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4 THE PSYCHIATRIC NURSE AS A BEHAVIORAL ENGINEER¹

Teodoro Ayllon • Jack Michael

The behavior which leads to a person's admission to a mental hospital often involves danger to himself or others, withdrawal from normal social functions, or a dramatic change from his usual mode of behaving. The professional staff of the psychiatric hospital directs its major efforts toward the discovery of the flaw in the patient's mental apparatus

Journal of the Experimental Analysis of Behavior, 1959, 2, 323-334.

¹This paper contains a portion of the data from a doctoral dissertation submitted to the Department of Psychology, University of Houston, in partial fulfillment of the requirements for the Ph.D. degree, in August, 1959. Grateful acknowledgment is due to the members of the doctoral committee for their help and encouragement, and also to Drs. H. Osmond and I. Clancey, Superintendent and Clinical Director of the Saskatchewan Hospital, for making research at this institution possible.

which presumably underlies his disturbed and dangerous behavior. Following the medical paradigm, it is presumed that once the basic disfunction has been properly identified the appropriate treatment will be undertaken and the various manifestations of the disfunction will disappear.

While diagnosis is being made and during subsequent treatment, the patient is under the daily care of the psychiatric nurse in the ward. There, he often exhibits annoying and disrupting behavior which is usually regarded as a further manifestation of basic difficulty. This behavior is sometimes identical with that which led to his admission; but at other times it seems to originate and develop within the hospital setting.

²As used in this paper, "psychiatric nurse" is a generic term including all those who actually work on the ward (aides, psychiatric nurses, and registered nurses).

though it is still regarded as a reflection of his basic problem, this disruptive behavior may become so persistent that it engages the full energies of the nurses, and postpones, sometimes permanently, any effort on their part to deal with the so-called basic problem.

Disrupting behaviors usually consist in the patient's failure to engage in activities which are considered normal and necessary; or his persistent engagement in activities that are harmful to himself or other patients, or disrupting in other ways. For example, failures to eat, dress, bathe, interact socially with other patients, and walk without being led are invariably disruptive. Hoarding various objects, hitting, pinching, spitting on other patients, constant attention-seeking actions with respect to the nurses, upsetting chairs in the dayroom, scraping paint from the walls, breaking windows, stuffing paper in the mouth and ears, walking on haunches or while in a squatting position are disruptive when they occur frequently and persistently.

At present, no systematic approach to such problems is available to the nurses. A psychodynamic interpretation is often given by psychiatrists and psychologists; and, for that matter, the nurses sometimes construct "depth" interpretations themselves. These interpretations seldom suggest any specific remedial actions to the nurses, who then have no other recourse than to act on the basis of common sense, or to take advantage of the physical therapy in vogue. From the point of view of modern behavior theory, such strong behaviors, or behavioral deficits, may be considered the result of events occurring in the patient's immediate or historical environment rather than the manifestations of his mental disorder. The present research represents an attempt to discover and manipulate some of these environmental variables for the purpose of modifying the problem behavior.

RESEARCH SETTING

The research was carried out at the Saskatchewan Hospital, Weyburn, Saskatch-

ewan, Canada. It is a psychiatric hospital with approximately 1500 patients. Its most relevant features in terms of the present experiment are:

1. The nurses are trained as psychiatric nurses in a 3-year program.
2. They are responsible for the patients in their wards and enjoy a high degree of autonomy with respect to the treatment of a patient. The psychiatrists in the hospital function as advisers to the nursing staff. This means that psychiatrists do not give orders, but simply offer advice upon request from the psychiatric nurses.
3. The nurses administer incoming and outgoing mail for the patients, visitor traffic, ground passes, paroles, and even discharge, although the last is often carried out after consultation with a psychiatrist. The nurses also conduct group therapy under the supervision of the psychiatric staff.

The official position of the senior author, hereafter referred to as *E*, was that of a clinical psychologist, who designed and supervised operant-conditioning "therapy" as applied by the nurses. Once his advice had been accepted, the nurses were responsible for carrying out the procedures specified by *E*. It was the privilege of the nurses to discontinue any treatment when they believed it was no longer necessary, when they were unable to implement it because of lack of staff, or when other ward difficulties made the treatment impossible. Whenever termination became necessary, *E* was given appropriate notice.

SUBJECTS

The subjects used in this investigation were all patients in the hospital. Of the total 19 patients, 14 had been classified as schizophrenic and 5 as mentally defective. Except for one female patient who was resident for only 7 months, all patients had been hospitalized for several years. Each subject presented a persistent behavior problem for which he had been referred to *E* by the nursing staff. None of the *Ss* was pres-

ently receiving psychotherapy, electroconvulsive therapy, or any kind of individual treatment.

