969; Marks, 1971), they have not by tradition been involved in matters of ward management and therapeutic policy. Furthermore, the methodological problems of controlled research in 'social engineering' are of sufficient complexity to deter clinical psychologists from working in this way with groups of patients without considerable research facilities.

Reviews of the effectiveness of token reinforcement schemes so far published (Davidson, 1969; Krasner, 1968; Kazdin and Bootzin, 1972) suggest that too much may have been expected of these methods, and there remain some fundamental questions yet to be answered. For example, Jones (1970) asks, are these techniques merely effective in the management of patients, or are they genuinely therapeutic? When they are applied to their limits, what is the extent of the residual deficit? The question that has attracted most attention is whether reported success has been attributable to the specific procedures, or to some kind of non-specific social influence, or Hawthorne effect (Ayllon and Azrin, 1965; Gripp and Magaro, 1971; Lloyd and Garlington, 1968; Marks *et al.*, 1967; Shean and Zeidberg, 1971).

Sinee Ayllon and Azrin there have been a number of published reports on token economy projects with adult institutionalized patients which emerged initially almost exclusively from the U.S.A. (Gericke, 1965; Gripp and Magaro, 1971; Krasner and Attowe, 1968; Lloyd and Abel, 1970; Lloyd and Garlington, 1968; Shaefer and Martin, 1969; Shean and Zeidberg, 1971). Winkler (1970) reported on a token reinforcement system with chronic psychiatric patients in Australia, and more recently a report appeared on a token economy with extremely withdrawn chronic schizophrenics in a hospital in Germany (Cohen *et al.*, 1972).

At the present time it seems that the specific operational procedures probably account for at least some of the observed changes. Furthermore, there are considerable implications for many institutions, even if these techniques offer no more than an effective means of managing long-stay wards.

It was from this standpoint that we decided to embark on a pilot investigation of a token reinforcement system in the management of a ward of chronic schizophrenic patients in our hospital.

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The essential characteristic of the 'token economy' is that the environment is rearranged in such a way that explicit consequences follow upon certain selected kinds of behaviour. The idea developed from a series of studies by Ayllon and Azrin (1965, 1968) in which the readily available reinforcements are made contingent upon the display of appropriate or desirable behaviour, e.g. increase in independent and responsible behaviour, participation in the hospital's scheduled activities, increased responsibility for personal care. The reinforcers are tokens and can be exchanged for a variety of desired commodities and privileges.

Although a token economy is essentially a simple reward system, nevertheless, as Davidson (1969) points out, 'the range of behaviours designated worthy of tokens, the number of tokens earned for performance of a given behaviour, the numbers of tokens needed for various desired activities, and the kinds of activities to be made contingent upon tokens—all these variables give to the reader some idea of the complexity and richness which is possible within this simple paradigm'.

The management and treatment of chronic patients has remained a major problem (Paul, 1969). Other available therapeutic techniques have not been found to be relevant to these patients' problems, and rehabilitation efforts tend to be limited to periodic 'habit training' schemes. Where industrial rehabilitation programmes have met with some success, the improvements tend not to generalize to the ward situation, as Wing (1970) has pointed out, and we were particularly interested in a programme directed at effecting change within the ward environment itself. We were interested in the practical relevance of token economy programmes, given the normal facilities and limited resources available in a typical service hospital in this country, and this paper is presented as a descriptive study and discusses some of the practical and administrative problems.

Initiation of the Programme

The rationale of a token economy was first discussed with nursing personnel in response to an interest, on the part of the ward staff, in starting a 'rehabilitation' scheme.

We conceived of the token economy as a nursing rehabilitation scheme in which the psychologist would function in a consultative capacity. Regular meetings of psychologists and ward staff were held weekly, and staff were encouraged to participate in the design and construction of the programme. We felt that this was essential, as a token economy requires not only a restructuring of the ward environment but also a radical modification of the traditional treatment philosophy and custodial role. Staff are required to be less directive and less actively and physically involved in patients' management, and to avoid fostering dependence. The fundamental principle that available rewards should be made contingent on a patient's actual behaviour is in direct conflict with the conventional 'illness' models, and much time was devoted throughout to discussions of 'institutionalized behaviour' in terms of a learning model, i.e. relating some of the abnormal behaviours to environmental factors rather than to diagnosis.

