

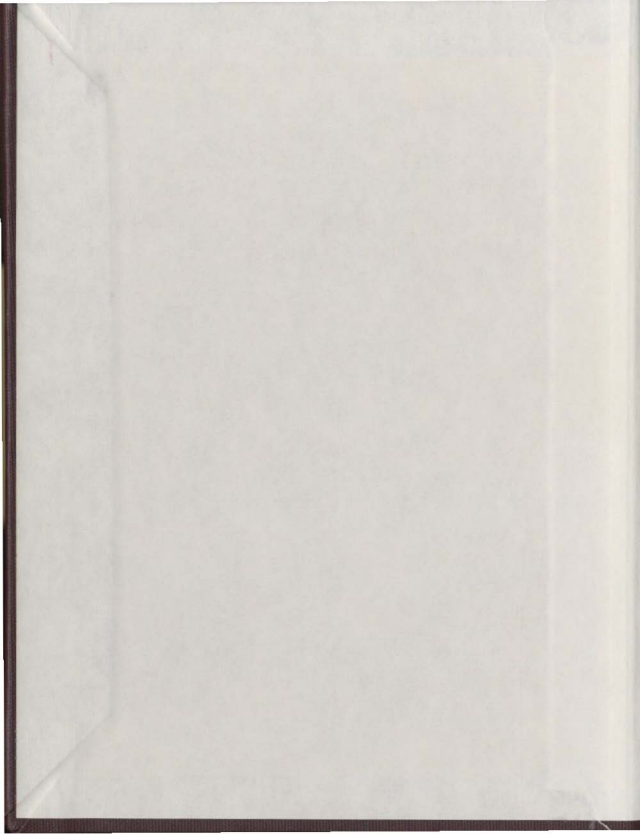
THE EFFECTS OF TWO KINDS OF FEEDBACK ON  
STAFF'S TASK COMPLETION IN A TOKEN  
ECONOMY PROGRAM

CENTRE FOR NEWFOUNDLAND STUDIES

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THE EFFECTS OF TWO KINDS OF FEEDBACK ON STAFF'S  
TASK COMPLETION IN A TOKEN ECONOMY PROGRAM

by



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A Thesis submitted in partial fulfillment  
of the requirements for the degree of  
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## ABSTRACT

This study investigated the effects of two kinds of performance feedback on ward staff's completion of assigned tasks in a token economy program. Subjects were 14 Psychiatric Nursing Assistants employed on a ward of 39 residents, 24 of whom were participants in the program. The assigned tasks were observing and recording resident performance on dining behaviour, physical appearance, room care, and recreational activities. The dependent measure was staff completion of tasks, computed daily. Its determination was based on Assistants' recordings on the designated program forms. Two completion scores were determined, the 'Percentage Observations Completion' and the 'Percentage Jobs Completion.' Reliability of using data on the forms was assessed by checks made surreptitiously by the ward Social Worker and Program Co-ordinator. Twenty-three percent of the assigned tasks were checked in this way, with an agreement of 99%. Percentage agreement with Assistants' recorded observations of residents' behaviours was 83%. A withdrawal design was employed in which baseline (A) and two feedback conditions (B and C) were presented in an A B A-B A C A C A sequence. During B conditions the Co-ordinator posted information containing the combined completion scores for staff on the nursing station bulletin board. During C conditions the

Co-ordinator posted the performance scores of the residents on the target behaviours. Feedback conditions were 16 days long, and the baseline and withdrawal conditions were 20 days each.

Results showed that Assistants' completion of assigned tasks increased in the four experimental phases (two kinds of feedback) relative to baseline and withdrawal phases. The differences were sufficient to support the conclusion that both kinds of feedback produced increases in completion rate. Details of the results are reported. Interpretations of the findings and the functions of performance feedback are discussed. Implications of this research, particularly a practical consideration of feedback as a staff management strategy, are discussed and suggestions for future research are made.

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## INTRODUCTION

A consideration of a number of factors indicates the important role of nonprofessional attendant staff in institutions for the mentally retarded and mentally ill. Firstly, they often make up as much as half of an institution's entire employee population and spend more time with residents than any other group of personnel (Bensberg, Barnett, and Hurder, 1964; Iwata, Bailey, Brown, Foshee, and Alpern, 1976). Secondly, the interpersonal behaviours of these staff are frequently a significant factor in influencing the behaviour of institutional residents (Dailey, Allen, Chinsky, and Veit, 1974; Gruenberg, 1967). Thirdly, most treatment programs in institutions can be readily implemented by attendant staff (e.g., Ayllon and Azrin, 1968), a practice most reasonable and appropriate in many settings since these staff provide direct, almost continual, care and supervision to residents. Fourthly, institutions typically do not have the resources to employ large numbers of professional mental health workers, and therefore must rely on available staff to implement a considerable number of treatment procedures; moreover, it is frequently contended that attendant level staff can enhance program effectiveness when playing a meaningful therapeutic role (see Ellsworth and Ellsworth, 1970).

It is apparent from a review of behaviour modification research that nonprofessional attendant staff are increasingly being recognized as potential behaviour change agents in institution-based treatment programs for the mentally retarded and mentally ill (Kazdin, 1977; Reppucci and Saunders, 1974). While a professional psychologist may design a program, oversee it, and compile records of residents' performances, usually the direct care attendant staff are ultimately responsible for executing it. They are responsible for what behaviours are reinforced, punished, and extinguished, and consequently they determine the effectiveness of a program. Therefore, the ongoing appropriate performance of attendant staff is of concern to both psychologists and administrators who design and oversee treatment programs for institutional residents.

Indeed, it is frequently the case in institutions that attendants spend considerable amounts of time engaging in non-job related or non-program related activities and relatively little time actually interacting with clients (residents) or carrying out assigned program duties. Support for this contention is evidenced in observational studies by Bensberg and Barnett (1966), Dailey et.al. (1974), Harmatz (1973), and Warren and Mondy (1971). The present investigation is concerned with the maintenance of appropriate staff performance in their implementation of the procedures of a token economy program; more specifically, it examines the

use of performance feedback as a strategy to increase attendants' completion of assigned tasks which consisted of observations and recordings of residents' behaviours. The decision to investigate increasing the program related performance of the staff resulted from informal observations over a one year period. Attendants' performance on the completion of assigned tasks was observed to vary in an indeterminate manner. Practical considerations of conditions in the institutional setting influenced the selection of feedback as a staff management strategy; generally, it is considered to be administratively and economically feasible for the program in question.

As Kazdin (1973; 1977) noted, both the development and maintenance of appropriate staff performance are necessary if program implementation is to be successful. It is often assumed that staff performance is maintained by such consequences as progress in residents' behaviours or regular instructions of assignments. This is likely to be an inaccurate assumption regarding the natural contingencies present in an institution and the power of such contingencies in shaping staff. Loeber (1971) pointed out that initial reinforcers for staff implementing a behavioural program are usually such things as novelty and prestige, but these become less dominant over time and are replaced with such things as boredom with routine and failure of residents to improve.

The recognition of the importance of nonprofessional attendant staff in the treatment of institutional residents has resulted in various investigations attempting to evaluate effective, successful staff management strategies. While investigations of specific strategies to determine their relative impact on staff behaviour are reviewed here, it should be noted that sometimes strategies or procedures are used in combination in various settings. Generally, the focus of studies has been on the maintenance of appropriate performance by staff who implement program procedures.

#### Management of Attendant Behaviour by Tangible Rewards

One strategy that has been demonstrated as considerably effective is the use of tangible rewards. Money as a reinforcer for staff was provided in several programs (Ayllon and Azrin, 1968; Buel and Born, 1977; Katz, Johnson, and Gelfand, 1972; Patterson, Griffin, and Panyan, 1976; Pomerleau, Bobrove, and Harris, 1972; Pomerleau, Bobrove, and Smith, 1973; Pommer and Streedbeck, 1974; Watson, 1976).