The behaviors which were studied do not represent the most serious problems encountered in a typical psychiatric hospital. They were selected mainly because their persistence allowed them to survive several attempts at altering them.

PROCEDURE

Prior to a systematic observational study of the patient's behavior the nurses were asked about the kind and frequency of naturally occurring reinforcement obtained by the patient, the duration and frequency of the problem behavior, and the possibility of controlling the reinforcement. Next, a period of systematic observation of each patient was undertaken prior to treatment. This was done to obtain objective information on the frequency of the behavior that was a problem to the nurses, and to determine what other behaviors were emitted by the patient.

Depending on the type of behavior, two methods were used for recording it. If the behavior involved interaction with a nurse, it was recorded every time it occurred. Entering the nurses' office, and eating regular meals are examples of such behavior.

Behavior which did not naturally involve contact with the nurse was recorded by a time-sampling technique. The nurse who was in charge of the program was supplied with a mimeographed record form. She sought out the patient at regular intervals; and without interaction with him, she recorded the behavior taking place at that time. She did not actually describe the behavior occurring, but rather classified it in terms of a pre-established trichotomy: (a) the undesirable behavior; (b) incompatible behavior which could ultimately displace the undesirable behavior; and (c) incompatible behavior which was not considered shapeable, such as sleeping, eating, and dressing. (Although these latter acts are certainly susceptible to the influence of reinforcement, they were regarded as neutral behaviors in

the present research.) The period of observation varied from 1 to 3 minutes. After making an observation, the nurse resumed her regular ward activities until the next interval was reached, whereupon she again sought out the patient. Except for one patient, who was observed every 15 minutes, such observations were made every 30 minutes.

The relevant aspect of the data obtained by the time-check recording is the proportion of the total number of observations (excluding observations of neutral behavior) during which the patient was engaging in the behavior being altered. This will be called the relative frequency of the behavior. As an example, on the first day of the program of extinction for psychotic talk in the case of Helen (see below), 17 nonneutral behaviors were recorded. Of these, nine were classed as psychotic talk and eight as sensible talk; the relative frequency of psychotic talk was 0.53.

Although it would have been desirable, a long pretreatment period of observation was precluded by the newness of this approach and the necessity of obtaining the voluntary cooperation of the nurses.

After the pretreatment study had been completed, *E* instructed the ward nurses in the specific program that was to be carried out. In all cases the instruction was given at ward meetings and usually involved the cooperation of only two shifts, the 7 a.m. to 3 p.m., and 3 p.m. to 11 p.m., since the patients were usually asleep during the 11 p.m. to 7 a.m. shift.

The pretreatment studies indicated that what maintained undesirable behavior in most of the patients was the attention or social approval of the nurses toward that behavior. Therefore, the emphasis in instructing the nursing staff was on the operation of giving or withholding social reinforcement contingent upon a desired class of behavior. What follows illustrates the tenor of *E*'s somewhat informal instructions to the nurses. "Reinforcement is something you do for or with a patient, for example, offering candy or a cigarette. Any way you convey attention to the patient is reinforcing. Patients may be reinforced if you answer their questions, talk

to them, or let them know by your reaction that you are aware of their presence. The common-sense expression 'pay no attention' is perhaps closest to what must be done to discourage the patient's behavior. When we say 'do not reinforce a behavior,' we are actually saying 'ignore the behavior and act deaf and blind whenever it occurs.'"

When reinforcement was given on a fixed-interval basis, the nurse was instructed to observe the patient for about 1 to 3 minutes at regular intervals, just as in the pre-treatment observation period. If desirable behavior was occurring at the time of observation, she would reinforce it; if not, she would go on about her duties and check again after the next interval had passed. Strictly speaking, this is fixed interval with a limited-hold contingency (Ferster & Skinner, 1957). During a program of extinction the nurse checked as above; however, instead of reinforcing the patient when he exhibited the behavior being altered, she simply recorded it and continued her other work. Except for specific directions for two patients, the nurses were not given instructions on the operation of aversive control.

The programs requiring time-sample observations started after breakfast (around 9 a.m.) and ended at bedtime (around 9 p.m.), and were usually carried out by only one of the 6 to 12 nurses on each shift. Because of the daily shift changes, the monthly ward rotations, and a systematic effort to give everyone experience at this new duty, no patient's program was followed by any one nurse for any considerable length of time. Nineteen, as a minimum, different nurses were involved in carrying out each patient's program. Over 100 different nurses participated in the entire research project.