The broad aims of the token economy were presented to staff in terms of increasing patients' independence and individual initiative. We found it necessary to emphasize this throughout. Unlike previous 'habit-training' programmes, we were interested in fostering the patients' spontaneous participation in self-care, rather than training them simply to respond to instructions. There is a strong danger that operant ward procedures of this kind may serve to increase rather than decrease authoritarian attitudes on the part of staff, and considerable time was devoted to discussion of this.

We allowed the specific aims, i.e. the target behaviours to be initially determined from a nursing management view point. Consequently aspects of personal hygiene and self-care were selected as our first target behaviours, and we later considered that these kinds of behaviour were among the most difficult to reinstate. Initially, as staff facilities were limited, it might have been preferable to select instead target behaviours from areas that have a high probability of responding rapidly to operant schedules, e.g. increasing the frequency or spontaneity of behaviours already manifest in the patients' repertoire. However, at this early

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stage there was strong resistance on the part of some staff whenever attempts were made to direct the first stages of the programme to areas others than personal habits.

Staff training in operant methods and elements of learning theory was carried out in these informal sessions and only essential technical terminology was introduced. A film on reinforcement therapy in the U.S.A. was shown twice, and was found moderately helpful (obtained from Messrs. Smith, Kline and French in this country).

A further concern at the planning stage was the question of the acceptability to the nursing staff of the increased clerical load. The Psychology Department was prepared to undertake the analysis of data, but the ward staff would be required to record their observations in the form of daily check-lists.

With regard to the tokens themselves, staff feared that only a minority of patients would appreciate their significance. We also met with sceptical attitudes about suggested target behaviours. It was felt that although some behaviours were within the repertoires of patients, these could not be elicited without direct instruction from the staff, e.g. to wash, dress, etc. This indeed is a general problem in the management of institutionalized in-patients. They will passively carry out instructions from a nurse, but rarely manifest the same behaviour spontaneously and independently of staff. Unless staff expectations of the patients change, the pattern of over-dependence is likely to be perpetuated, with patient and staff mutually shaping each others behaviour. Furthermore the ward staff had also to contend with sceptical attitudes from other members of staff outside the programme, whose long acquaintance with many of these same patients gave them no expectation of change.

An additional difficulty encountered from the beginning, and one with which we were frequently to be preoccupied, is engendered by the nursing shift system, and the joint authority of two people over one ward. This can serve to create quite dissimilar regimes within a single ward, e.g. we found one shift preferred patients to be in bed by a specified hour, the opposite shift had a more flexible attitude towards this. Besides the 'institutionalizing' effect this is likely to have on a group of patients who are already over-dependent, it inevitably limits the effectiveness of individual rehabilitation efforts by nursing staff. Much of the planning stage was therefore taken up with developing as far as possible a consistent ward regime and routine. However, we continued to encounter quite serious disparities throughout the project.

With the policy of group decision both ward sisters of necessity experienced a loss of authoritative influence and status, and they were both sufficiently flexible to adapt to this. At the same time junior staff found they were required to assume greater responsibility, and had considerably more say in the running of the ward than had been customary.

The question of the nature of the reinforcements and rewards to be employed presented a number of special problems. It was made clear from the beginning that patients would not suffer any form of deprivation of satisfaction of their basic needs as a consequence of the token economy. Food and basic comforts were not to be withheld. However, extra edible goods and additional commodities and privileges would be available to patients, in exchange for tokens, in addition to their daily meals. Even so, some of the nursing staff at first found this unacceptable. It is normally seen as a nursing responsibility to distribute all available goods and 'rewards' to all patients alike. For example, allowing some patients to stay in bed late (if they chose to spend their tokens in this manner) contravened this principle, and there was therefore much discussion of the advantages inherent in a scheme which allowed patients who were so lacking in spontaneity and initiative to make some decisions for themselves.

Thus the token economy was started in an atmosphere of general scepticism, of 'yet another rehabilitation scheme', and without very much to lead us to expect that it would survive its six months preliminary run.

The Programme

Staffing arrangements

The nursing staff constituted the basic ward team with the ward doctor, the clinical psychologists and the unit nursing officer functioning in

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an advisory and consultative capacity. Later an occupational therapist joined the ward team on a permanent basis and her activities were incorporated into the token economy. Attempts were made throughout to involve all staff who were in any way associated with the patients, including the ward domestic and staff on adjacent wards.