For example, Katz et.al. (1972) found that monetary bonuses to psychiatric aides resulted in a substantial increase in their reinforcer dispensing behaviour to patients over baseline levels in a token economy program. The withdrawal of the monetary bonus resulted in a decline of aide-dispensed reinforcement to a near baseline level. Pommer and Streedbeck (1974) used tokens worth one dollar in conjunction with public notices to obtain higher levels of job completion and

increased procedure implementation by staff in a residential child-treatment facility. Patterson et.al. (1976) further demonstrated the effectiveness of monetary reward when they found that payment of nonprofessional attendants with small amounts of money contingent upon their training, profoundly and severely retarded institutionalized residents produced dramatic increases in the frequency of daily training sessions.

The outcome of a study by Pomerleau et.al. (1973) suggested that cash awards to aides result in increases in the amount of appropriate behaviour in patients. When the cash awards were discontinued for the staff, inappropriate patient behaviour increased. Buel and Born (1977) also found that contingent monetary bonuses for staff resulted in corresponding patient improvement.

Another effective reinforcer has been commercial trading stamps (Bricker, Morgan, and Grabowski, 1972; Hollander and Plutchik, 1972; Hollander, Plutchik, and Horner, 1973). In a residential facility for developmentally retarded children Bricker et.al. (1972) provided attendants with video feedback of their performance on the ward. Staff received verbal praise and trading stamps contingent on their interacting with the residents, as previously recorded on videotape. The result was a 700% increase in staff-resident interaction on the ward and an improvement in the suitability of tasks selected by attendants for use with the children.

The changes were apparently a result of the reinforcement because removal of the videotape feedback did not result in a loss of target behaviour increases.

The systematic application of a trading stamp reinforcement procedure (Hollander and Plutchik, 1972) increased attendant performance on the completion of tasks related to carrying out a contingency management program for hospital ward patients. Also, Hollander et.al. (1973) found that reinforcing attendants with trading stamps had a positive effect on the degree to which patients engaged in work behaviour; the removal of this reinforcement for attendants resulted in a decrease of patient work behaviour.

A further example of the use of contingent reward to maintain staff performance is opportunity to arrange work schedules (Iwata et.al., 1976). Those attendant staff who had met performance criteria implementing staff-resident assignments were eligible for a weekly lottery in which they could win the opportunity to rearrange their days off work for the following week. Winning a chance to arrange work schedules was found to be a successful staff management procedure as measured by time spent in predefined target behaviours and task completion.

#### Management of Attendant Behaviour by Performance Feedback

A second strategy that has been used to increase and maintain staff treatment behaviours is feedback (Andrasik and McNamara, 1977; Brown, Willis, and Reid, 1977; Panyan,

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Boozer, and Morris, 1970; Patterson, Cooke, and Liberman, 1972; Quilitch, 1975; Welsch, Ludwig, Radiker, and Krapfl, 1973). Essentially, feedback is providing information about performance; it can vary in its manner of delivery (written or oral), content (staff performance, resident performance, comparison among individuals), and effects upon targeted persons (staff behaviour or resident behaviour).

There is evidence that feedback can be used effectively independent of any other reinforcers by simply giving staff information about what he or she is doing. For example, Panyan et.al. (1970) trained ward attendants to teach self-help skills to institutional residents but found that staff performance gradually deteriorated. A feedback procedure was implemented in the form of a " feedback sheet " which gave information on the percentage of training sessions attendants conducted out of all possible sessions. The weekly delivery and posting of the " feedback sheets " substantially increased the percentage of sessions conducted by the staff of three halls (wards). Panyan et.al. concluded that the feedback system is one economical method whereby the performance of attendants can be maintained in the absence of daily supervision. Also, Welsch et.al. (1973) used performance feedback to increase the daily project activity of staff in a state hospital for the retarded. Using principles and procedures similar to Panyan et.al. (1970), daily project completion

results in two behaviour modification programs were posted in the ward hallway. Welsch et.al. concluded that providing feedback to ward personnel could function as a reinforcer for daily project completion, and that it is a convenient, simple, and efficient way to promote training activities in cases where resident improvement is so gradual that it does not function as a reinforcer.

A subsequent study by Quilitch (1975) further demonstrated the efficacy of staff feedback independent of other forms of reinforcement. In a comparison of performance feedback, memos of instructions to staff, and workshop teaching, he found that the memos and workshop were ineffective staff management procedures in an institution for the mentally retarded, while the performance feedback (together with staff scheduling) effectively motivated the staff to lead daily recreational activities with the residents. Quilitch concluded that performance feedback is a useful staff management procedure readily available in institutions.

#### Management of Attendant Behaviour by Instructions

A third strategy that has been investigated is a form of instructional technique. In relation to the maintenance of appropriate staff behaviour, such procedures usually involve situations where staff are instructed to behave in a particular way with clients or residents (Buel and Born, 1977; Katz et.al., 1972; Pommer and Streedbeck, 1974; Quilitch, 1975), as differentiated from instructional methods

to develop skills (i.e. use of planned lectures).

In the Katz et.al. (1972) study baseline observations indicated that psychiatric aides dispensed low rates of reinforcement for appropriate patient behaviour. Their investigation of the effects of three separate manipulations (instructions, verbal prompts, and monetary reward) revealed that instructing the aides had no effect on their reinforcement dispensing behaviour, while verbal prompts resulted in a slight increase, and a monetary bonus produced a substantial increase (as mentioned previously). Similarly, Quilitch (1975) found that sending a memo instructing staff to lead daily recreational activities for institutional residents was ineffectual. Buel and Born (1977) provided further evidence of the ineffectiveness of instructions in maintaining appropriate staff performance and concluded that instructions alone will probably not bring about important long-term changes in staff behaviour.

#### Management of Attendant Behaviour by Social Praise, and Modeling

Social praise (Christian, Holloman, and Lanier, 1973; Montegar, Reid, Madsen, and Ewell, 1977; Stoffelmayr, Lindsay, and Taylor, 1979), and modeling (Wallace, Davis, Liberman, and Baker, 1973) have also been used as staff management strategies. For example, Christian et.al. (1973) designed a program to teach 28 severely and profoundly retarded female patients to eat with a spoon. The intention was that the

program would be maintained by the attendant ward staff and would result in decreased involvement by psychology department personnel. The transition to a staff-run program was facilitated by regular meetings, and praise and social reinforcement were given to the attendants whenever appropriate. The results were that inappropriate eating responses of the patients were significantly decreased; the number of psychology personnel implementing the program was reduced to zero from 10, and the number of attendant staff increased from zero to four per meal over the duration of the study (45 days reported). Stoffelmayr, et.al. (1979) used a procedure consisting of telephone reminders and contingent praise to increase ward staff's behaviour of holding treatment sessions with long-stay schizophrenic patients. They concluded that the intervention of prompts and social reinforcement was an effective means of motivating staff treatment activities.

In the Wallace et.al. (1973) study the purpose was to increase ward staff's attendance at a social interaction hour held daily for patients and staff. Neither instructions to attend nor ensuring that there were no competing duties affected staff behaviour. However, when professional staff such as the psychologist or nursing supervisor attended the sessions, both staff and patient attendance were increased.

### Management of Attendant Behaviour by Administrative Changes

It should be noted briefly that there is another form of staff-management strategy, which is perhaps suitably termed 'administrative changes' in a ward or institution. Such administrative manipulations have ranged from simply displaying a poster of an inappropriate staff behaviour (Fielding, Errickson, and Battin, 1971) to a relatively more sophisticated system of introducing program equipment changes and administrative policy changes of two different kinds each, in addition to three forms of information feedback (Andrasik and McNamara, 1977). Both of these investigations resulted in improvements in appropriate staff performance. As well, Sneed and Bible (1979) obtained improvements in staff performance by implementing "duty-cards" for attendants in an institution for severely and profoundly retarded adults; this administrative procedure emphasized specificity of job descriptions, assignment schedules, and individual responsibility for job completion.

