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GROUP-CONTINGENT REINFORCEMENT OF CHRONIC PSYCHIATRIC PATIENTS

by

Maxine Ellen Loomis

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Education)
in The University of Michigan
1971

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What can you say about the people behind the evolution of your dissertation? That they were helpful, challenging, and scholarly? That they prompted you to constantly question and substantiate your assumptions? That they provided scholarly criticism as well as emotional support? My committee and colleagues did all of that and more.

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CHAPTER I

INTRODUCTION

The group as a potential medium of change has been the focus of research by social psychologists for more than twenty years. A basic proposition held by Cartwright (1951) is

> that the behavior, attitudes, beliefs, and values of the individual are all firmly grounded in the groups to which he belongs. . . . Whether they change or resist change will, therefore, be greatly influenced by the nature of these groups. Attempts to change them must be concerned with the dynamics of groups [p. 387]."

Application of the theoretical framework of operant conditioning to the behavior of groups of individuals was initiated by Skinner (1953) as an extension of the learning principles that control human behavior. The behavioral group contingency consists of social stimuli, interpersonal responses, and social consequences for the behavior. Skinner (1953) states:

> In the field of social behavior special emphasis is laid upon reinforcement with attention, approval, affection, and submission. These important generalized reinforcers are social because the process of generalization usually requires the mediation of another organism. Negative reinforcement--particularly in the form of a punishment--is most often administered by others in the form of unconditioned aversive stimulation or of disapproval, contempt, ridicule, insult, and so on [p. 299].

Behavioral research concerning group contingencies has a brief, 8-year history. Within this time the measurement of group phenomena has been exploratory and incomplete with respect to the criterion of replication. There exists no completely researched framework of group functioning such as that which has been developed by the social psychologists. However, both informal and formal groups abound within psychiatric hospitals and offer an untapped therapeutic resource to the behavioral therapist.

A psychiatric hospital ward may contain anywhere from 20 to 90 patients living together in close physical proximity. These patients have little or no choice as to whom their fellow patients will be; however, they do have close enough contact with each other over a period of time to become acquainted and to form small informal groups. Since this grouping is based on voluntary interpersonal consent, it must be assumed that something has made this type of contact mutually reinforcing. On the other hand, formal patient groups (for example, exercise groups, sheltered workshop crews, or group therapy groups) as organized by the staff are often considered to function in the service of staff economy, i.e., it conserves staff time and energy to work with 12 patients rather than one patient at a time. It is the contention of this researcher that the group setting can be utilized to the learning advantage of the patients. The purpose of the current research was to explore the responsiveness of chronic hospitalized psychiatric patients to the therapeutic application of group contingencies.

Background

Skinner (1953) states:

> The principle technique employed in the control of the

> individual by any group of people who have lived together for a sufficient length of time is as follows. The behavior of the individual is classified as either 'good' or 'bad' or, to the same effect, 'right' or 'wrong' and is reinforced or punished accordingly. We need not seek far for a definition of these controversial terms. The behavior of an individual is usually called good or right insofar as it reinforces other members of the group and bad or wrong insofar as it is aversive. . . . In explaining any given instance of group control we have to show how the behavior of the controller is interlocked with that of the controllee in a social system [p. 324-325].

Expanding on Skinner's basic premise, it would appear reasonable to utilize group contingencies in the treatment of mental patients when (a) the discriminative stimuli with which the desirable behaviors are to occur include at least several other people, (b) the desired target behavior (response) is one that requires interpersonal relatedness, or (c) consequences for the behavior are mediated by the group. For example, Liberman (1968) reported that at Patton State Hospital the staff had been able to eliminate paranoid behavior expressed overtly in the presence of the staff members but not paranoid ideas expressed between patients. Whether deliberate or inadvertant, this reinforcement of crazy behavior by other patients does maintain the sick behavior, and as such could be subjected to a group contingency.

Gelfand, Gelfand, and Dobson (1967) investigated the social reinforcement contingencies which psychotic patients experience in mental hospitals and discovered that for their population the patients themselves exceeded the nurses and nursing assistants as behavioral engi-

neers. Their findings showed that the patients ignored inappropriate behavior 79% and rewarded it only 12% of the time. The patients, however, were less skillful in consequating prosocial behavior--attending to only 56% of the appropriate behavior of their fellow patients. When the data for responses to both appropriate and inappropriate behavior were combined, the patients emerged as the most appropriate dispensers of behavioral consequences. This evidence is strongly encouraging for the efficacy of applying group contingencies to produce behavior change in psychiatric patients.

While the work of Barrish, Sanders, and Wolf (1969); Bushell, Wrobel, and Michaelis (1968); Packard (1970); Schmidt and Ulrich (1969), Wahler (1967) with elementary school children; Sulzbacker and Houser (1968) with mentally retarded children; and Phillips (1968) and Rose and Sundel (1970) with delinquent adolescents has produced conclusive findings supporting the use of group contingencies, little significant work has been done with adult psychiatric patients. Various theoretical and practical insights can be gained, however, by a review of several relevant studies.

The measurement of interpersonal communication transactions within an inpatient peer group of delinquent adolescents, as described by Buehler, Patterson, and Furniss (1966), is an exemplar of a comprehensive assessment method. Using several novel techniques for observation and data collection, the authors conducted three studies to test their hypothesis that the delinquent peer group provides massive schedules of positive reinforcement for deviant behavior and negative reinforcement or punishment for socially conforming behavior. The results from study one indicated peer reinforcement of 70% for such behavior as rule break-

ing, criticism of adults and adult rules, and aggressive behavior. Among other findings, their second study demonstrated that within peer reinforcement of delinquent behavior, the non-verbal levels of communication were used in 82% of the reinforcing responses. It was also evident that peers more frequently reinforced delinquent responses and punished socially conforming behavior.

Still within the realm of assessment, study three showed that there was a high level of congruence between the level of communication utilized by the subject and his peer group respondents; staff members tended to reinforce and punish indiscriminately, therefore having little planned effect on the behavior in question; and the inmate behavioral system not only shaped and controlled its own members, but it also shaped and controlled the behavior of the staff. The data gleaned from these studies is the type of assessment information which is essentaal to the formulation of an intervention plan utilizing group contingencies.

The variables that might be measured and changed within a small group of patients have been only tentatively explored. In one of the earliest reported studies on the behavior modification of group functioning, Shapiro (1963) demonstrated with small groups of normal subjects that disagreement is likely to occur more often where reinforcement in achieving a decision is made contingent on disagreement. He concluded that, "the findings of this study indicate that interaction among persons can become dependent, in part, upon the outcome of a group decision [p. 271]."

This was followed by a series of studies using group contingencies to shape and increase cooperative responses in a variety of subjects. Azrin and Lindsley (1965), reinforced cooperation between children.

Hingtgen, Sanders, and DeMyer (1965) were able to shape cooperative responses in early childhood schizophrenics and noticed there was also an increase in physical contact, helping behaviors, and verbal responses between partners. Hingtgen and Trost (1966) then proceeded to shape vocal responses and physical contact in early childhood schizophrenics and found that the results generalized to the ward and home settings of the subjects. The children did, however, tend to perform these behaviors in the presence of adults (who were capable of reinforcing them) rather than peers. Whitman, Mercurio, and Caponigri (1970) noted generalization to other situations with peers of social responses in two retarded children following a study in which they reinforced each child contingent upon both children's performance.

Several elements are common to all of these studies. The desired interpersonal behavior was increased through the use of group contingencies. In none of the studies were verbal instructions given to clarify or verbally prompt the desired response. In all of the studies the side effects which did occur were desirable. Thus, it can be seen that cooperation and/or competition, as two real-life interpersonal behaviors, can be shaped, increased, or decreased within a small group setting.

Assertive and leadership behaviors occur in relation to other people and as such can be learned within a small group setting. One of the side effects noted by Azrin and Lindsley in their study of cooperation between children was the development of a leader-follower relationship within several pairs of subjects.

An experiment within Phillips' (1968) study of token reinforcement for pre-delinquent boys inadvertently dealt with the use of a group

leader as a necessary factor for the performance of complex group-contingent tasks. He employed a peer Manager system at various stages of his study. The privilege of being Manager for the week was auctioned for tokens to the highest bidder. Results indicated that, "the point contingencies levied by the Manager under the manager condition were more effective than the fines administered by the house parents under the group condition, even when the values of the fines under the group condition were greater than those administered by the Manager [p. 218]."

Lack of a leader or at least a patient with the requisite behaviors to organize a group plan of action was apparently responsible for the failure of a group contingency experiment within Boren and Colman's (1970) study. Their group contingency was arranged so that each listener received points depending on the number of speakers. The number of tokens awarded to the speaker was less than the number awarded to the group; however, the maximum number of points for all could be obtained if each group member agreed to speak an equal number of times. Rather than organizing a formal sequence of speakers, the group fell to coercion and threats in an attempt to produce speakers. It would appear from these results that the organizational or problem-solving behavior required of the group was too complex. This is an example of a situation in which the requisite behaviors necessary for group problem solving required shaping before the group contingency could be applied to a complex chain of target behaviors.