Nursing staff. We had stated as a basic requirement that continuity of nursing staff should be maintained throughout as far as possible. Apart from this, however, we did not ask for any increase in the normal nursing allocation. In view of general pressure on nursing staff, it was unlikely that this would have been granted anyway, but we also considered it important that the programme should be undertaken within the limits of realistic staffing conditions. It seemed essential to us that it should not be possible for changes that became apparent to be written off as effects of an increase in nursing staff. The actual staffing arrangements were: two nursing staff on each shift at any one time, i.e. a team of four permanent personnel, which included two ward sisters and two enrolled nurses. Only twice over the whole period were there changes in the nursing team. Only one member was pre-selected; the others were already engaged in duties on the ward and were not selected beyond showing an interest in the programme. They were not new entrants into the service; they had worked on average 14 years in psychiatric hospitals, mainly on the chronic wards.

Psychologists. Two clinical psychologists have been involved with the token economy project at any one time. They have been responsible for the initial development and maintenance of the programme, staff training and pre- and post-assessment procedures. No psychologist has been attached full-time to the ward, but during the initial months several hours were devoted to observation of the ward life (7 a.m.–9 p.m.) observing patients' behaviour in specific areas, e.g. bathroom, meal times and staff-patient interaction. An intimate understanding of practical nursing problems was essential. The psychologist also ran the weekly ward meetings with staff.

Administrative support at all levels was essential. The support and co-operation of the medical and nursing administrative staff are central to the development and maintenance of such a programme. Many aspects of a token economy ward are likely to concern the day-to-day running of the ward. Clinical psychologists have not normally concerned themselves so intimately with the total life of the ward, or moved so far into nursing territory. Conflicts may arise at any point between the demands of the token economy rehabilitation programme and traditional nursing ward regimes, and the psychologist and ward team are dependent at every step on the full backing of the nursing administration if difficulties are to be resolved.

Moneys

We required a small block grant to be made available to the ward for the purchase of various commodities which would be available to our patients in exchange for tokens. This can present some difficulty where money payments are made to patients. The exact sum to be allocated is normally known in advance. In a token economy this can only be done retrospectively, i.e. the nursing staff kept a record of commodities 'purchased' by the patients.

Furthermore the system required some effective control of additional or alternative reward sources. Other sources of money were controlled in accordance with DHSS regulations (H.M.67(70) later superseded by H.M.71(90) in 1971), but there was no interference with private moneys. These do not create a serious difficulty on a female ward, but must be taken into account where a token economy on a male ward is envisaged, since many patients are likely to be receiving pensions.

Our basic staffing and financial requirements were accepted by the medical and nursing administration, and the project was approved by the Hospital Management Committee.

Ward population

The token system was established in a chronic ward for female patients. These had all been diagnosed as chronic schizophrenics. Their mean age was 58·2 years (range 39–72 years) and the average length of stay in hospital

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30·0 years (range 13–42 years). Only cases diagnosed as senile dementia were excluded, but it became clear later that some of our chronic schizophrenic patients were in fact suffering from dementia. A few of the patients on the ward were functioning at a sufficiently high level to be able to attend the hospital's industrial workshop every weekday. These patients were not included within the programme and were awarded a standard amount of tokens daily on a non-contingent basis. This left 14 patients, who all showed the typical behaviour of regressed chronic and schizophrenic patients and made the most demands on nursing time.

Their behaviour was characterized by dependence on nursing staff for nearly all aspects of personal care, apathy, inactivity, lack of spontaneity and initiative, social withdrawal and lack of verbal interaction. That is, the patients showed the typical negative symptoms of chronic schizophrenics and the kind of behaviour generally attributed in large part to institutionalism (Wing and Brown, 1970). The patients had not been considered suitable for the hospital industrial workshop, and most were taken daily to a knitting class group in an attempt to provide some kind of activity to exercise disused faculties. Three patients had been participating in a more formal occupational therapy socialization programme.

Token programme

The token programme was explained in simple terms to the patients. In the first place, the tokens (white plastic cards) were introduced into the ward on a non-contingent basis. The patients received twice daily a predetermined number of tokens which could be spent in the ward shop twice a day. After a week this was reduced to a once daily occurrence, which necessitated the patients looking after their tokens all day. At first the patients were helped and encouraged to spend their tokens, but later they were to be left free to participate in these transactions if and when they chose. Sweets and cigarettes etc. were no longer to be handed out as favours.

The next stage involved the introduction of tokens on a contingent basis. Patients no longer received tokens automatically but were now informed of ways of earning them.

In the area of self-care, patients were able to earn tokens for carrying out activities like getting up, getting themselves to the bathroom, washing, finding clothes and dressing, combing hair and brushing teeth.