### Conclusions about Staff-Management Strategies

The review of the literature on strategies and procedures to maintain appropriate staff behaviour in their implementation of treatment programs shows consistently positive results with the use of tangible reinforcers (Hollander and Plutchik, 1972; Katz et.al., 1972; Patterson et.al., 1976). Also, there are indications that such an approach leads to corresponding appropriate changes in residents' behaviours (Buel and Born,

1977; Hollander et.al., 1973; Pomerleau et.al., 1973). There is evidence to support the use of performance feedback as an effective procedure to maintain staff behaviour (Panyan et.al., 1970; Quilitch, 1975; Welsch et.al., 1973), although there have been suggestions that by itself the utilization of feedback may be limited (Pomerleau et.al., 1973; Pommer and Streedbeck, 1974). It is apparent that instructions alone have not resulted in successful maintenance of staff performance (Buel and Born, 1977; Katz et.al., 1972; Quilitch, 1975), and are probably better used in combination with other strategies. There is evidence that social praise or approval is an effective procedure (Christian et.al., 1973; Stoffelmayr et.al., 1979), and there are suggestions that modeling may improve institutional staff behaviour (Wallace et.al., 1973). Finally, administrative manipulations of program procedures or policy have been demonstrated as an effective staff management strategy (Sneed and Bible, 1979).

It is distinctly clear that management strategies are necessary for the long-term maintenance of attendant staff behaviour in institutional settings (see Kazdin, 1977, chapter six). However, the selection of a particular strategy is often dictated by practical considerations of conditions in the institution. Therefore, the use of the most effective approach (i.e. reinforcers contingent on staff behaviour) is not always possible (Andrasik and McNamara, 1977; Brown et.al., 1977; Reppucci and Saunders, 1974). Potential

problems may arise with respect to: (a) availability of money for reinforcers; (b) a program co-ordinator's lack of direct control over reinforcers for staff (e.g., work schedules, salary or bonuses, working conditions); (c) union contracts and/or civil service regulations; or (d) politics within an institution or a specific ward. One or more of these factors may make a particular performance maintenance strategy impractical and not feasible. Thus, due consideration must be given to the circumstances present in an institution (or other treatment facility) in addition to the demonstrated efficacy of a particular strategy or procedure.

#### The Present Investigation

The present study will investigate the effectiveness of two kinds of feedback on the performance of nonprofessional attendants in their implementation of the procedures of a token economy program. The first kind is daily written feedback of staff performance, and the second is daily written feedback of resident performance.

The program has been established for several years on a long-term ward of an institution (hospital) for the mentally retarded and mentally ill. There are approximately 450 residents in the institution which is comprised of 12 wards; over 350 of these residents are considered to be long-term or "chronic," and situated on nine of the wards. The token economy program applies to an average of 24 male residents of a ward commonly known in the hospital as the 'behaviour

modification unit.' Candidates for the unit come from other long-term wards, and are admitted to the program following a behavioural assessment and whenever a bed is made available due to a discharge or transfer.

The reason for the establishment of the program was the numerous hospital residents determined to be functioning at a low level on a number of behavioural skills. The program's general aim is to enable as many residents as possible to function more independently and rely less on staff. It is also anticipated that residents will be better prepared for possible discharge into the community. Thus, the program specifically emphasizes the development of self-care, work, and social skills, and also is directed at the modification of maladaptive or problem behaviours.

Criteria for the target behaviours are operationally defined, and residents are awarded tokens whenever they satisfy all of a target's criteria. There is a large assortment of back-up reinforcers available for exchange. Attendants are required to observe the residents on the criteria for each of the target behaviours, record the results of the observations on an appropriate, designated form for each target, and award tokens to those residents meeting criteria. In addition to the use of positive reinforcement to produce desired changes, demonstrations and prompts are sometimes used. Punishment (usually response cost and time out) and negative reinforcement are occasionally necessary for problem

behaviours.

As indicated earlier, the incentive for the present research resulted from informal observations during a one-year period which had revealed that attendants' performance on the completion of assigned program tasks varied in an indeterminate manner. Based on these observations it was decided to investigate systematic procedures for increasing and maintaining the program related behaviours of the attendants. The dependent variable in the present investigation was staff completion of assigned tasks as determined by their recordings of observations on the designated forms for the target behaviours. The use of data on the record forms as the measurement of task completion was selected because it is an ongoing procedure in the token economy program and readily available for computation and analysis. Also, periodic reliability checks revealed that data presented on the forms accurately represented the completion of observations, the recording of the results, and awarding of tokens to those residents meeting criteria.

Unfortunately many potentially effective reinforcers were deemed not feasible for use in the particular institutional setting in question due to a number of factors. Such factors included lack of direct control over reinforcers for staff and concern about union contracts and civil service regulations with regard to possible contingencies. However, it was apparent that various kinds of performance feedback

were practical, and certainly feasible to investigate as a strategy to maintain the program related behaviours of attendants.

As previously mentioned, two kinds of performance feedback were investigated in the present study. While the mode of delivery was the same in both, the content of the feedback varied. The first involved daily written feedback of staff completion scores of assigned tasks, which were posted in a conspicuous location on the ward; the second feedback condition consisted of daily written (and posted) feedback for staff of residents' performance scores on the program's target behaviours. The administration of the feedback contingencies in the present investigation entailed a withdrawal experimental design (Hersen and Barlow, 1976; Leitenberg, 1973) in which baseline (A) and the two feedback conditions (B and C) were presented in an A B A B A C A C A sequence. Thus attendants' completion of tasks were monitored throughout all phases of the study to determine the effects of the feedback conditions being applied.

Along with the aforementioned necessary consideration of practical circumstances in the institution there was evidence to support the use of written feedback procedures as an effective staff management strategy (Andrasik and McNamara, 1977; Panyan et.al., 1970; Quilitch, 1975; Welsch et.al., 1973). The present investigation used principles somewhat similar to the Panyan et.al (1970) and

Welsch et.al. (1973) studies in that attempts were made to improve daily program completion results of staff by posting written completion scores. An extension of the above feedback studies was the examination of the effects of written feedback of residents' performance.

The primary concern of the present study is a practical one, to investigate the use of performance feedback as a method to increase and maintain attendants' completion of assigned tasks in the token economy program. Appropriate performance in carrying out the tasks was considered necessary for the success of the program in its attempts to improve residents' level of functioning on behavioural skills. Also, this improvement had to occur within the existing administrative, economic, and political conditions of the ward and hospital. It was anticipated that feedback would be demonstrated as an economical and readily available strategy whereby the appropriate performance of attendants can be maintained in institutions that rely on such direct care staff to implement treatment procedures.

Specifically it was hypothesized that:

1. Written, posted feedback of attendant staff's performance (completion of assigned tasks) in their implementation of a token economy program's procedures increases the completion rate of tasks by staff.

2. Written, posted feedback of residents' performances on a token economy program's target behaviours increases the completion rate of tasks by staff.

While it was hypothesized that both feedback conditions produce improvements in program task completion by staff, it was expected that completion rates would be higher during feedback of staff performance.

#### METHOD

##### Subjects and Setting

The subjects were 14 Psychiatric Nursing Assistants who were employed on the 'behaviour modification unit' (West 2A) of the Waterford Hospital, St. John's. Nine of the Assistants were male, five were female. Their mean age was 32.3 years with a range of 21 to 53 years. All were quite experienced; six had worked as Nursing Assistants for more than 10 years, three had worked for five to nine years, and the remaining four had one to four years experience. With regard to time working on West 2A, six had four or more years experience, five had worked there for approximately two to three years, and three Assistants had just over one year's experience on the unit.

All Assistants had completed the Psychiatric Nursing Assistant training program, and participated in various inservice training sessions. Also, there were frequent

(an average of two per month) ward discussions on the principles involved in the implementation of contingency management programs. As well, there were weekly ward meetings attended by all staff on duty. Approximately half of the meeting time included consideration of various aspects of the token economy program.