Objectives of the Study

The current study was designed to explore the use of group-contingent reinforcement with chronic hospitalized psychiatric patients. Specifically, answers were sought to the questions of whether group-contin-

gent reinforcement could be utilized to increase specified individual behaviors of group members, and whether this experimental variable would also produce an increase in verbal and non-verbal interaction between group members. An attempt was made to select behaviors which were within the behavioral repertoires of the patients in the group so as to avoid the confounding of data by the necessity of shaping requisite behaviors. Allowance was made for the possible necessity of teaching the patients various methods of observing and consequating each others' behaviors.

Hypotheses

1. The frequency of selected individual behaviors of chronic psychiatric patients can be increased by the application of group-contingent reinforcement.

2. The frequency of verbal behavior and physical contact of one patient to another can be secondarily increased by the application of group-contingent reinforcement for other selected individual behaviors.

CHAPTER II

METHOD

Setting and Subjects

The Subjects of this study were a group of six men from an open male ward of a large state psychiatric hospital. For further description of the individual Subjects see Table 1. The average patient census on the ward at the time of the study was 70 patients. The staff consisted of a ward psychiatrist, a social worker, and four nursing service attendants. The average staff-patient ratio was 1:35 on the day shift and 1:70 during the evening and night shifts. The primary treatment modality used with the patients was work therapy, and one-third of the patients held regular jobs off the ward. Approximately two-thirds of the patients had grounds cards which they used during their free time to move about the hospital grounds.

For six months prior to the onset of this study the six Subjects had been working in the kitchen of one of the large patient cafeterias in the hospital. Each man was scheduled to work 2.5 hours during the breakfast and noon meals 5 days per week. Thus, a man who worked all of his scheduled shifts averaged 25 hours of work per week.

The tasks for which the patients could earn points were behaviorally specified and consisted of jobs such as taking the food carts to and from the serving line, cleaning the food carts, and cleaning up in the kitchen area. The patients worked along with the regular cafeteria staff, who numbered six staff members per meal. The cafeteria staff observed each patient's job performance and punched his daily work record in the appropriate place following completion of a given task. For

TABLE I

Description of Subjects

Subject	Diagnosis	Age	No. Yrs. in Hospital	No. of Admissions	No. of Passes Total/ Last Yr.	Marital Status	Education
1	-Mental Deficiency -Chronic Schizophrenia, Hebephremic Type	51	30.5	2	14/0	Single	5th grade Special Ed.
2	-Schizophrenic Reaction, Hebephremic Type	59	22.0	1	46/0	Married	7th grade
3	-Schizophrenic Reaction, Chronic Undifferentiated Type	42	16.5	2	3/0	Single	10th grade
4	-Schizophrenic Reaction, Paranoid Type	30	4.5	2	18/14	Divorced	12th grade
5	-Chronic Schizophrenia, Hebephremic Type	53	32.5	1	15/0	Single	1.5 yrs. college
6	-Cerebral Palsy	23	3.0	1	10/3	Single	12th grade Special Ed.

an example of the daily work record, see Figure 1.

Name _____

Date _____

AM Shift		Possible Points	PM Shift
_____	Take down food cart	8	_____
_____	Bring back food cart	8	_____
_____	Bring back dish cart	8	_____
_____	Wash food cart	7	_____
_____	Dress and grooming	5	_____
_____	Sweep and mop floor	14	_____
_____	Clean sink	5	_____
_____	Clean cupboard	5	_____
_____	Other (specify)		_____

Total for day _____

Employee's initial _____

Figure 1. Daily Work Record

At the end of every week each patient's total number of points were converted into money at the rate of 1 cent per point. The patient group was then taken on an outing outside of the hospital grounds, regardless of the number of points earned. These weekly outings consisted of shopping trips, eating at a variety of restaurants, picnics, and visiting various places of interest in the surrounding community. A brief mid-

weekly meeting was also held on the ward to discuss any concerns about the patients' cafeteria jobs and to plan the weekly outing.

Staff and Materials

This study was conducted by the author and the social worker who had been working with the patient group for the six months prior to the onset of this study. The only materials required other than the daily work record were money for the group bonuses and weekly data sheets for the recording of individual behaviors. See Figure 2 for a sample weekly data sheet.

Procedure

The study followed a conventional A-B-A (baseline-treatment-return to baseline) reversible design with the addition of the staggered treatment of two target behaviors more common to the multiple baseline design. See Figure 3 for a schematic representation of the experimental design.

Three weeks prior to the actual baseline period the researcher was introduced to the group by the social worker and began attending the regular meetings and outings. The three-week baseline period was utilized to collect information on the individual frequencies of (a) verbal behavior--each audible utterance of one word or more initiated by one patient toward another patient (regardless of whether recognized by the recipient patient) counted as one verbal behavior, (b) physical contact --each occurrence of touching, pulling, shoving, guiding, or hitting in which one patient made movement toward and contact with another patient's body counted as one physical contact, (c) work behavior--the weekly number of points earned by each patient at his cafeteria job, and (d) grooming behavior--clean shave (having shaved within three hours of observa-

Patient		1	2	3	4	5	6
1. Work Points Earned							
2. Grooming							
Meeting	Clean Shave						
	Clean Clothes						
Outing	Clean Shave						
	Clean Clothes						
3. Interpersonal							
Meeting	Talk						
	Touch						
Outing	Talk						
	Touch						

Meeting	Outing
Time:	Time:
Place:	Place:
Bonus Money:	Bonus Money:

Figure 2. Weekly Data Sheet

Weeks	1-3	4-6	7-9	10-12
Work Behavior	A (baseline)	B		A
Grooming Behavior	A (baseline)		B	A

Figure 3. Schematic Representation of Experimental Design

tion) and clean clothing (wearing a shirt and trousers picked up at the clothing room within three hours of observation). The settings for these observations were the two weekly meetings with the patient group --the group outing and the planning meeting.

During the treatment period, the group contingency basically consisted of each member of the group receiving a previously agreed upon reinforcer contingent upon every member of the group fulfilling his individual behavioral contract. Furthermore, if one of the six group members did not fulfill his behavioral contract, the reinforcement was withheld from the entire group. At the beginning of each three-week period the new behavioral contract was discussed with the group, written on a behavioral assignment card, and a card given to each patient. See Figures 4 and 5 for behavior assignment cards.

Group Job	Payment
Everyone must: earn at least 350 points this week	$2.00 Bonus for everyone

Figure 4. Behavior Assignment Card--weeks 4 through 6

Group Job	Payment
Earn at least 350 points this week	$2.00 Bonus
Clean shave at meeting Wednesday	.50 Bonus
Clean shave and clean clothes (shirt and trousers) on Friday for outing	1.00 Bonus

Figure 5. Behavior Assignment Card--weeks 7 through 9

During the treatment period (weeks 4-9) the behavioral interventions of the researcher were based upon the data regarding how well the patients were accomplishing the specified target behaviors. Since the patients vacilated in their attainment of the behavioral assignment for work behavior, a number of behavioral interventions were directed at teaching the patients some interpersonal influence behaviors. On the other hand, the patients responded immediately to the group-contingent reinforcement for grooming behavior and no additional interpersonal influence interventions were initiated for this target behavior. See Figure 6 for the Progression of Interpersonal Influence Interventions.

At the beginning of week 4 the group was presented with the group job of every member earning at least 350 points at his cafeteria job for the week in order for all members to receive a $2.00 bonus. The group contingency was discussed and questions answered, but no assistance was given as to how the group was to accomplish this goal.