Undertaking this kind of programme necessitated a radically different approach to the patients and their care. For instance in the bathroom the staff role became principally one of observing and tolerating periods of inactivity and non-intervention that were frequently necessary before the patients displayed any signs of spontaneity and initiative. In the traditional nursing regime, time and staff shortage emerge as the basic factors in the maintenance and reinforcement of over-dependence, i.e. a nurse may have half-an-hour to get twenty chronic patients up, washed, dressed, etc. To get round this kind of difficulty one may have to consider making somewhat unconventional modifications in the nursing regime, e.g. we considered at one time the possibility of patients taking breakfast in their night clothes so that more time might be devoted to the self-care activities in the bathroom. Beds were not expected to be made before breakfast, and meals now took a little longer. Pressure was relieved by shifting the occupational therapy schedule one half-hour forward. Such simple intervention can go some way towards reducing unnecessary pressures on nursing staff, and redirecting skills into more rehabilitative procedures.

Because of limited staff facilities we were obliged to adopt group-oriented rather than individual-oriented procedures. Later, when wide individual differences emerged, two groups were formed with different programmes. We would have preferred to devise more individual shaping procedures but were unable to meet the practical requirements for this. Where possible, tokens were handed out immediately upon performance of the appropriate task, but frequently there were practical restrictions which often made this impossible (e.g. in the bathroom situation, the total number of tokens earned were handed out at the exit as the

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patient was ready to leave). Staff were instructed that praise and verbal approval should accompany the handing out of tokens.

The various activities around meal times were incorporated into the programme, including activities like finding and putting on an apron, helping to lay the table, clearing one's own things and helping wash up.

One of the characteristics of the patients was their apparent lack of interest in their surroundings, and one of the aims was to increase patient involvement in the running of the ward and participation in light ward jobs, e.g making or helping to make their own bed, tidying or dusting jobs, arranging flowers, etc. Attempts to take an interest in appearance, e.g. hair looking attractive, use of make-up, were also rewarded.

Other facets of ward life were gradually incorporated into the token economy programme. For example, staff complained of a few patients who were difficult to get up in the morning, and it was a frequent observation that some patients would put themselves to bed at a very early hour, even before 5.00 p.m. Staff had been expected to get these patients up again. For one patient this was construed as attention-seeking behaviour, in others it was thought to reflect a desire to withdraw from the ward environment. We discussed the potentially strong reinforcement value that going to bed early, or staying in bed late, might have for these patients, and it was decided that extra time in bed (e.g. up to 10.00 a.m.) would be offered in exchange for tokens. Several patients took advantage of this, and although the ward was criticized by some outsiders, staff accepted that patients had a right to this privilege if they had paid the correct amount of tokens.

A brief assessment of the patients' arithmetical skills had suggested that introducing tokens of differing value would prove too complex to allow patients to handle their own token transactions. Thus, for quite a long period all tokens had the same value, i.e. one unit. Even so, assistance was often required. The tokens could be used to purchase a wide variety of goods from the small ward 'shop' which we introduced. This gave patients access to more goods than are usually available on a daily basis. These were mostly inexpensive items, since the ward had to budget from a small block grant, and included for example:

Food items (1–10 tokens): sweets, chocolate, fruit, potato crisps, soft drinks, nuts, tin of coffee. *Cigarettes:* 1 cigarette (5 tokens), packet of 10 (50 tokens). *Toilet articles* (10–30 tokens): e.g. soap, lipstick, handcream, shampoo, comb, nail varnish. *Clothing accessories* (10–50 tokens): scarf, gloves, jewellery, coloured stockings, socks. *Decorative and recreational materials* (5–30 tokens): games, puzzles, reading material, pens and pencils, writing paper, pictures and calendars, plants, flowers. *Social activities* (5–15 tokens): hospital socials, cinema, going for walk in grounds, outing from hospital. *Other privileges:* To go to bed before 4.00 p.m. (20 tokens); To go to bed between 4.00 and 5.00 p.m. (15 tokens). *To stay in bed late:* e.g. 8.00–8.30 a.m. (5 tokens).

It will be seen that relatively speaking cigarettes were made quite 'expensive'. This was deliberate, as we were not in favour of a large inflation of cigarette smoking on the ward. It may also be noted that the token values bear some, but not a close, relationship to monetary values. It was considered that this was a desirable long-term aim, but at this stage we did not want this restriction. Effective reinforcers were enormously difficult to find for these patients, and we attempted to bring a wide range of different types of reinforcers within their 'purchase' scope.