The work schedule consisted of a shift rotation of days (0800 - 1600 hrs.), evenings (1600 - 2400 hrs.), and nights (2400 - 0800 hrs.); two Assistants worked only day shifts while 12 rotated among the three shifts. The schedule was arranged in four seven-day (one week) blocks so that an Assistant would work five nights of the first week, five evenings of the next, then a block of five days, and finally a 'relief week' which usually included two nights, two evenings, and one day. The shifts worked in a one week block could be five consecutive, three shifts with two off and then two on, or two shifts worked with two off and three on.

One subject resigned his position in the hospital five weeks into the study, and a second resigned just before the completion of the sixth week.

There were 39 male residents on the ward, and, while the number varied throughout the present study, an average of 24 were included in the token economy program. The number ranged from 22 to 26, and there was a total of 31 different residents in the program, as a result of a small number of transfers, discharges, and new admissions during the period

of the study. The primary diagnoses of the program residents, as indicated on their charts by the attending psychiatrist, were: mental retardation, 17; schizophrenia, 10; and 'behavioural problems,' 4. Their mean was 32.5 years, with a range of 18 to 53 years. The length of time of continuous hospitalization since last admission ranged from 0.9 years to 22.8 years with a mean of 5.9 years.

#### The Token Economy Program

The original ward token economy program was started seven years ago. The program's present Co-ordinator has been in that position for three years, except for a period of approximately six months when the program was interrupted because of a strike by nonprofessional staff in the hospital. Throughout the past three years various revisions and adjustments were made to the program, with the most recent occurring two months before the commencement of the present investigation.

The targets of the token economy program included eating-drinking behaviours, personal hygiene skills, room care, social interaction, recreational activities, and work performance. Specific criteria had been developed for these target behaviours and tokens were awarded to residents when successfully meeting the criteria of a target.

The procedures of the ward program required that staff (Psychiatric Nursing Assistants) complete a number of assigned tasks each day; on West 2A the tasks were called 'job categories'. Staff were required to observe the approximately

24 residents on the criteria for each of the target behaviours, record the results of the observations on the appropriate designated forms, inform each resident of his performance, and award tokens to those meeting the criteria (except for recreational activities for which there were no tokens awarded). The nine job categories and their scheduled times under consideration in the present study were as follows:

- Job 1 - Eating and Drinking, at 0800 hrs.
- Job 5 - Room Care, at 0830 hrs.
- Job 4 - Physical Appearance Check, at 0845 hrs.
- Job 1 - Eating and Drinking, at 1130 hrs.
- Job 8 - Recreational Activity Survey, at 1205 hrs.
- Job 4 - Physical Appearance Check, at 1615 hrs.
- Job 1 - Eating and Drinking, at 1630 hrs.
- Job 8 - Recreational Activity Survey, at 1700 hrs.
- Job 8 - Recreational Activity Survey, at 2030 hrs.

There were individual record forms for each job category. The criteria for the resident target behaviours were listed on the forms and there were spaces in which to record the results of the observations for all residents (Appendix A).

The assignment of staff to job categories was done by the senior Nursing Assistant; at the end of each day he assigned staff for the next day by filling in their names on the 'Job Schedule Form' (Appendix B) which was posted on the nursing station bulletin board. The Assistants were expected

to note which categories they were scheduled for, obtain the appropriate form from the filing box (situated in the nursing station) at the scheduled time, and complete the set of observations and recordings.

As an illustration: Nursing Assistant L.S., who has been assigned Job 1 at 1130 hrs., is required to go to the dining area with the appropriate form, observe each resident for the 'eating and drinking' criteria, record the results on the form, inform each resident of his performance, and award a token to those meeting the criteria. For the purposes of the present investigation, L.S. having observed each resident and completed the record form would have satisfied the criterion for completion of an assigned task.

The completed record forms were filed in the nursing station for the day, and collected the next morning by the Program Co-ordinator who took them to his office for computation and analysis. These collected forms would contain the results of observations for the previous day.

#### Dependent Measure

The dependent measure was the daily percentage of assigned tasks (job categories) completed. The determination of completion was based on Assistants' recordings (data) on the job category forms. Two completion percentage scores were determined.

First, the percentage of observations completed on all individual residents for all job categories was computed daily by dividing the total number of observations recorded (as indicated by the data on the forms) by the total number of observations possible. The Program Co-ordinator calculated this score immediately following the collection of the record forms each morning. The number of possible observations varied from day to day because of physically ill residents, day leave, temporary transfer, or resident attendance at activities off the ward. (This first score is the 'Percentage Observations Completion').

Second, the percentage of job categories or sets of observations completed was computed. Again this information was determined from the record forms collected by the Program Co-ordinator. It was calculated by dividing the number of forms (both partially and fully recorded) by the total number of job categories possible for the day. The number of possible job categories varied occasionally because of all residents on excursions outside the hospital, or requirements of staff for extraordinary reasons elsewhere. (This second score is the 'Percentage Jobs Completion'). For the purpose of illustrating the second score: if eight of nine scheduled job categories were completed (i.e. records of resident observations made on the forms) then the completion rate would be 88.9%.

### Reliability Checks

The reliability of using data on the job category record forms as the measurement of task completion was assessed by checks on Assistants' completions of assigned tasks made surreptitiously by the ward Social Worker and Program Co-ordinator. They were scheduled randomly on a weekly basis, and the number per week depended on the availability of time from other duties.

The check involved a visit to the ward at the time of a scheduled job category in order to determine that the Assistant was actually carrying out the assigned task; the criteria were that he or she was in the vicinity of the residents to observe them individually and that the result was recorded on the appropriate form at the time of the observation.

In addition a sample of checks included recording observations of select residents on the target behaviours independently of Assistants' observations; these were completed by the Social Worker and Program Co-ordinator as a measure of reliability of staff's observations.

### Procedure and Design

As previously indicated a withdrawal design was employed in which baseline (A) and the two feedback conditions (B and C) were presented in an A B A B A C A C A sequence.

A<sub>1</sub>, Baseline (20 days): During baseline the usual daily assignment system for Nursing Assistants was in effect, as already described. The data from the record forms was compiled by the Program Co-ordinator to determine the 'Percentage Observations Completion' score and the 'Percentage Jobs Completion' score, but no feedback or other information regarding staff's implementation of program procedures was presented.

B<sub>1</sub>, Daily Written, Posted Feedback of Task Completion Scores (16 days): During this phase the Program Co-ordinator posted the percentage scores of assigned tasks in the nursing station. The information was contained on the "Feedback Chart" which measured approximately 55 cm. by 45 cm., and was posted conspicuously on the nursing station bulletin board. The percentage completion (both scores) for Assistants collectively was presented for two days previous and the daily 'Percentage Observations Completion' score was plotted on a graph throughout the 16 days.

The information was posted approximately mid-morning each day, immediately following the computation of the previous day's completion scores. All Assistants were verbally informed of the "Feedback Chart" by the Co-ordinator, but were not told that the procedure constituted an experiment. They were told that "the information was being posted in order to let you know how you are doing on the completion of observations on the job categories from day to day." The only

questions were ones requesting an explanation or elaboration of the information presented on the " Feedback Chart ", and they were answered by the Co-ordinator as directly and straightforwardly as possible.

A<sub>2</sub>, Baseline (20 days): The daily written, posted feedback of task completion scores was withdrawn and the conditions described in the initial baseline were in effect.

B<sub>2</sub>, (16 days): The procedure of daily written, posted feedback of task completion scores was implemented again, as presented above.

A<sub>3</sub>, (20 days): Withdrawal of daily written, posted feedback of task completion scores.

C<sub>1</sub>, Daily Written, Posted Feedback of Residents' Performance Scores on Target Behaviours (16 days): During this phase the Program Co-ordinator posted the performance scores obtained by residents on the program's target behaviours. The information was contained on a " Feedback Chart " similar to that described previously, and was posted conspicuously on the nursing station bulletin board. The raw scores obtained by all program residents on the target behaviours' criteria were presented for the previous two days, and the mean daily scores for all residents collectively on eating-drinking, physical appearance, and room care were plotted on a graph throughout the 16 days.