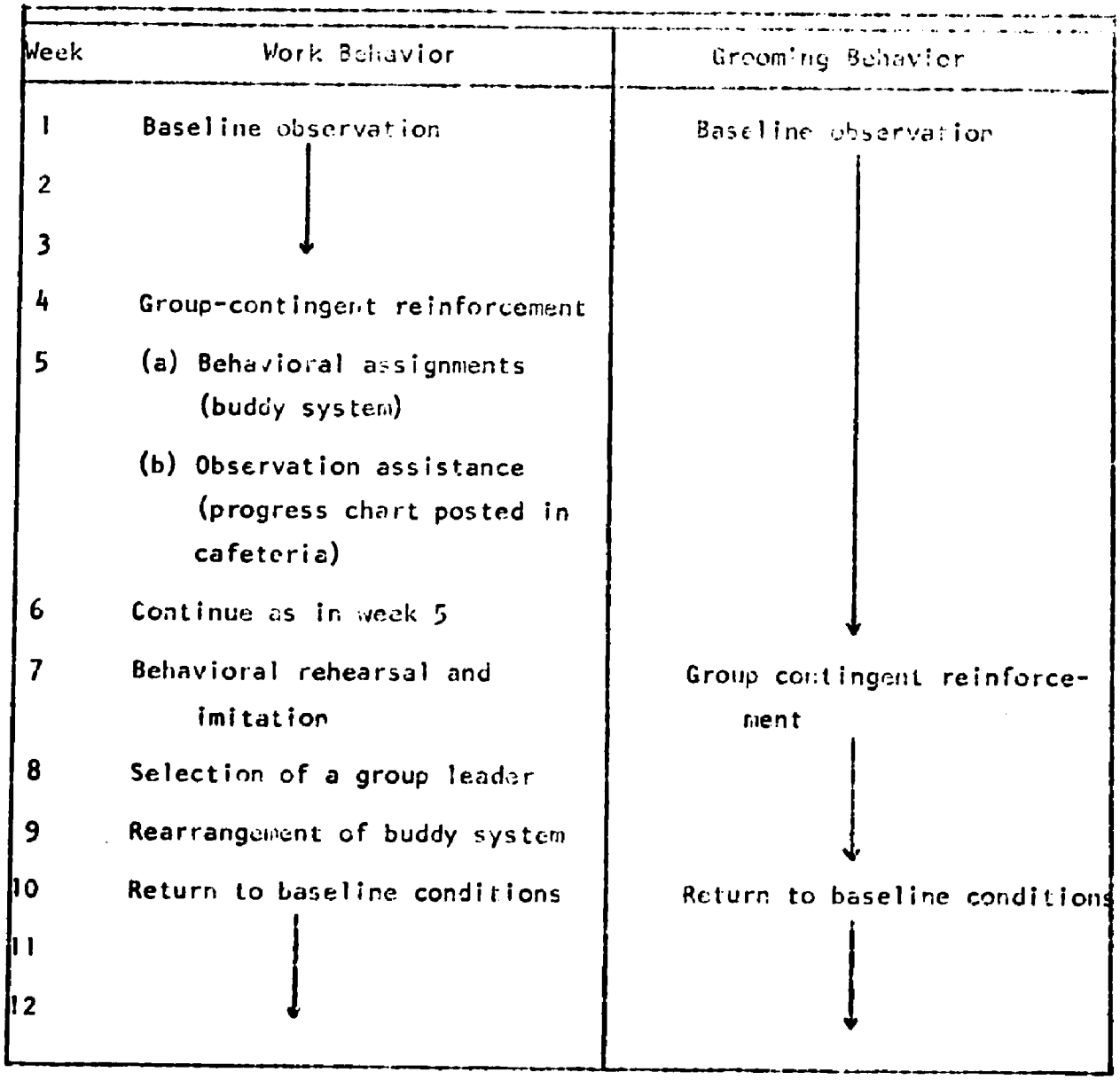


Figure 6. Progression of Interpersonal Influence Interventions

Since only half of the group performed the target criterion (actually representing a decrease in work behavior) and no attempts at interpersonal influence among group members were noted during week 4, techniques were initiated at the beginning of week 5 to assist the patients in observing each others' work behavior. Behavioral assignments were specified. A buddy system, in which each of the six men was responsible for monitoring the behavior of one other member of the group, resulted

in three pairs of two buddies. A group member who worked regularly was paired with one who worked more sporadically. The assignment was that the buddies were to work the same schedule and go to and return from work together. A progress chart was posted in the cafeteria on which the cafeteria staff recorded the cumulative daily points earned by each patient to assist the patients in further monitoring their buddy's progress.

The procedure was held constant for week 6 based on the fact that all six patients had reached the group target behavior of 350 points or more during week 5.

Behavioral rehearsal, an in vitro method of allowing the individual group members to practice the chain of behaviors required to get their buddies to come to work with them, was carried out at the beginning of week 7. The behaviors were modeled first by the staff members who demonstrated the specific verbal and non-verbal behaviors required to convince the patients to come to work. The patients then practiced these same behaviors with their buddies. The patients further rehearsed ways in which they could reinforce their buddies with praise and attention when they did come to work. This practice focused on use of sentences such as, "I'm glad you came to work today," as social reinforcers. Several of the patients complained that it was each man's business whether he worked or not and balked at becoming actively concerned about someone else's work performance. One patient attempted to elicit staff assistance in getting his buddy to work and was told to worry about himself.

The group contingency for grooming behavior was introduced at the beginning of week 7. See Figure 5 for the behavioral assignment card

for weeks 7 through 9. No special teaching techniques were initiated regarding group grooming behavior.

During week 8 an attempt was made to interest one of the patients in functioning as the group leader. Subject #4 was chosen because of his high level of socially appropriate behavior on the ward and on group outings. While he said he would try to get the other men to work, later discussion with him revealed that he was attempting to maintain his record as a well-behaved patient in order not to jeopardize his forthcoming discharge. He stated that openly involving himself in the work behavior of the other five group members would be in opposition to his personal goals.

The buddy system was rearranged at the beginning of week 9. This was done because two of the group members had consistently earned less than 350 points per week and their original buddies were no longer being reinforced for attempting to take them to work, i.e., their buddies were refusing to go.

The group contingencies for both work behavior and grooming were discontinued at week 10 and the group activities were conducted in a manner equivalent to that of the baseline period.

CHAPTER III

RESULTS

The results will be presented under the behavioral categories of (a) work behavior, (b) grooming behavior, and (c) interpersonal behavior. The frequencies of both individual and group behavior will be analyzed.

Work Behavior

Prior to this study and during the baseline period the entire group had never earned more than 350 points per week. During the 8 weeks before the introduction of the group contingency, 3 of the patients earned the target number of points on 4 of the weeks, 4 patients earned the target number of points twice, and 5 patients earned the target points twice.

Following the introduction of the group contingency the target number of points was earned by 3 patients for 1 week, by 4 patients for 6 weeks, by 5 patients for 1 week, and by all six patients for 1 week. See Figure 7 for the percentages of the group earning 350 points or more. In effect 4 rather than 3 patients began consistently earning at least 350 points. There is no indication that this increase of one patient was a direct result of the group-contingent reinforcement, since the number of points earned by each patient did not decrease following removal of the treatment.

As indicated by Figure 8, Individual Points Earned per Week, by the end of the study patients #1, 2, 4, and 5 had stabilized above 350 points per week while patients #3 and 6 were consistently earning less

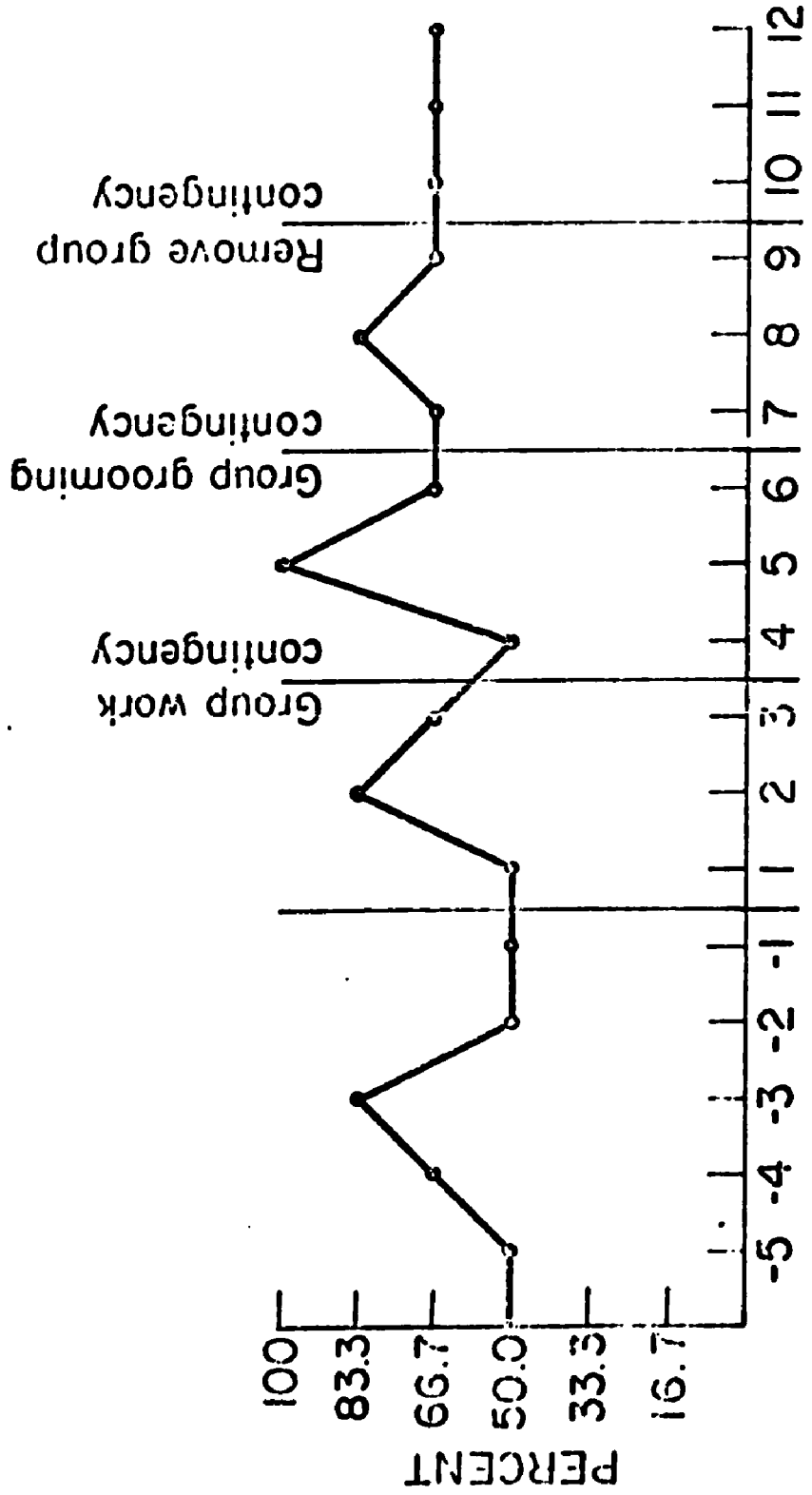


Figure 7. Percentage of Group Earning at least 350 Points.