Patients also used the tokens to enable them to attend various social functions and facilities. They paid a fixed number of tokens to attend the hospital cinema, bingo, socials, and occasional outings from the hospital. On the whole not many of the available social functions were of interest to the patients. In the ward discussions we related the general lack of interest in personal care to the absence of meaningful social events outside the hospital environment. On the initiative of the hospital's co-ordinator of voluntary activities, we were later able to offer the patients an outing to the private homes of two voluntary workers. After all patients had had this experience this was added to the list of social activities on which patients could spend tokens.

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Negative reinforcement

We had decided early on in the project against directly using the token system to impose 'fines' in the negative reinforcement of inappropriate, aggressive, disruptive behaviour. Instead, positive reinforcement of the sort of behaviour we wanted to encourage was emphasized, and we encouraged staff to avoid reinforcement of negative behaviour by avoiding drawing unnecessary attention to it. It was considered that the imposition of fines would be conducive to the development of a negative approach. Required to respond to negative behaviour, staff would tend to 'look for' negative behaviour, and this might easily supersede the more positive approach we were trying to encourage. There is some evidence to support this from Lloyd and Abel (1970), who found that sometimes ward personnel would tend to rely on fines. Furthermore, we questioned the effectiveness of negative reinforcement by fining. There is a strong possibility that the positive effects of the attention directed towards the inappropriate or other negative behaviour will outweigh the negative effects of fining.

Results

General observations and problems

Staff. There was considerable intial difficulty in putting the token economy principles into practice. At first staff were inclined to 'see' that all patients made some kind of purchase at the ward 'shop', and there was some reluctance to allocate responsibility for caring for the tokens to the patients themselves. For example, some staff found it difficult to refuse a patient's request for cigarettes, as they were expected to if the patient had not the required number of tokens. As others have also reported (e.g. Ball, 1969), the systematic application of these methods involves a kind of self-discipline, which can disrupt the satisfaction often derived from the mothering and babying relationship that some staff have with this sort of patient. This was clearly a problem for some of our staff: all expressed a degree of loss of 'personal identity', but some were better able to adapt to the demands of the new approach.

We were acutely aware that the success or failure of the programme, indeed its very survival, lay in the hands of the nursing staff. The ward was disrupted three times by moves entailed by the hospital modernization programme, each occasion presenting a ready-made opportunity for our programme to fold up; on each occasion, however, the staff kept it running. The increased burden of clerical work was quite quickly accepted by the nursing staff as part of their nursing duties.

Motivation and morale fluctuated during the first year. Although our aims were restricted with such severely handicapped chronic patients, staff clearly felt under an obligation to demonstrate the effectiveness of the token economy to other ward staff. Many of our initial qualitative changes were difficult to demonstrate, but gradually the staff gained confidence in the token economy. Changes were acknowledged by other staff; outside interest from other hospitals developed and the staff took on themselves the role of 'selling' the methods to their colleagues.

Required to work as a team, the ward became more independent and self-contained, and more readily attempted to resolve difficulties at ward level. There was also some loosening of the traditionally rigid sister-nurse role differentiation, as the junior nurses found they had to take on increased responsibility in the token economy programme.

The total number of days of sick leave and periods of leave in the two years preceding the initiation of the programme decreased in the following two years; however this difference does not reach statistical significance. It was also felt that the overall increase in morale and in positive attitude toward the ward was reflected in the degree of overtime that staff were prepared to put in.

The manner of running the ward became so different from the established nursing approach to this kind of ward that we had considerable difficulty in making use of the occasional 'untrained' staff who were allocated to the ward at times of staff leave. However, attempting to run the programme with the normal nursing allocation did not prove satisfactory, and we were unable to maintain a satisfactory level of consistency and systematic operation. If nursing

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facilities are limited, operant programmes are probably best restricted to a single area of target behaviour at any one time, e.g. incontinence or dressing.

It is our view that to operate effectively a token economy which involves the total 'life' of the ward, a staff-patient ratio of 1 : 6/8 must be allowed for.

Patients. Contrary to the ward's expectations, most patients took some interest in the tokens, but not unexpectedly in such a heterogeneous group, this varied widely and tended to be related to initial level of functioning.