The information was posted approximately mid-morning each day. All Assistants were verbally informed of the "Feedback Chart," but were not told that the procedure constituted an experiment. The Co-ordinator told staff that "the information was being posted in order to let you know how the residents are doing on the target behaviours from day to day." Again, the only questions by staff were related to further explanation or elaboration of the feedback information, and they were answered directly and straightforwardly by the Program Co-ordinator.

A<sub>4</sub>, Baseline (20 days): The daily written, posted feedback of residents' performance scores was withdrawn, and the conditions described in the initial baseline were in effect.

C<sub>2</sub>, (16 days): The procedure of daily written, posted feedback of residents' performance scores on the target behaviours was implemented again, as described above.

A<sub>5</sub>, (20 days): Withdrawal of daily written, posted feedback of residents' performance scores on the target behaviours.

It was intended to implement both feedback conditions together on a permanent basis following the last return to baseline conditions. However, five nursing personnel were to be transferred to the 'behaviour modification unit' within the next week, and they were to be trained in the implementation of the program procedures. Also, minor adjustments had to be made with regard to the scheduling of observations

and assignment of staff to the 'job categories.' These factors resulted in the postponement of the reinstatement of performance feedback as a regular function of the token economy program.

## RESULTS

### Reliability

The reliability of using the job category record forms as the measurement of task completion was determined by having the ward Social Worker and Program Co-ordinator surreptitiously check assigned tasks being implemented when scheduled. Approximately 23% of the tasks assigned during the research period were checked in this way. The reliability was calculated by dividing the number of agreements on task completion by the number of agreements plus the number of disagreements and multiplying the result by 100. Table 1 provides the number of tasks checked and the percentage agreement with the Assistants for the Social Worker, Program Co-ordinator, and both combined. (There were 45 independent checks of the same task; thus there is a total of 305 different checks).

As indicated on Table 1 the combined checks resulted in an agreement of 99%. On one occasion an Assistant presented a completed job category form when no observations had been made, and there were two instances of properly recording observations without filing the record form in the nursing station.

TABLE 1

Reliability Checks on Completion of  
Assigned Tasks by Assistants

	Tasks Checked	Agreements	% Agreements
Social Worker:	130	128	98.5%
Program Co-ordinator:	220	219	99.5%
(SW - PC Together):	(45)	(45)	(100%)
Combined Total:	305	302	99.0%

(Total number of assigned tasks: 1346)

A sample of checks included recording observations of residents on the target behaviours independently of Assistants' observations. This reliability was determined by dividing the number of agreements on observations by the number of agreements plus the number of disagreements and multiplying by 100. For a combined total of 386 residents observed by the Social Worker and Program Co-ordinator during the research period the agreement with Assistants' observations of target behaviours was 83%.

#### Completion of Assigned Tasks

The purpose of the present investigation was to examine the effects of two kinds of feedback on Assistants' completion of assigned tasks which were part of the procedures of the token economy program. The first was written, posted feedback of Assistants' task completion scores, and the second was written, posted feedback of residents' performance on target behaviours. As described in the method section, two completion scores were calculated; they were the 'Percentage Observations Completion' and the 'Percentage Jobs Completion.'

The first score of daily completion of assigned tasks ('Percentage Observations Completion') under baseline and feedback conditions is presented in Figure 1. It is apparent from Figure 1 that both feedback conditions were effective in increasing the completion rate of assigned tasks; returns

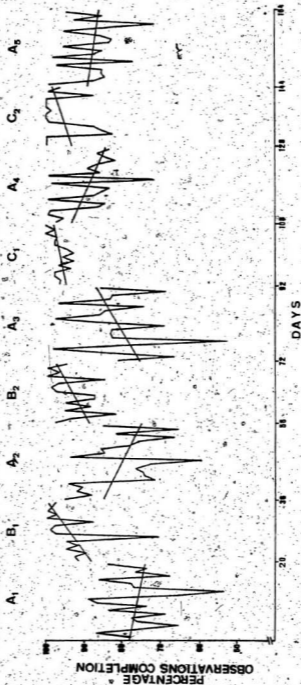


Figure 1. Daily 'Percentage Observations Completion' for subjects as a group during baseline, feedback, and withdrawal phases.

to baseline conditions resulted in a decrease of the 'Percentage Observations Completion' score, (but there was a gradual increase over successive withdrawal phases).

During the first experimental phase ( $B_1$ , feedback of Assistants' task completion) the percentage completion score increased from a mean of 76.0% during the initial baseline ( $A_1$ ) to a mean of 93.6%. In the second experimental phase ( $B_2$ ) completion increased from a mean of 80.0% during withdrawal ( $A_2$ ) to a mean of 93.2%. The subsequent return to baseline conditions ( $A_3$ ) resulted in a mean 'Percentage Observations Completion' score of 81.2%. During the next experimental phase ( $C_1$ , feedback of residents' performance) the percentage completion increased to a mean of 96.5%. In the last experimental phase ( $C_2$ ) completion increased from a mean of 89.2% during withdrawal ( $A_4$ ) to a mean of 96.1%. The final return to baseline conditions ( $A_5$ ) resulted in a mean 'Percentage Observations Completion' score of 87.9%.

Since under each feedback condition the mean rate of completions is higher than under each of the baseline conditions, and since the trend (by the semiaverage method, indicated in Figure 1) is accelerating in each of the feedback conditions compared to decelerating trends in all but one of the baseline conditions, it is reasonable to conclude that it has been shown that both forms of feedback produced improvements in attendants' rate of task completion.

The second score of daily completion of assigned tasks ('Percentage Jobs Completion') is presented in Figure 2 for all baseline and feedback conditions. It is also apparent from this chart that both feedback conditions were effective in increasing the completion rate of assigned tasks. The 'Percentage Jobs Completion' score increased from a mean of 80.0% during the initial baseline ( $A_1$ ) to a mean of 97.9% during the first experimental phase ( $B_1$ , feedback of Assistants' task completion). In the second experimental phase ( $B_2$ ) completion increased from a mean of 83.4% during withdrawal ( $A_2$ ) to a mean of 97.1%. During the next experimental phase ( $C_1$ , feedback of residents' performance) the mean 'Percentage Jobs Completion' score increased to 100% from 84.0% during the preceding return to baseline conditions ( $A_3$ ). In the last experimental phase ( $C_2$ ) completion increased from a mean of 91.2% during withdrawal ( $A_4$ ) to a mean of 96.9%, and the final return to baseline conditions ( $A_5$ ) resulted in a mean score of 91.4%.

In summary, both percentage completion scores show that Assistants' completion of assigned tasks increased in the four experimental phases (two kinds of feedback) relative to baseline and withdrawal phases. The primary goal of increasing staff completion of assigned tasks in the token economy program by the use of performance feedback was achieved.

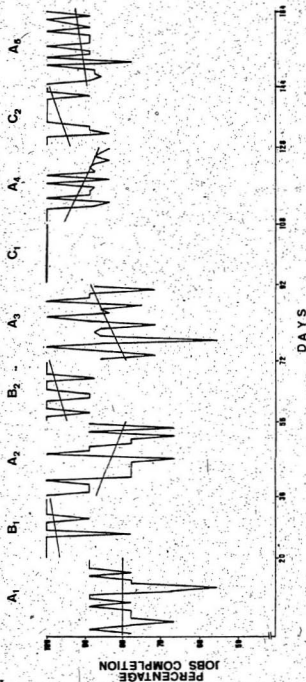


Figure 2. Daily 'Percentage Jobs Completion' for subjects as a group during baseline, feedback, and withdrawal phases.

### Individual Subject Data

The preceding presentation of results provided a picture of the effects of the feedback interventions on the Assistants as a group, but it may be misleading in that it suppresses instances of variability in the data for individuals. The first score of daily completion of assigned tasks ('Percentage Observations Completion') for individual subjects is presented in Figures 3, 4, and 5 to allow a more detailed analysis of the effects of the experimental conditions. The method of the senior Nursing Assistant assigning staff to tasks, the shift rotation schedule, custodial duties on the ward, occasional requirements of staff on other wards, and periods of annual leave, resulted in a varying number of task assignments; this is reflected in the charts by the unequal number of data points for the individual subjects.