Most social ward activities took place in the dayroom, which was a large living room containing a television set, card tables, magazines, and games. It was here that reinforcement was given for social behaviors toward patients, and for nonsocial behaviors which were strengthened to complete with undesirable behaviors. The fact that the research was carried out in five wards distributed far

from each other in a four-floor building made it impossible for *E* to observe all the nurses involved in the research at any one time. Because of the constant change in nursing personnel, most of *E*'s time was spent in instructing new people in the routines of the programs. In addition, since *E* did not train the nurses extensively, he observed them, often without their knowledge, and supervised them in record keeping, administering reinforcement, extinction, etc. That the nurses performed effectively when *E* was absent can be at least partially determined by the ultimate results.

RESULTS

The results will be summarized in terms of the type of behavior problem and the operations used in altering the behavior. In general, the time required to change a specific behavior ranged from 6 to 11 weeks. The operations were in force for 24 hours a day, 7 days a week.

Strong Behavior Treated by Extinction, or Extinction Combined with Reinforcement for Incompatible Behavior

In the five cases treated with this program, the reinforcer was the attention of the nurses; and the withholding of this reinforcer resulted in the expected decline in frequency. The changes occurring in three of the behavior problems, scrubbing the floor, spending too much time in the bathroom, and one of the two cases of entering the nurses' offices, were not complicated by uncontrollable variables. Lucille's case is presented in detail as representative of these three. The interpretation of the changes occurring in the other two behavior problems, entering the nurses' offices, and psychotic verbal behavior, is not so clearcut. Helen's case illustrates this point. For details concerning the cases not discussed in this paper, see Ayllon (1959).

Lucille. Lucille's frequent visits to the nurses' office interrupted and interfered with

their work. She had been doing this for 2 years. During this time, she had been told that she was not expected to spend her time in the nurses' office. Frequently, she was taken by the hand or pushed back bodily into the ward. Because the patient was classified as mentally defective, the nurses had resigned themselves to tolerating her behavior. As one of the nurses put it, "It's difficult to tell her anything because she can't understand—she's too dumb."

The following instructions were given to the nurses: "During this program the patient must not be given reinforcement (attention) for entering the nurses' office. Tally every time she enters the office."

The pretreatment study indicated that she entered the office on an average of 16 times a day. As Fig. 1b shows, the average frequency was down to two entries per day by the seventh week of extinction, and the program was terminated. Fig. 1a shows the same data plotted cumulatively.

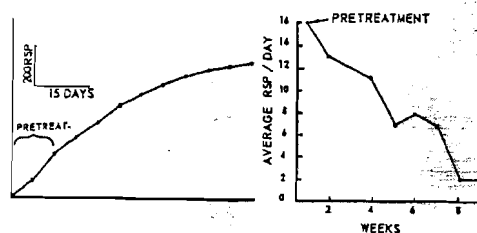


FIGURE 1 Extinction of the response "entering the nurses' office." (a) cumulative record, (b) conventional record.

Helen. This patient's psychotic talk had persisted for at least 3 years. It had become so annoying during the last 4 months prior to treatment that other patients had on several occasions beaten her in an effort to keep her quiet. She was described by one of the psychiatrists as a "delusional" patient who "feels she must push her troubles onto somebody else, and by doing this she feels she is free." Her conversation centered around her illegitimate child and the men she claimed were constantly pursuing her. It was the nurses' impression that the patient had "nothing else to talk about."

A 5-day pretreatment observation of the patient was made at 30-minute intervals to compare the relative frequencies of psychotic and sensible content in her talk. Some of the nurses reported that, previously, when the patient started her psychotic talk, they listened to her in an effort to get at the "roots of her problem." A few nurses stated that they did not listen to what she was saying but simply nodded and remarked, "Yes, I understand," or some such comment, the purpose of which was to steer the patient's conversation onto some other topic. These reports suggested that the psychotic talk was being maintained by the nurses' reaction to it. While it is recognized that a distinction between psychotic and normal talk is somewhat arbitrary, this case was included in the research because of its value as a problem involving primarily verbal behavior.

The following instructions were given to the nurses: "During this program the patient must not be given reinforcement (attention) for her psychotic talk (about her illegitimate child and the men chasing her). Check the patient every 30 minutes, and (a) tally for psychotic talk; and (b) reinforce (and tally) sensible talk. If another patient fights with her, avoid making an issue of it. Simply stop the other patient from hurting her, but do so with a matter-of-fact attitude."