Over time, however, the effectiveness of the back-up reinforcers waned for some of the patients, although a few did maintain a strong interest (spending up to 2,000 tokens monthly). However, for some patients it proved enormously difficult to find any effective reinforcement short of introducing more stringent deprivation measures. With an elderly severely regressed population we did not feel justified in resorting to such measures. With better staffing facilities we might have been able to investigate the effectiveness of different, less conventional reinforcers (e.g. offering time with a nurse). Further we were acutely aware of the need for more attractive social incentives. Most of the social events available take place within the hospital, and staffing facilities did not enable us very frequently to offer time out of hospital as a reward. It seemed to us that to maintain improvements in self-care, personal appearance, etc. social reinforcement must play a critical part. One solution may be to enlist the assistance of voluntary workers, although in our experience voluntary workers do have particular difficulty in accepting the principles of a token economy, e.g. patients paying tokens to go out, etc.

As it was, edible goods were the most frequently 'purchased', e.g. one patient purchased potato crisps every day. Light alcoholic drinks were also popular with some and cigarettes were of course popular with smokers. A few patients were able to make use of the accessories such as lipstick, powder and shampoo.

Both hoarding and stealing did occur, but as these were not too serious we made no attempt to control this behaviour, e.g. by devaluing unspent tokens, or changing the colour of tokens of persistent stealers.

Starting as we did as a pilot investigation, we had not adopted an adequately long-sighted view of the programme. As some patients improved the programme naturally required modification. We were not really able to cope with the complexity of new reinforcement schedules for individual patients. It is now very clear to us that such a programme needs to be seen from the beginning as integrated within a wider rehabilitation programme, i.e. as patients reach a certain functional level they should transfer to another ward where the new behaviours can be maintained and which has more advanced treatment objectives. Likewise, patients unable to profit from the token economy would also be transferred.

Quantitative Findings

1. *Chart data*

The number of tokens earned in various activities as recorded on the charts was used as a measure of change in these activities. A polynomial regression analysis (Finn, 1968) was performed to assess the presence and direction of change in the self-care activities, participation in ward activities and meal-time activities.

Self-care activities. Results show that as a group the patients were participating significantly more in self-care activities (these included getting themselves up, getting to the bathroom, washing face and hands or bathing, finding clothes and dressing, combing hair, and brushing teeth). Over a nine-month period a significant linear trend ($p < 0{\cdot}02$) was observed.

Before the introduction of the token economy the normal procedure had been for patients to carry out a daily 'strip' wash in the bathroom. Bathing was a once weekly routine organized by staff. In the token economy patients were offered a choice of washing or bathing. Against general expectations several patients took to bathing themselves spontaneously. One lady has been known to take 4 or 5 baths a day.

Ward jobs. Results show a significant positive linear increase in tokens earned for participation in light ward jobs over the eighteen-month period. Mean number of tokens earned monthly over this period increased from 154 to 311.

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Meal-time activities. Tokens earned for the meal-time activities (finding and putting on an apron, clearing own plates, dress remaining clean, helping with washing and drying up, etc.) only showed a significant linear trend for the lunchtime activities. Recordings in these areas fluctuated quite widely. A high degree of staff control was unavoidable for some of the meal-time activities, so that some of these activities, e.g. washing-up, may frequently have been under the control of staff rather than the token contingencies. It remains difficult, however, to explain the differences between meal-times.

Incontinence. Special reinforcement contingencies were arranged for four of the patients: they were rewarded when dry at the time of day that they had been found to be most frequently incontinent of urine. Soiling did not enter this programme.

Incontinence in the two patients rewarded in the morning and afternoon, excluding the patient who died, showed a progressive decline (see Table I).

2. *Staff ratings of patients*

An Activity Rating Scale was constructed for use on the ward. It consists of 27 items, covering most areas of interest in the study—social interaction, appearance, ward work and some psychotic symptom items. Ratings on a four-point scale were made by the ward staff for all patients four times during the study and were available for 11 out of the 14 patients for each year. Using the ratings of the two ward sisters, these data were pre-processed, transformed to orthogonal polynomial regression coefficients and subjected to a number of univariate and multivariate analyses (Finn, 1968).

Of major interest with this kind of rating data is an estimate of the extent to which differences found on the scale can be attributed to subject difference, irrespective of rater difference. As a test of rater agreement F-ratios were computed, using univariate analysis of variance for all 27 items. To the extent that raters disagree, the significance of the F's will be reduced. In summary, 25 items yielded F's with p values of less than 0·05, the majority, 20 items, being less than 0·01. Thus the instrument may be considered reliable, and the variance in the following analysis attributable to subject variables.

The next question was whether any change had occurred over the four years in the items of behaviour rated. A linear trend analysis using a transformation matrix showed that a significant ($p < 0{\cdot}0001$) overall linear trend had occurred.