Two of the Assistants resigned their positions early in the study and hence were not present for a full experimental cycle. Of the remaining 12 subjects, the data from eight conformed to the pattern of the group; that is, they increased in completion rate under feedback conditions and decreased during withdrawal. Of the four who included an exception to the pattern, three ( $S_{10}$ ,  $S_{11}$ ,  $S_{14}$ ) showed  $A_4$  Withdrawal higher than the  $C_1$  Feedback condition, and the fourth ( $S_4$ ) showed  $A_3$  Withdrawal higher than  $C_1$ . These four subjects seem to have been exhibiting a cumulative carry-over effect which is evident in the group data as a steady increase in the level of

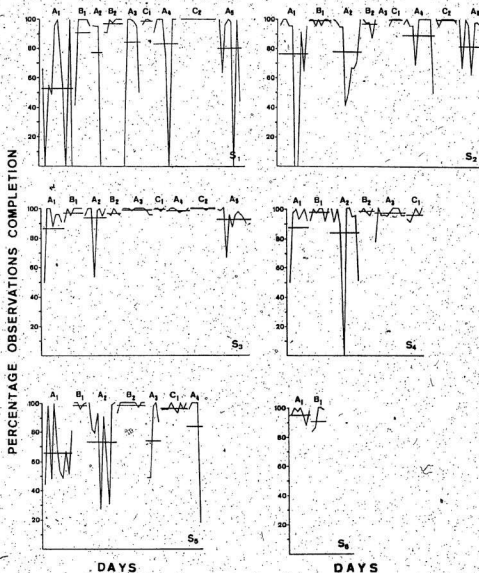


Figure 3. Daily 'Percentage Observations Completion' for individual subjects during baseline, feedback, and withdrawal phases.

PERCENTAGE OBSERVATIONS COMPLETION

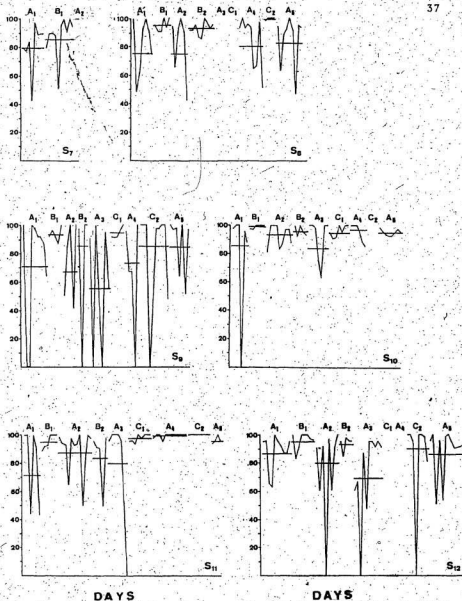


Figure 4. Daily 'Percentage Observations Completion' for individual subjects during baseline, feedback, and withdrawal phases.

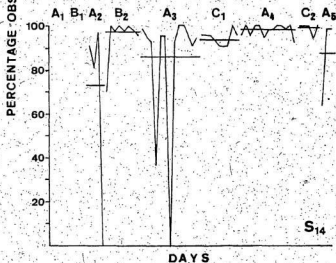
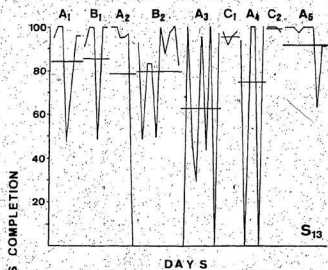


Figure 5. Daily 'Percentage Observations Completion' for individual subjects during baseline, feedback, and withdrawal phases.

successive withdrawal phases. Alternatively there may have been a systematic change in some conditions not under experimental control which effected a gradual improvement in task completions. Subject<sub>11</sub> did not increase his 'Percentage Observations Completion' score during the second feedback phase (B<sub>2</sub>) compared to the first withdrawal phase (A<sub>2</sub>) although the rate is clearly higher than in the initial baseline condition.

With regard to the second score ('Percentage Jobs Completion'), the means obtained by individual Assistants for all phases are presented in Table 2. In all but one phase the completion rate increased or decreased as expected or remained the same; the only notable exception was subject<sub>11</sub> who decreased his score during the second experimental phase (B<sub>2</sub>).

TABLE 2

Mean Scores of Percentage Jobs Completion  
for Individual Subjects in all Phases

Subjects	A <sub>1</sub>	B <sub>1</sub>	A <sub>2</sub>	B <sub>2</sub>	A <sub>3</sub>	C <sub>1</sub>	A <sub>4</sub>	C <sub>2</sub>	A <sub>5</sub>
S <sub>1</sub>	52.2	92.9	80.0	100	84.6	100	84.6	100	82.4
S <sub>2</sub>	76.9	100	78.3	100	—	100	89.5	100	85.7
S <sub>3</sub>	88.9	100	94.7	100	100	100	100	100	96.4
S <sub>4</sub>	90.9	100	87.5	100	100	100	—	—	—
S <sub>5</sub>	73.1	100	76.0	100	80.0	100	88.9	—	—
S <sub>6</sub> *	100	100	—	—	—	—	—	—	—
S <sub>7</sub> *	88.9	95.2	100**	—	—	—	—	—	—
S <sub>8</sub>	83.3	100	81.8	100	—	—	83.3	100	87.5
S <sub>9</sub>	75.0	100	71.4	87.5	55.6	100	72.7	86.4	87.5
S <sub>10</sub>	88.9	100	100	100	86.7	100	100	—	100
S <sub>11</sub>	75.0	100	91.7	87.5	77.8	100	100	100	100
S <sub>12</sub>	92.9	100	86.7	100	73.3	—	—	92.3	90.0
S <sub>13</sub>	85.7	87.5	81.8	85.7	66.7	100	77.8	100	94.7
S <sub>14</sub>	—	—	80.0	100	91.3	100	100	100	88.9

\* resigned position

\*\* based on only two assigned tasks

## DISCUSSION

The results of this investigation clearly indicate that written, posted feedback of attendant staff's performance increased their completion rate of assigned tasks in a token economy program; also, written, posted feedback of residents' performance on the program's target behaviours increased staff completion rate of assigned tasks. As noted in the results section both percentage completion scores showed that the frequency of task completion increased in the four experimental phases (two kinds of feedback) relative to baseline and withdrawal phases. The results obtained during the feedback interventions are consistent with those reported by other researchers (Quilitch, 1975; Panyan et.al., 1970; Welsch et.al., 1973). Thus the outcome of the present investigation provides further empirical validation of the utility of performance feedback strategies developed in similar research projects.

An examination of the daily completion rate of assigned tasks (both the 'Percentage Observations Completion' and the 'Percentage Jobs Completion') shows an obvious variability over the period of the study, which is not unexpected (Hersen and Barlow, 1976). There is overlap in the completion rates during feedback conditions and those obtained during baseline and withdrawal conditions. However, it is felt that it is reasonable to conclude that performance feedback has been shown to have increased the rate of completions,

for the following reasons: (a) the mean levels for the group data are clearly higher during all the feedback phases than for the baseline and withdrawal phases, and (b) this pattern is largely replicated by the individual subject data; (c) the trends (as indicated by semiaveraging) in the feedback phases were all accelerating while those in three of the four withdrawal conditions were decelerating; and (d) the variability is much reduced during the feedback conditions relative to that during the baseline and withdrawal phases.

In considering the possibility that varying participation rates of Assistants may have confounded the group results, the individual data were further examined (see Figures 3, 4, and 5; pp. 36 - 38). Clearly there is a wide range of baseline completion rates, both in terms of level and variability. However, it is not the case that subjects characterized by low initial baseline completion rates participated less frequently in feedback conditions than other subjects, nor is it the case that subjects characterized by high initial baseline completion rates participated less frequently in the withdrawal phases than other subjects. Therefore it is reasonable to have confidence that the unavoidable absence of subjects from some of the phases (reasons for this were outlined in the results section) did not systematically bias the results in favour of the hypotheses.