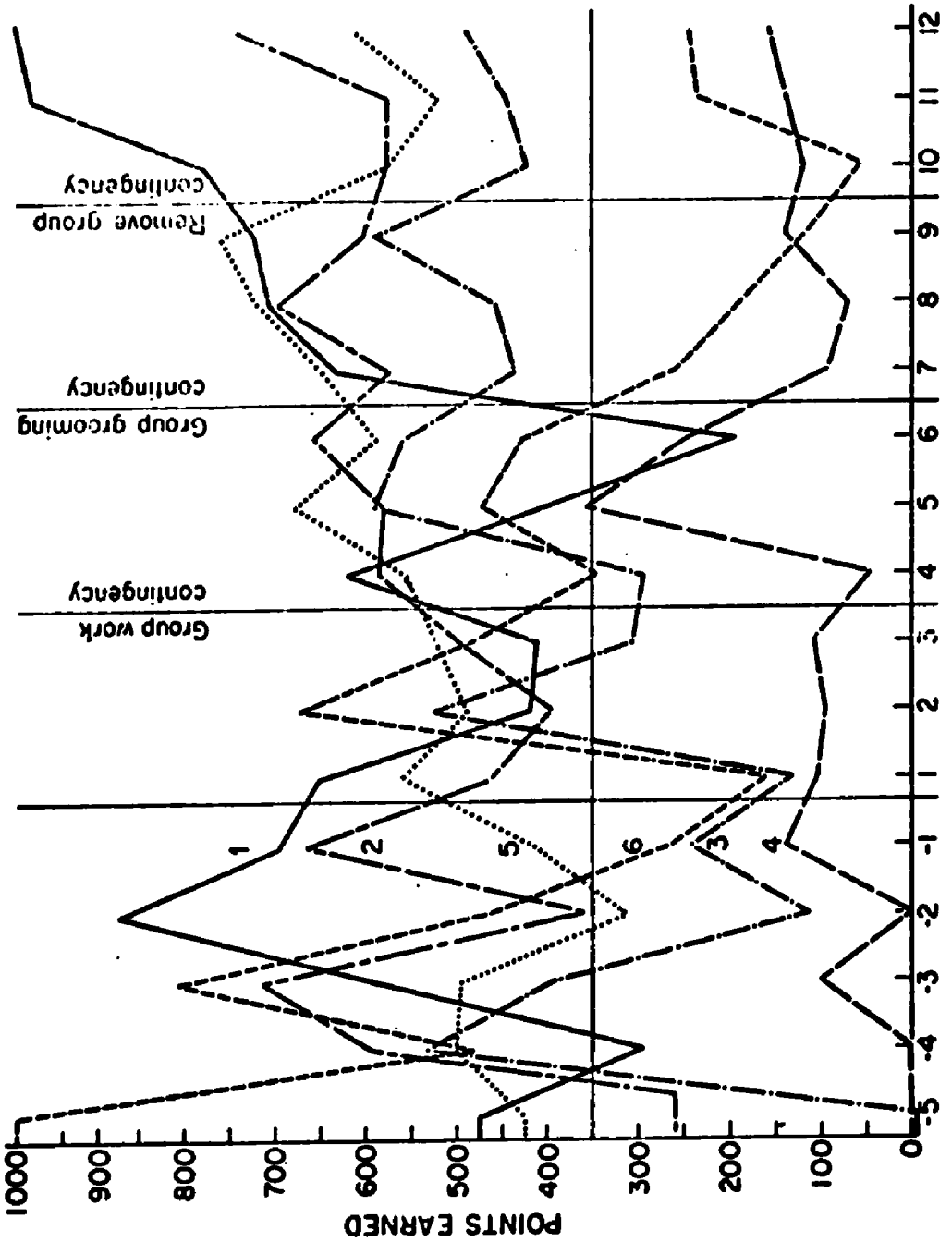


Figure 8. Individual Points Earned per Week.

than 350 points per week. This is further evidence that the group contingency treatment was not effective in influencing the work behavior of all six group members in the desired direction.

Grooming Behavior

The results shown in Figures 9 and 10 indicate that the patients' grooming behaviors were brought under control of the group contingency. The percentage of patients clean shaven for group functions increased 33% over the baseline period while the group contingency for grooming was in effect. When the treatment was discontinued, the shaving behavior again returned to its baseline rate. Figure 11, Cumulative Record --Individual Shaving Behavior, demonstrates the heterogeneity of shaving behavior prior to introduction of the group contingency for shaving. The patient with the lowest score had accumulated only 4 shaves, while the patient with the highest score had 13 of 13 possible shaves.

The percentage of the group wearing clean clothes for the group outing also remained at 100% during the treatment period. (The group bonus for clean clothing was not offered on group meeting days since hospital procedure made it impossible for the patients to get clean clothing on that particular day.) The group rate of wearing clean clothing at group meetings dropped below the baseline and treatment levels once the treatment was discontinued. Figure 12, Cumulative Record--Individual Clean Clothes for Outing, indicates the spread in the group before and after treatment. Before treatment the patients ranged from 1 to 4 of 6 possible outings for wearing clean clothes, while following treatment the patients' cumulative records ranged from 5 to 8 of 12 possible measurement periods.