Each item was subjected to a trend analysis to see which behaviour accounted for this significant improvement seen in the patients (see Table II). These data confirm the behavioural data findings described above. Reinforced self-care activities in the bathroom show significant increases (Items 11, 12 and 15) as do also the ward job activities. It is also of interest that the rating scale confirms the improvement in various aspects of social behaviour, including taking interest in socials, interaction with staff and patients, and reading magazines on the ward.

There have been no changes according to the rating scale in the four symptom items (see Table II). No direct attempt had been made in the programme to modify psychotic symptoms directly. However, others have reported some symptom change during token economy programmes, although the findings are somewhat inconsistent (Hutchinson and Baker, 1972).

3. *Minimal social behaviour scale*

Among the non-specific changes observed

TABLE I

No. of incidents of incontinence

Results	Patient	Base-line June	1st assessment July/August	2nd assessment November/December
a.m. p.m. combined ..	1	20	14	8
a.m. p.m. combined ..	2	7	7	2
p.m. only	3	4	4	Patient died
Nights only	4	10	8	10

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TABLE II

Activity Rating Scale (analysis by item)

Social Activities	p<
1. Activity	0·01
2. Socials	0·01
3. Social interaction	0·01
4. Appearance	0·01
5. Speech with staff	0·01
6. Speech with other patients	0·01
7. Reading	0·01
8. Shop	0·05
9. Money	0·05
10. TV	0·01
Self-care activities	
11. Hair	0·01
12. Dressing	0·05
13. Continene—urine	N.S.
14. Continence—faeces	N.S.
15. Washing—face and hands	0·05
16. Going to bed	N.S.
17. Eating	N.S.
Ward activities	
18. Laying tables	0·01
19. Washing up	0·01
20. Wash basins	0·01
21. Volunteering	0·01
22. Dusting	0·05
23. Bed making	0·01
Symptoms	
24. Aggression	N.S.
25. Affect	N.S.
26. Thought disorder	N.S.
27. Hallucinations	N.S.

were increased accessibility and responsiveness. We observed more spontaneity in verbal and social interaction, although this is still abnormally limited. Although the programme did not include specifically social behaviours among patients' target behaviours, it seems that at least some aspects of social interaction were probably reinforced, e.g. volunteering for a job is a form of social interaction.

Measurement of social behaviour in severely regressed patients presents some difficulty, unless of course time-sampling techniques can be undertaken. We decided to use the Farina Minimal Social Behaviour Scale (MSBS) for this purpose.

The MSBS was constructed by Farina *et al.* (1957) as a measure of interpersonal behaviour in the extremes of pathology, and was appropriate to the level of functioning of our patients. It has a standardized interview format, and inter-rater agreement is fairly satisfactory. All patients were interviewed four times by different interviewers to whom the patients were unknown. Results for three of these, given at nineteenth-month intervals, were subjected to analysis, one being excluded as it was given three months before the final interview, and inspection showed no change to have taken place over this period.

Eleven of the 14 patients were available for each of these three occasions and two-tailed t-tests for correlated data were carried out. These indicated that there was a non-significant mean decrease in the first 19 months, but that for the second period a highly significant improvement had occurred ($t = 19{\cdot}5$; $p < 0{\cdot}001$). Eight out of the 11 patients accounted for this improvement.

4. *Comments*

Without a control ward we cannot, of course, necessarily attribute any of our findings to the specific token contingencies. Many of our measures were probably not adequately objective, e.g. ratings by staff involved in the programme; and the analysis of results has involved an analysis of overall trends, rather than individual patient data, an approach which is common, but, as Allen and Magaro (1971) emphasize, is not really suitable for measuring changes on a token economy.

DISCUSSION

In a group of chronic schizophrenic patients as regressed as those in the treatment programme, discharge and rehabilitation into the community was not a realistic objective. However, one of the younger patients who had been in hospital 17 years was taken home on the initiative of her relatives; unfortunately she had to be returned to the hospital after a short time, as they found her unmanageable. Three other patients were accepted by the hospital industrial workshop, and attend spontaneously and unescorted on a daily basis, for which they earn a sum of money.

Many interesting changes were difficult to document. Staff commented on the more relaxed atmosphere in the ward. Patients behaved less readily as a corporate body, for example, they

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were less dependent on instruction from staff when coming to meals or leaving the meal table. Some have started taking themselves off for walks in the hospital grounds more readily, and take the initiative over ward jobs without staff intervention. Previously many patients had tended to remain 'glued' to their chairs. It was a rewarding day for staff when two of the patients were observed to have quite spontaneously started a card game together, with cards that one of them had purchased from the token economy shop that same day. It is a common observation that this kind of self-maintained social interaction is an aspect of behaviour most conspicuously absent from the behaviour repertoire of severely regressed chronic schizophrenic patients.