Inspection of the individual subject data shows that most subjects reduced the variability in their completion scores during the period of the study, especially in the feedback phases. Three of them ( $S_9$ ,  $S_{12}$ ,  $S_{13}$ ) continued to have fairly high variability. The variability is particularly obvious for subject<sub>9</sub>, and would therefore suggest that the feedback interventions may not have affected his completion rate. It is likely that other important conditions were controlling his performance. The same conclusion is suggested for the other two subjects, but the variability in their completion scores is not as clearly exhibited, particularly in the second feedback conditions for subject<sub>13</sub>.

The outcome of the present study is encouraging in that it indicates that feedback of residents' performance results in a high rate of completion of assigned tasks by staff. Although it was hypothesized that both kinds of feedback would produce improvements in task completion it was expected that the rate would be higher during feedback of staff performance; also, there have been suggestions that staff do not react in an appropriate direction to information about patients or clients (e.g., Loeber, 1971). However, it is necessary to note two possible alternative explanations for the increases obtained during feedback of residents' performance.

First, there may have been a cumulative carry-over effect from the previous feedback interventions; there is support

for the presence of such an effect in the steady increase in the level of successive withdrawal phases. Therefore the increases during this second experimental condition would not be a result of resident performance feedback by itself. Second, it is possible that the Assistants were responding to the implied feedback of their performance during the second condition. While the information presented referred to the performance of the residents with no direct reference to Assistants' performance, an analysis of the contents of the feedback reveals that staff were indirectly given information on their completion of assigned tasks because of missing observation results on residents and missing results of entire job categories. Thus it is probable that the second feedback condition actually involved a combination of the two kinds of feedback. However, it is noteworthy that the staff's conversation in the presence of the Program Co-ordinator during the second feedback condition usually focused on the performance of the residents, and there were no comments made on their task completions. Although the results are not unequivocal it is felt that the balance of evidence supports the conclusion that performance feedback of residents' behaviours was effective in increasing staff's program-related behaviours.

The results of the present investigation suggest that performance feedback functioned as a reinforcer for the Assistants' completion of assigned tasks in implementing the procedures of the token economy program. This interpretation

appears accurate as there were increases in the dependent variable following the feedback interventions; thus feedback is considered to be a consequence which increased the staff's completion rates. Also, the consideration of performance feedback as a reinforcement effect corresponds to analyses in other feedback studies (e.g., Welsch et.al., 1973).

It is possible that feedback might have had effects in addition to such a direct reinforcement effect. It may serve a novel antecedent stimulus function that occasions new contingency relations. It could be that feedback may have led to a change in the interpersonal interactions and social and work contingency relationships operating on the ward. Allen, Chinsky, and Veit (1974) found that staff members in a residential facility for the retarded often punished another staff's interactions with clients that were identified as training or social interactions, while reinforcing traditional custodial interactions. Although the staff in the present study were participating in a treatment oriented program it could be that interactions somewhat similar to those reported by Allen et.al. were taking place on the ward, and the performance feedback may have produced changes in the Assistants' social and work contingency relationships. It should be noted that it is speculative to attribute the results obtained to changes in the usual contingency relations among staff, but it does appear plausible that such a 'by-product' of feedback may contribute to increases in the dependent variable, rather

than considering all dependent variable changes indicative of a direct reinforcement effect.

Brief consideration should be given to at least two specific ways that feedback may have functioned as a form of stimulus control. First, the information presented on the feedback charts may have served as a discriminative stimulus to avoid punishment, which in this situation would be a punishment perceived to be forthcoming from the public display of low completion rates. At least two Assistants remarked to the Program Co-ordinator that the "nursing supervisor will probably be on our backs if the graphs are low!" Second, it is possible that a portion of the increases in the completion rate may be a function of peer competition. One Assistant stated at least three times that low completion rates presented on the feedback chart "must be the guys on the other shift, because we're keeping the graph going upward .... so somebody else is pulling it down!"

Attempts to delineate possible controlling variables are speculative as there is no direct evidence for them. As mentioned previously there is support for an explanation of feedback as a reinforcement effect in that increases were obtained in the dependent variable following the feedback interventions. It does appear possible that performance feedback involves multiple controls. Nevertheless, this study was not designed to assess the specific function of feedback, that is more critical in producing the dependent variable

changes; the primary concerns were practical and involved the behaviour of attendant staff in their implementation of program procedures.

With regard to the practical considerations, the goal of increasing staff completion of assigned tasks by the use of performance feedback was achieved. As a staff management strategy it was economically and administratively feasible in the institution, and therefore is readily available for use by both psychologists and administrators who are responsible for designing and overseeing treatment programs. The strategy does not require any extra funding, nor does it demand an excessive amount of time to implement each day (approximate time of 45 minutes for computation, posting on the feedback chart, and other paperwork); furthermore it decreases the time required for ongoing supervision of staff carrying out program procedures.

The clear demonstration of the efficacy of this positive approach is encouraging when consideration is given to the aversive control procedures frequently present in institutions for long-term residents; unfortunately, all too often it is the practice of nursing supervisors to reprimand staff for mistakes and pay undue attention to negative aspects of their work performance. Also, the present investigation provides further evidence of the use of a behavioural systems analysis in attempts to increase and maintain institutional staff performance; such behavioural approaches should be of value

to administrative personnel who strive to improve the provision of services by their employees. It is anticipated that continued demonstrations of the effective use of a behavioural systems analysis will contribute to the successful development of a technology for improving treatment services in institutions.

An important area that warrants additional research is the effects of improved staff performance on residents' behaviours. While the significance of direct-care staff's interactions with residents in institutional settings has been well discussed in the behaviour modification literature (and at the outset of this study), more data are definitely needed to document specific changes in resident behaviour as a result of modifications in staff behaviour; this particularly applies to those strategies that do not use tangible reinforcers for staff. The analysis and reporting of resident behaviours on the targets of the token economy program was beyond the immediate aim of the present study, but the investigation of corresponding resident behaviours should be included in subsequent research of staff-management procedures.

As indicated in the method section it was intended to continue performance feedback as a regular aspect of the program; however, circumstances on the ward caused the postponement of feedback being reinstated on a permanent basis. This is considered to be an unfortunate shortcoming of the

present investigation as it is clinically important to maintain improved staff performance over extended periods of time. Kazdin (1973) pointed out that there is a general lack of maintenance data in staff-management studies; also, there are suggestions that the effects of feedback diminish over time in the absence of other contingent reinforcers (Pommer and Streedbeck, 1974). Obviously, there is a need for increased studies that evaluate the effects of performance feedback over extended periods, in addition to the aforementioned corresponding behaviours of clients or residents.

Future research in the area of performance feedback should also focus on further specification of the variables that make feedback effective; examples of specific issues are the content of the feedback information, its location in the setting, the mode of presentation (i.e. written or verbal), the individual providing the feedback, and the frequency of providing it. As well, future research should probably be concerned with delineating the controlling variables related to the functions of feedback, for example an examination of the reinforcement and stimulus control functions referred to earlier. Additionally, related matters such as employee satisfaction, management's increased use of treatment information, management-employee collaboration in the treatment of clients (residents), and accountability in the provision of treatment services, should be addressed in future research endeavours.