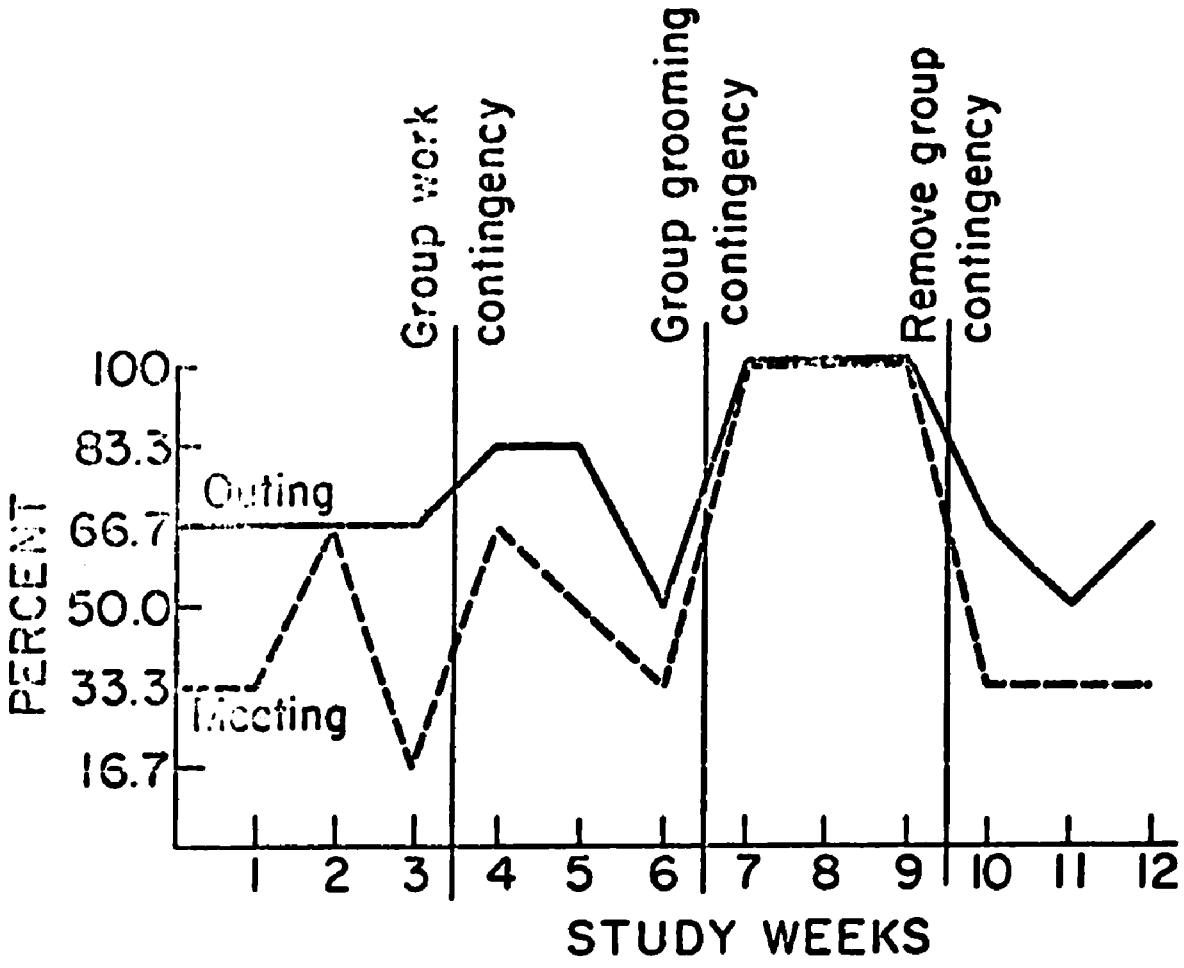


Figure 9. Group Shaving Behavior

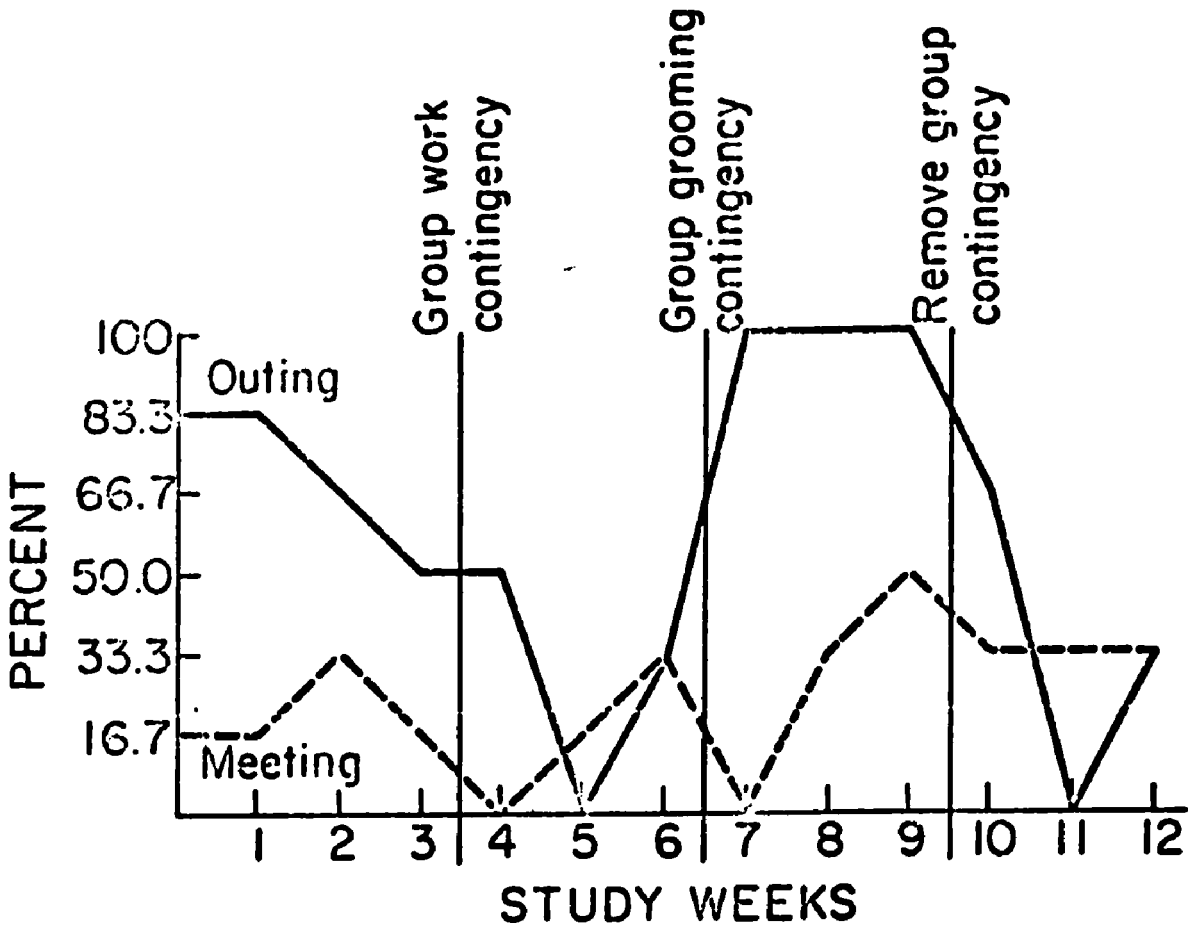


Figure 10. Group Clean Clothing Behavior

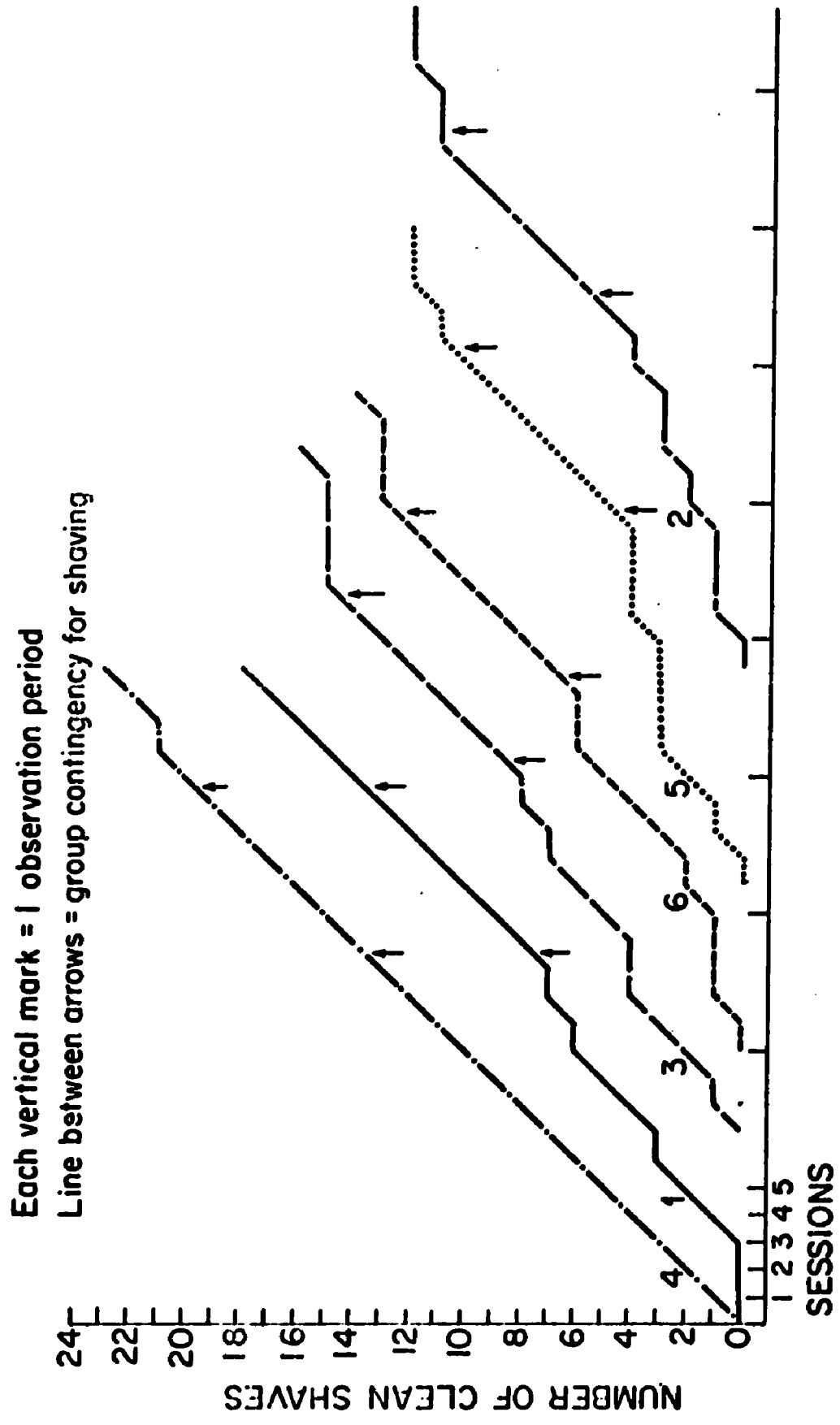


Figure 11. Cumulative Record--Individual Shaving Behavior

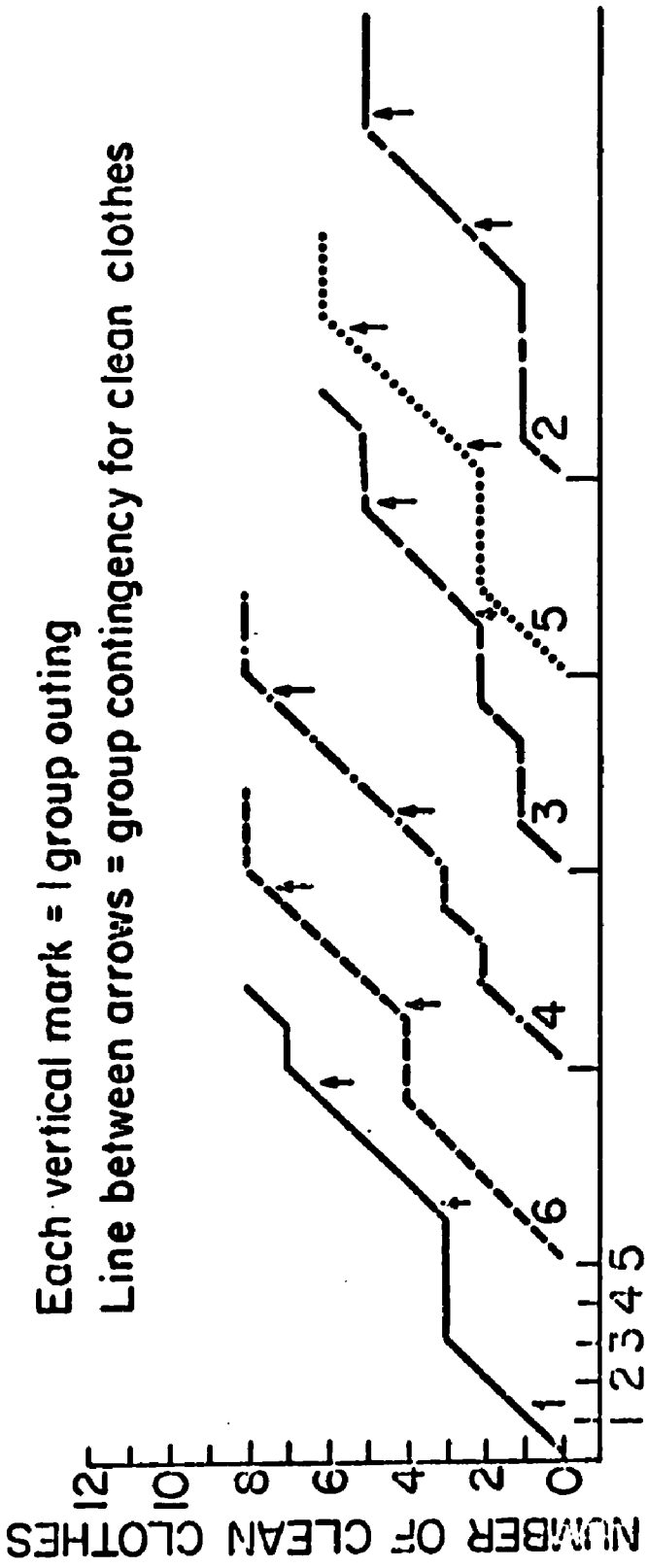


Figure 12. Cumulative Record--Individual Clean Clothes for Outing

Interpersonal Behavior

The patients' interpersonal behaviors of talking to each other and touching each other, while not the object of a group contingent bonus, did increase markedly during the treatment period. See Figure 13. Number of talks per 15 minutes at the group meeting increased 675% by the last week of treatment and 1,050% at the first meeting following removal of the treatment. Three weeks after removal of the group contingent bonuses, the patients' talking to each other in the meetings had returned to the baseline rate.

The number of talks per 15 minutes on the group outings increased by 300% during the treatment period and returned to a rate slightly below that of the baseline period 3 weeks following removal of the group contingent bonuses. As indicated by Figure 14, Individual Interpersonal Behavior--Talk, the increased rate of group talking is the cumulative effect of increases in talking on the part of all six group members.

The number of touches per 15 minutes at the group meeting increased from 0 to 3 by the end of the treatment period and returned to the baseline rate 3 weeks after the removal of the group contingent bonuses. The number of touches per 15 minutes on the group outing increased from 0 to 1.5 during the treatment period and returned to the baseline rate 3 weeks after removal of the group contingent bonuses. As indicated by Figure 15, Individual Interpersonal Behavior--Touch, the increased rate of touching in the group does not represent the cumulative effect of increases in touching on the part of all six group members. Two of the patients did not touch another group member during the treatment period and 3 of the patients demonstrated only sporadic touching. Patient #3 accounted for 90% of the total touching behavior in the group.