It was evident that the token economy programme, directed as it was towards discouraging staff-dependent behaviour, reduced the degree of regimentation in the routine of the ward, and this itself may account for some of the changes. Clearly, a number of non-specific factors are likely to have been operating. However, it is our view that behaviour therapy methods do provide an acceptable alternative to the traditional and custodial approaches to staff working with regressed patients on chronic wards. In many ways these methods offer perhaps a more appropriate and meaningful alternative than therapeutic community approaches or relationship therapy. Furthermore they have the advantage of setting specific short-term objectives and progressing in a 'step-wise' fashion, with the result that even with patients of severely limited levels of functioning the concept of 'rehabilitation' can be made meaningful. Consequently staff can derive encouragement and reinforcement as they observe the progress and improvement in their patients. Furthermore, a token economy programme involves the psychiatric nurse more directly in a therapeutic role than does the traditional custodial role. With the attraction of community nursing increasing, mental hospitals are likely to hold decreasing attraction for psychiatric nurses, and the development of therapeutic programmes which develop special and appropriate nursing skills is essential unless long-stay wards are to be neglected. One student nurse temporarily attached to the ward commented that she found the work more interesting and satisfying than her work on an acute psychiatric ward.

We would conclude, on the basis of our experience, that continuity of nursing staff is the most important single factor. Secondly, it is recommended that both staff and patients should be selected with the objectives of the token economy in view, rather than our method of selecting the token economy for an ongoing ward community, with all its contingent problems of changing attitudes and staff control over their 'own' patients. Thirdly, the token economy must be viewed as a hospital rather than ward project, which will require the co-operation of almost every level of staff and administration in the hospital. Fourthly, some provision must be made to set up an environment designed to maintain the progress made in the token economy. It is especially in this area that our own programme failed.

One of the most useful outcomes of the whole venture has been the recognition of the potential value of designating the ward as the basic rehabilitation unit in rehabilitation programmes for chronic patients. A hierarchical arrangement of wards, each with its rehabilitation objectives clearly defined, and allowing for movement between wards may then be conceptualized, e.g. at the higher level might be a ward of patients who show most of the behaviours and skills required to live in group homes in the community but who are lacking in the social skills they would also need. The ward rehabilitation programme might then, for example, be devoted to social skills training. Below this, another ward might specify as its objectives to bring the patients to a level of independence from which they could transfer to a supportive but less structured and supervised ward, which could be run with a considerable degree of 'self-care' as recommended in the DHSS report (H.M.(71)97) on Hospital Services for the Mentally Ill. Patients in such a ward might be expected to take full responsibility for personal care, to take the initiative for leaving and returning to wards, using local shops and undertaking some 'job' within the hospital. At a lower level, rehabilitation objectives may

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well be more limited (e.g. as in the token economy described in this report). Any techniques that are relevant to the target behaviours and the patients level of functioning, may be used. For example, Heap *et al.* (1970) used a 'behavioural milieu' therapy approach which combined behaviour therapy procedures, token economy, attitude therapy, and ward government approaches.

We would suggest that the designation of the ward as the basic rehabilitation unit and the organization of wards in a hierarchical structure for rehabilitation purposes offers an opportunity for maximum co-ordination of rehabilitation staff—nurses, occupational therapists, social workers, psychologists—and increases the probability of the generalization and maintenance of therapeutic progress made at any one stage.

It is concluded that behaviour modification programmes which are introduced at ward level employing ward personnel as therapists have a valuable contribution to make towards the rehabilitation problems that confront us on our chronic wards.

Summary

A pilot investigation of the relevance of behavioural modification methods, in particular the token economy, to the management of a ward of chronic schizophrenic patients, given conditions of normal service facilities and staffing, is described. Fourteen severely regressed 'institutionalized' female patients with average length of stay in hospital of 30 years were included in the programme, and available rewards were made contingent upon display of more independent behaviour. While there is both qualitative and quantitative evidence of change, the paper is mainly concerned with the practical problems in the institution and maintenance of the token economy which may be encountered by staff intending to set up similar programmes in chronic wards of mental hospitals. It is concluded from our experience that behaviour therapy approaches introduced at ward level have considerable potential in the organization of rehabilitation programmes for long-stay population in psychiatric hospitals, and in making better use of nursing skills than traditional methods of care.

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