## REFERENCES

- Allen, G.J., Chinsky, J.M., & Veit, S. W. Pressures towards institutionalization within the aide culture: A behavior-analytic case study. Journal of Community Psychology, 1974, 2, 67 - 70.
- Andrasik, F., & McNamara, J.R. Optimizing staff performance in an institutional behavior change system: A pilot study. Behavior Modification, 1977, 1, 235 - 248.
- Ayllon, T., & Azrin, N. The Token Economy: A Motivational System for Therapy and Rehabilitation. New York: Appleton - Century - Crofts, 1968.
- Bensberg, G.J., & Barnett, C.D. Attendant Training in Southern Facilities for the Mentally Retarded. Atlanta: Southern Regional Education Board, 1966.
- Bensberg, G.J., Barnett, C.D., & Hurder, W.P. Training of attendant personnel in residential facilities for the mentally retarded. Mental Retardation, 1964, 2, 144 - 151.
- Bricker, W.A., Morgan, D.G., & Grabowski, J.G. Development and maintenance of a behavior modification repertoire of cottage attendants through TV feedback. American Journal of Mental Deficiency, 1972, 77, 128 - 136.
- Brown, K., Willis, B.S., & Reid, D.H. Differential effects of supervisor verbal feedback and approval on institutional staff performance. Behavior Therapy, 1978, 9,
- Buel, C.L., & Born, D.G. Indirect modification of patient behavior with instructions, bonus contingencies, and training programs applied to nursing aides. The Psychological Record, 1977, 27, 743 - 751.
- Christian, W.P., Holloman, S.W., & Lanier, C.L. An attendant operated feeding program for severely and profoundly retarded females. Mental Retardation, 1973, 11, 35 - 37.
- Dailey, W.F., Allen, G.J., Chinsky, J.M., & Veit, S.W. Attendant behavior and attitudes toward institutionalized retarded children. American Journal of Mental Deficiency, 1974, 78, 586 - 591.

- Ellsworth, R.B., & Ellsworth, J. The psychiatric aide: Therapeutic agent or lost potential? Journal of Psychiatric Nursing, October 1970, 7 - 13.
- Fielding, L.T., Errickson, E., & Bettin, B. Modification of staff behavior: A brief note. Behavior Therapy, 1971, 2, 550 - 553.
- Gruenberg, E.M. The social breakdown syndrome. — some origins. American Journal of Psychiatry, 1967, 123, 12 - 20.
- Harmatz, M.G. Observational study of ward staff behavior. Exceptional Children, 1973, 39, 554 - 558.
- Hersen, M., & Barlow, D.H. Single Case Experimental Designs: Strategies for Studying Behavior Change. New York: Pergamon, 1976.
- Hollander, M., & Plutchik, R. A reinforcement program for psychiatric attendants. Journal of Behavior Therapy and Experimental Psychiatry, 1972, 3, 297 - 300.
- Hollander, M., Plutchik, R., & Horner, V. Interaction of patient and attendant reinforcement programs: The "piggyback" effect. Journal of Consulting and Clinical Psychology, 1973, 41, 43 - 47.
- Iwata, B.A., Bailey, J.S., Brown, K.M., Foshee, T.J., & Alpern, M. A performance based lottery to improve residential care and training by institutional staff. Journal of Applied Behavior Analysis, 1976, 9, 417 - 431.
- Katz, R.C., Johnson, C.A., & Gelfand, S. Modifying the dispensing of reinforcers: Some implications for behavior modification with hospitalized patients. Behavior Therapy, 1972, 3, 579 - 588.
- Kazdin, A.E. Issues in behavior modification with mentally retarded persons. American Journal of Mental Deficiency, 1973, 78, 134 - 140.
- Kazdin, A.E. The Token Economy. New York: Plenum Press, 1977.
- Leitenberg, H. The use of single-case methodology in psychotherapy research. Journal of Abnormal Psychology, 1973, 82, 87 - 101.
- Loeber, R. Engineering the behavioral engineer. Journal of Applied Behavior Analysis, 1971, 4, 321 - 326.

- Montegar, C.A., Reid, D.H., Madsen, C.H., & Ewell, M.D. Increasing institutional staff to resident interactions through in-service training and supervisor approval. Behavior Therapy, 1977, 8, 533 - 540.
- Panyan, M., Boozer, H., & Morris, N. Feedback to attendants as a reinforcer for applying techniques. Journal of Applied Behavior Analysis, 1970, 3, 1 - 4.
- Patterson, R., Cooke, C., & Liberman, P. Reinforcing the reinforcers: A method of supplying feedback to nursing personnel. Behavior Therapy, 1972, 3, 444 - 446.
- Patterson, E.T., Griffin, J.C., & Panyan, M. Incentive maintenance of self-help skill training programs for non-professional personnel. Journal of Behavior Therapy and Experimental Psychiatry, 1976, 7, 249 - 253.
- Pomerleau, O.F., Bobrove, P.H., & Harris, L.C. Some observations on a controlled social environment for psychiatric patients. Journal of Behavior Therapy and Experimental Psychiatry, 1972, 3, 15 - 21.
- Pomerleau, O.F., Bobrove, P.H., & Smith, R.H. Rewarding psychiatric aides for the behavioral improvement of assigned patients. Journal of Applied Behavior Analysis, 1973, 6, 383 - 390.
- Pommer, D.A., & Streedbeck, D. Motivating staff performance in an operant learning program for children. Journal of Applied Behavior Analysis, 1974, 7, 217 - 221.
- Quilitch, H.R. A comparison of three staff-management procedures. Journal of Applied Behavior Analysis, 1973, 8, 59 - 66.
- Reppucci, N.D., & Saunders, J.T. Social psychology of behavior modification: Problems of implementation in natural settings. American Psychologist, 1974, 29, 649 - 660.
- Sneed, T.J., & Bible, G.H. An administrative procedure for improving staff performance in an institutional setting for retarded persons. Mental Retardation, 1979, 17, 92 - 94.
- Stoffelmayr, B.E., Lindsay, W., & Taylor, V. Maintenance of staff behavior. Behavior Research and Therapy, 1979, 17, 271 - 273.

- Wallace, C.J., Davis, J.R., Liberman, R.P., & Baker, V.  
Modeling and staff behavior. Journal of Consulting and  
and Clinical Psychology, 1973, 41, 422 - 425.
- Warren, S.A., & Mondy, L.W. To what behaviors do attending  
adults respond? American Journal of Mental Deficiency,  
1971, 75, 449 - 455.
- Watson, L.S. Shaping and maintaining behavior modification  
skills in staff using contingent reinforcement techniques.  
In R.L. Patterson (Ed.), Maintaining Effective Token  
Economies. Springfield, Ill.: Charles C. Thomas, 1976.
- Welsch, W.V., Ludwig, C., Radiker, J.E., & Krapfl, J.E.  
Effects of feedback on daily completion of behavior  
modification projects. Mental Retardation, 1973, 11,  
24 - 26.

## APPENDIX A

Program record forms for  
job categories 1,4,5,and 8









## APPENDIX B

'Job Schedule Form'  
for assignment of staff to job categories

STAFF JOB SCHEDULE FORM

DATE: \_\_\_\_\_

<u>TIME (approx.)</u>	<u>JOB</u>	<u>STAFF ASSIGNED</u>
7:00 - 7:45 a.m.	Job 2 (Oversee Dressing)	
7:15 - 8:00 a.m.	Job 3 (Oversee Personal Hy.)	
8:00 a.m.	Job 1 (Eating-Drinking)	
8:15 a.m.	Job 3 ( Con't Oversee Per.Hy.)	
8:30 a.m.	Job 5 ( Room Care)	
8:45 a.m.	Job 4 (Physical Appearance Ck.)	
11:15 a.m.	Job 6 (Collect Work Sheets)	
11:30 a.m.	Job 1 (Eating-Drinking)	
12:05 p.m.	Job 8 (Recreation Survey)	
3:10 p.m.	Job 7 (Social Int. Session)	
3:15 p.m.	Job 6 (Collect Work Sheets)	
4:15 p.m.	Job 4 (Physical Appearance Ck.)	
4:30 p.m.	Job 1 (Eating-Drinking)	
5:00 p.m.	Job 8 (Recreation Survey)	
8:00 p.m.	Job 10 ( Commissary-Lunch)	
8:30 p.m.	Job 8 (Recreation Survey)	
9:00 p.m.	Job 11 (Banking)	

STAFF SUPERVISING PATIENT CHORES

Job 12 (Chores cat. A) \_\_\_\_\_

Job 13 (Chores cat. B) \_\_\_\_\_

Job 14 (Chores cat. C) \_\_\_\_\_

Special AssignmentsStaff Placement on Other Wards