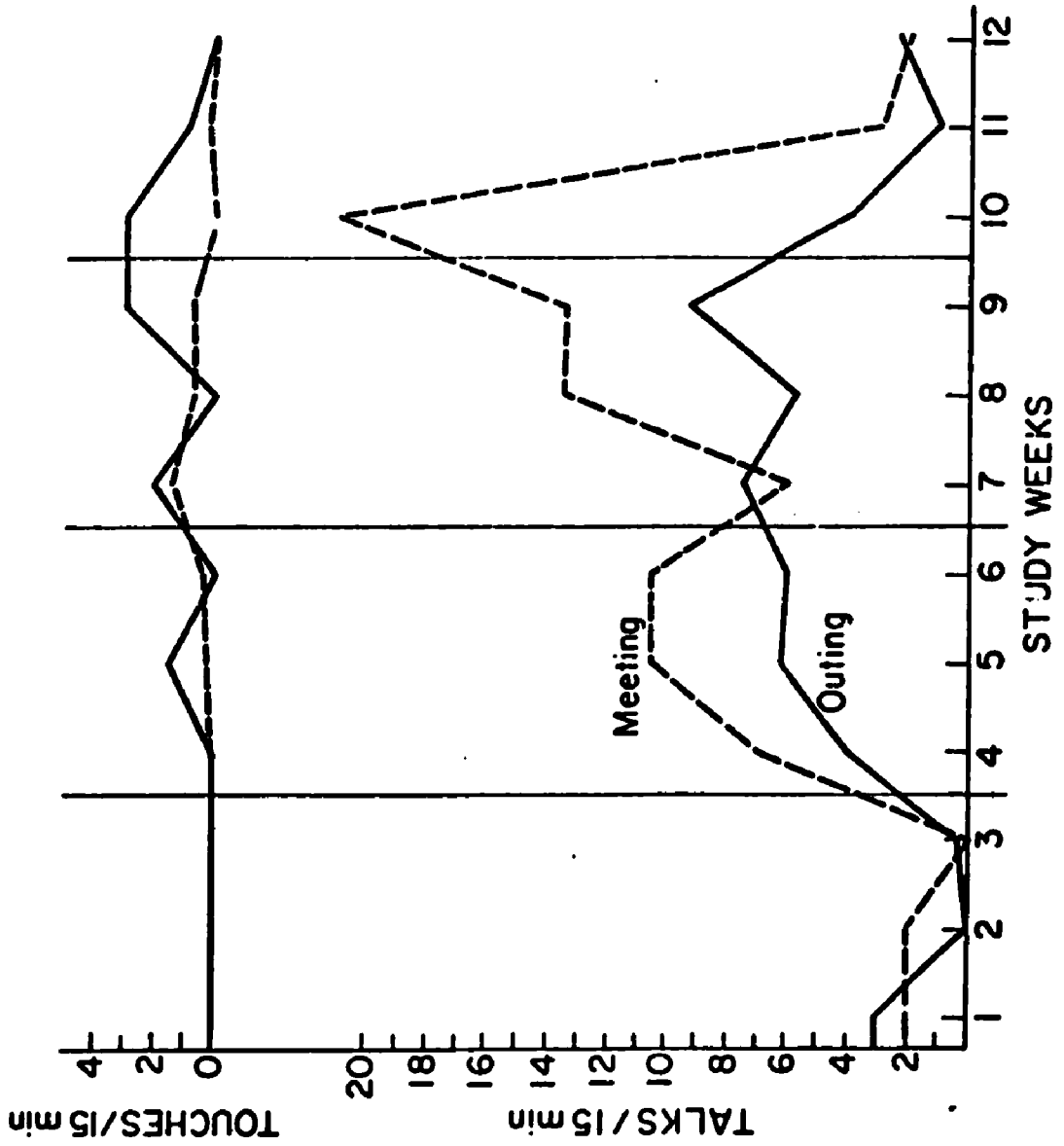


Figure 13. Group Interpersonal Behavior

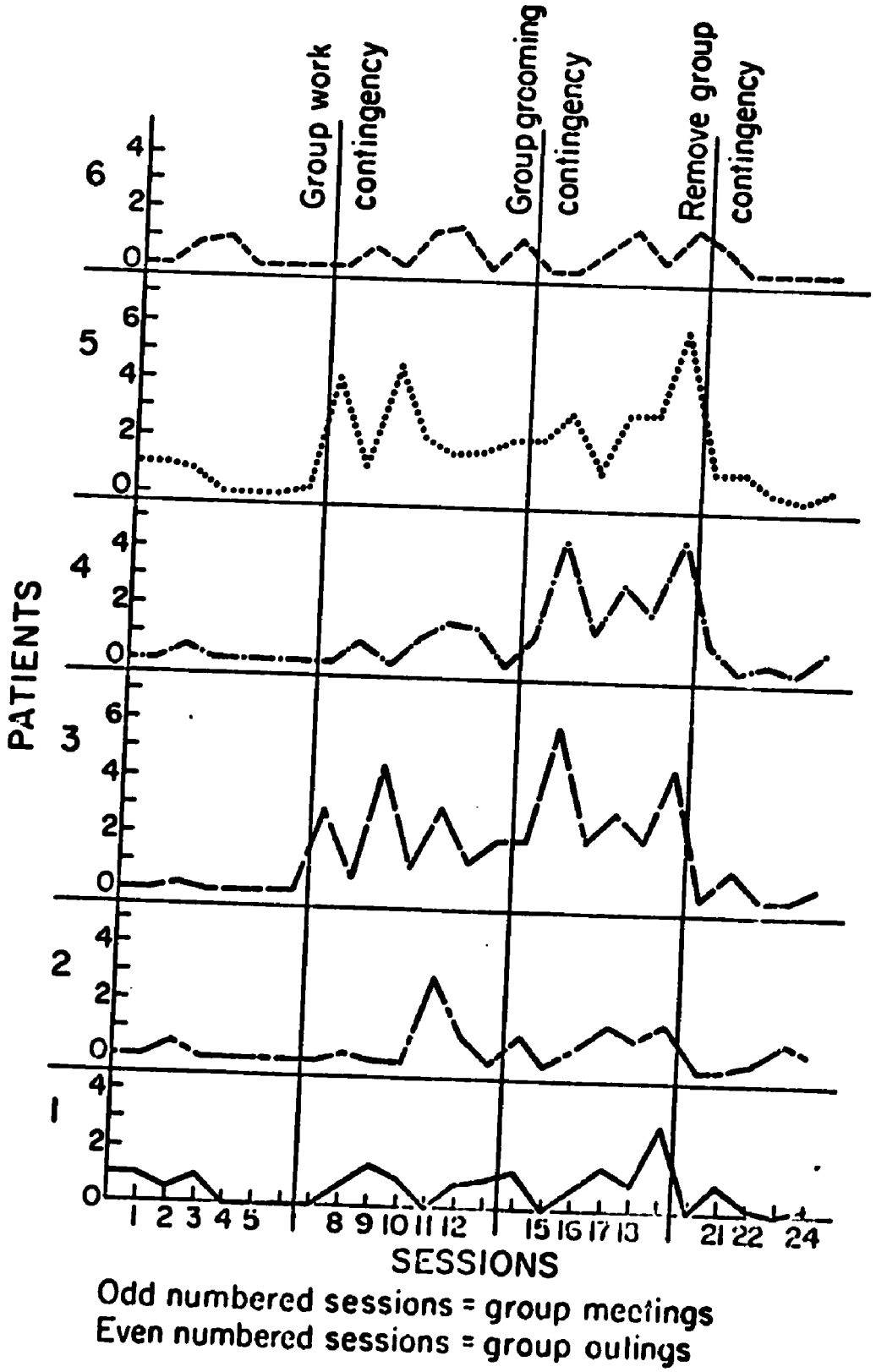
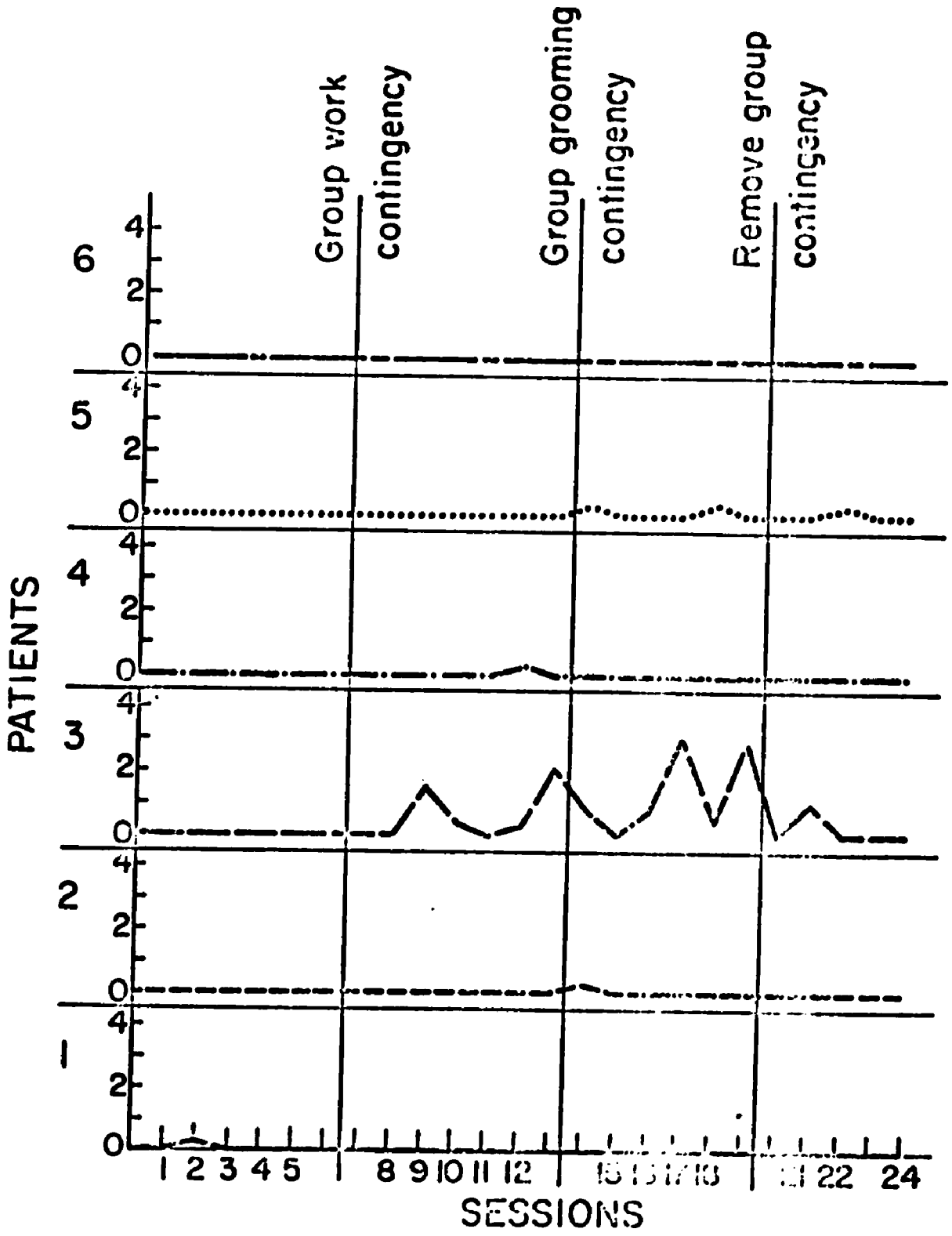


Figure 14. Individual Interpersonal Behavior--Talk.



Odd numbered sessions = group meetings
Even numbered sessions = group outings

Figure 15. Individual Interpersonal Behavior--Touch.

CHAPTER IV

DISCUSSION

The objective of this study was to explore the use of group-contingent reinforcement with chronic hospitalized psychiatric patients. Since two of the three target behaviors were brought under the control of the group-contingent reinforcement, it would appear beneficial to compare and contrast the behaviorally active components of the independent variable in relation to each of the dependent variables (work behavior, grooming behavior, and interpersonal behavior). The use of verbal instructions played a significant role in the conduct of the study and also requires further examination. Finally, the side effects of the group-contingent reinforcement which did occur were desirable and will be discussed in relation to the treatment.

Work Behavior

The group-contingent reinforcement did not directly effect the work behavior of the patients in the group as evidenced by the facts that (a) by the end of the group contingency period two of the six patients were consistently earning less than 350 points and (b) the weekly number of points earned by each patient did not decrease following removal of the treatment. Several reasons for this lack of experimental control over work behavior became evident during the course of the study.

A complex chain of behaviors was required for all of the six patients to earn at least 350 points per week. Each patient had to make daily observations of his buddy's cumulative number of points

earned. If his buddy was not earning at least 35 points per meal for which he was scheduled, then the patient had to approach his buddy and talk him into coming with him to the cafeteria at the appointed time for work. Once in the cafeteria the patient then had to make sure that his buddy was working in addition to completing his own job. This effort had to be sustained for two meals a day over a five-day period of time. In effect, the chain of behaviors required for a patient to get his buddy to the cafeteria and make sure that he worked for just one meal was multiplied ten times. Since payday was only once a week (bonuses for work behavior were also given on payday), the patients were required to perform a complex chain of behaviors without immediate reinforcement at frequent enough intervals throughout the week.

In addition to staff-patient reinforcement being given only once a week, the patient-patient reinforcement for coming to work and earning points toward the group bonus was noticeably lacking. In keeping with the findings of Gelfand, Gelfand, and Dobson (1967) the patients appeared to lack the behavioral skills for reinforcing each others' prosocial behaviors. There were several occurrences in which a patient would wander into the cafeteria during the work period, receive no recognition of his presence from his fellow patients, and eventually wander back up to the ward without having worked.

It also became evident that the patients could avoid punishing consequences from the hospital staff by minding their own business. This message was given verbally several times when patients attempted to elicit staff assistance in getting each other to work. There appeared to be a powerfully reinforced ward norm regarding being concerned only about one's self. This of course ran counter to the group influence

expected within this study.

Another factor that weakened the effect of the group-contingent reinforcement for work was the lack of experimenter control over the patients' sources of money, passes, and discharge. Since money was used as a generalized secondary reinforcer within the group contingency, any outside source of money would decrease the effectiveness of the group bonuses. For example, it was possible for several of the patients to work more hours in the cafeteria to make up for the lost bonus money on weeks when it was obvious the entire group membership would not earn 350 points. Money also failed to be a significant reinforcer for patient #3 whose legal guardian supplied him with a large weekly allowance. Patient #6 had always received frequent passes home. His work performance dropped markedly in week 6, however, when plans were initiated for his discharge from the hospital. Had his eventual discharge been contingent upon his work record, his performance might have been different.

In considering the initial heterogeneity of the work behavior of the group members, one would also have to question whether the selection of a uniform target behavior and uniform reinforcers for all group members was appropriate. An alternative approach would have been to engage in a shaping process for those group members demonstrating the fewest requisite work behaviors and appropriately reinforce successive approximations in the direction of the target behavior. This would have allowed for individualized contracts within the group contingency.

The interpersonal influence teaching that was done (see Figure 6, Progression of Interpersonal Interventions) appears to have been of questionable value upon examination of the overall pattern of work behavior. Closer scrutiny of the weekly behavior of the patient group

yields data that appear clinically significant. The group contingency alone in week 4 had little effect on the group's work behavior. Only 50% of the group reached the target 350 points. During week 5 the patients were assisted in observing each other's work behavior through use of the buddy system and the progress chart posted in the cafeteria. This week the entire group made the target 350 points and each individual received the $2.00 bonus. The techniques from week 5 were continued, but no new techniques were added during week 6. However, the cafeteria elevator broke down at the beginning of week 6, forcing the patients to push the food carts about a quarter mile up and down several ramps to get them to the serving line. The result was that the patients performed four times the physical labor for the same number of points as was previously required and 83.3% of the groups members earned fewer points during week 6 than they had during week 5. This reaction to the extra work constitutes one possible explanation of the decrease in work scores during week 6, and appears more "normal" than "sick."

Week 7 saw the advent of the group-contingent reinforcement for grooming in addition to the work behavior contingency. Although the elevator was repaired, the group tended to avoid the topic of working on the work-related bonus for the remainder of the treatment period even when the researcher brought it up in the group meetings. The patients initiated several discussions of the grooming-related bonuses, apparently preferring to focus on the shorter, more easily attainable chain of grooming behaviors. One can only speculate what the result might have been had the work behavior remained the sole focus of the group's attention for several more weeks.

Grooming Behavior

The results demonstrate that the grooming behaviors were brought under the control of the group-contingent reinforcement. Unlike the work behavior, the behaviors of shaving and wearing clean clothes were reinforced with the group bonus within three hours of when they were performed. The requisite behavioral chain was also much shorter and needed to be performed only once a week for wearing clean clothes and twice a week for being clean shaven.

While the group initially displayed a baseline heterogeneity--especially with regard to shaving--the fact that all group members had the requisite behaviors within their behavioral repertoires greatly facilitated their earning the bonus. No direct attempts at interpersonal influence were observed while the patients were shaving and putting on their clean clothes. The patients did, however, verbalize their awareness that if they didn't clean up before the group meetings and outings the group would not receive the bonus.

It is impossible to quantify the cumulative effect that the interpersonal influence teaching done with respect to the work behavior had on the grooming behaviors. One would have to postulate that there was some generalization from the former situation to the latter. This is one of the clinical advantages and experimental control deficits of the multiple baseline approach to design.

Interpersonal Behavior

The number of talks per 15 minutes by one patient to another patient during the group meetings and group outings increased secondarily as a result of the group contingencies. Even during the period from week 4 through 6 when the work contingency was demonstrating a question-

able effect, the group talking behavior increased 525% during the meetings and 200% on the outings. While the increased rate of touching does not represent a cumulative group increase (patient #3 accounted for 90% of the total group touching behavior), the increased rate of group talking is the cumulative effect of increases in talking on the part of all six group members.

The topics of patient to patient verbalizations were not quantified; however, the subjective impression of this researcher was that they could be categorized as (a) requests (e.g., "Could I have a light?"), (b) social conversation (e.g., "Did your apple cider taste good?"), and (c) interpersonal concern (e.g., "I'll keep your money in my wallet and you can get some from me when you go to the snack bar."). The latter example of one patient demonstrating concern for another group member's welfare represents a marked change that occurred gradually over the twelve weeks of the study. Since talking to and being concerned about one's peers is considered an appropriate social response, it would appear that group contingencies could be utilized most effectively in the area of interpersonal behavior.

The fact that touching behavior increased at all, even among four of the patients, is further evidence of the interpersonal potency of th group contingency treatment. There are punishers present in a psychiatric hospital for patients who touch each other. The norm is, "Keep your hands to yourself."

CHAPTER V

CONCLUSIONS

The results of this study provide information regarding (a) variables to be considered for the use of group-contingent reinforcement and (b) the shaping of interpersonal influence behaviors. Since it has been demonstrated that group-contingent reinforcement can be used to change selected behaviors of chronic hospitalized psychiatric patients, questions must be raised for the conduct of future research in this area of therapeutic intervention.

The results of this study support the premise that group-contingent reinforcement can be effectively utilized when (a) the discriminative stimuli with which the desirable behaviors are to occur include at least several other people, (b) the desired target behavior (response) is one that requires interpersonal relatedness, or (c) consequences for the behavior are mediated by the group. The work behavior, which was not brought under the control of the group contingency, contained none of these interpersonal elements. The cafeteria jobs as they were defined required only that a man come and do his own tasks without necessarily even talking with anyone else. On the other hand, whether a man was cleanly dressed and shaved was more of a social behavior and more appropriately brought under control of the group contingency. It would appear from the data that the interpersonal nature of the basic behavioral paradigm should be the primary consideration in determining whether to use an individual or group contingency to change a patient's behavior.

Another variable to be considered is the homogeneity among the individual patients in the group with respect to the target behavior. The baseline frequency or duration of the desired behavior appears to be a valid criterion for the determination of patient groupings. In cases where there is homogeneity among several patients in relation to the target behavior, a group contingency contract might prove more efficient in terms of staff time. For example, all six of the patients in this study were capable of shaving themselves at a specified time and the uniform group criterion was effective in controlling each patient's shaving behavior. No extra effort was required for the setting of individual contracts. When circumstances prevent the selective grouping of patients according to their levels of behavioral competency, then individual behavioral contracts within a group contingency framework should be considered. For example, one of the six patients in this study had not previously demonstrated the consistent chain of behaviors necessary for earning 350 points per week at work. A group contract could have been formed which would have initially allowed this patient to earn 200 points per week while the other patients were required to earn 350 points. The group bonus would have been contingent upon each patient accomplishing his part of the contract. The contract for the patient with the lowest earning potential would then have been gradually increased to 225, 250, 275, 300, and 350 points per week until he was working at the same level as the other group members. The major benefit of this group approach over merely forming a number of unrelated individual contracts appears to be the side effects of increased patient to patient talking and concern.

Further research is required to determine the effectiveness of in-

dividual behavioral contracts within a group contingency framework. Research is also needed to determine whether group-contingent reinforcement can be utilized to directly increase the interpersonal behaviors of psychiatric patients. The findings of this study warrant further exploration of the usefulness of group contracting with a wide variety of patient groupings. Patient age, length of illness, types of behavioral deficits, and types of treatment settings are variables to be considered.

Exploration of the techniques useful in shaping interpersonal influence behaviors in patients is necessary. The steps outlined in this study included assistance in (a) observation of the other patients' behavior, (b) setting the stimulus situation for the required behavior to occur, and (c) reinforcement of desirable behavior in the other patients. The techniques used to facilitate this process were behavioral assignments, behavioral rehearsal, and imitation. Further work in this area should reveal more effective methods of shaping interpersonal influence behaviors among psychiatric patients, for this is an essential set of behaviors in a person's social repertoire. The techniques involved in assisting patients to observe each other's behavior and reinforce each other's desirable behavior can be readily taught to and applied by the nursing and attendant staffs. In effect they will be expanding their own effectiveness by reinforcing behaviors with which patients can learn to help each other.

In summary, it appears that individual target behaviors can be brought under the control of and changed through use of group-contingent reinforcement. The side effects of increased patient to patient talking and concern are also secondarily controlled by the group treat-

ment. The implications of these findings for improving the interpersonal skills of chronic hospitalized psychiatric patients are numerous. Often it is the lack of interpersonal skill that confines the patient to an institutional setting. Improvement of these skills through the use of group-contingent reinforcement would greatly increase the patient's chances of adjusting to a more adaptive role in society.

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