The 5-day observation period resulted in a relative frequency of psychotic talk of 0.91. During treatment (Fig. 2), the relative frequency dropped to less than 0.25; but, later on, it rose to a value exceeded only by the pretreatment level. The sudden increase

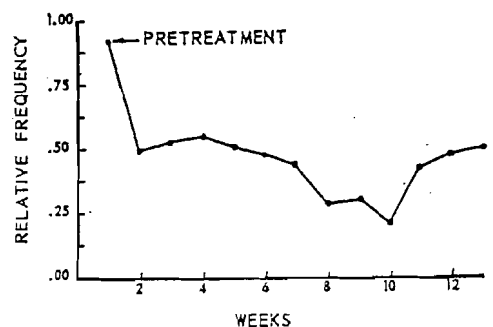


FIGURE 2 Extinction of psychotic talk.

in the patient's psychotic talk in the ninth week probably occurred because the patient had been talking to a social worker, who, unknown to the nurses, had been reinforcing her psychotic talk. The reinforcement obtained from the social worker appeared to generalize to her interaction with other patients and nurses. The patient herself told one of the nurses, "Well you're not listening to me. I'll have to go and see Miss _____ (the social worker) again, 'cause she told me that if she would listen to my past she could help me."

In addition to the reinforcement attributable to the social worker, two other instances of bootleg reinforcement came to light. One instance occurred when a hospital employee came to visit the ward, and, another, when volunteer ladies came to entertain the patients. These occasions were impossible to control, and indicate some of the difficulties of long-term control over verbal behavior.

It is of interest to note that since the reinforcement program began, the patient has not been attacked by the other patients and is only rarely abused verbally. These improvements were commented upon by the nurses, who were nevertheless somewhat disappointed. On the basis of the improvement shown in verbal behavior, the nurses had expected a dramatic over-all change which did not occur.

Strong Behavior Treated by Strengthening Incompatible Behavior

This case represented an attempt to control violent behavior by strengthening an incompatible class of responses, and to recondition normal social approaches while the violence was under control. The first phase was quite successful; but errors in strategy plagued the last half of the program, and it was terminated by the nurses because the patient became more violent.

The immediate reason for referral was that the patient, Doty, had become increasingly violent over the last 5 years, and recently attacked several patients and hospital personnel without any apparent reason. Since

admission and up the present, she had received many electroconvulsive-therapy treatments aimed at reducing this violence, with little or no success. In 1947, a physician recommended her as a good case for psychosurgery. In December of the same year, she attempted to strangle her mother who was visiting her at the time. In July 1948, the patient had a leucotomy. The situation had recently become so serious that at the least suspicious move on her part the nurses would put her in the seclusion room. She spent from 3 to 12 hours daily in that room.

A 5-day pretreatment study, at 15-minute intervals, indicated that one of the nonviolent behaviors exhibited fairly often was "being on the floor" in the dayroom. The response included lying, squatting, kneeling, and sitting on the floor. Strengthening this class of responses would control the violence and, at the same time, permit the emotional behavior of other patients and nurses toward her to extinguish. To strengthen the patient's own social behavior, her approaches to the nurses were to be reinforced. The response "approach to nurse" was defined as spontaneous requests, questions or comments made by the patient to the nurse. Ultimately, the plan was to discontinue reinforcing being on the floor once the patient-nurse social interaction appeared somewhat normal. Presumably, this would have further increased the probability of approach to the nurses.

For the duration of the program, continuous social reinforcement was to be available for her approach to the nurses. Social reinforcement was to be available for the first 4 weeks only, on a fixed interval of 15 minutes, contingent on the response being on the floor. For the last 4 weeks, social reinforcement was to be withheld for being on the floor.

The following instructions were given to the nurses for the first 4 weeks of the program: "Reinforce (and tally) her approaches to you every time they occur. Check the patient every 15 minutes, and reinforce (and tally) the behavior being on the floor."

From the fifth week on the instructions

were modified as follows: "Continue reinforcing (and tallying) her approaches to you every time they occur. Check the patient every 15 minutes, and tally but do not reinforce the behavior being on the floor."

During the period of reinforcement, as shown in Fig. 3, the relative frequency of the response being on the floor increased from the pretreatment level of less than 0.10 to a value of 0.21. During the succeeding 4 weeks of extinction, the frequency of being on the floor returned to the pretreatment level.

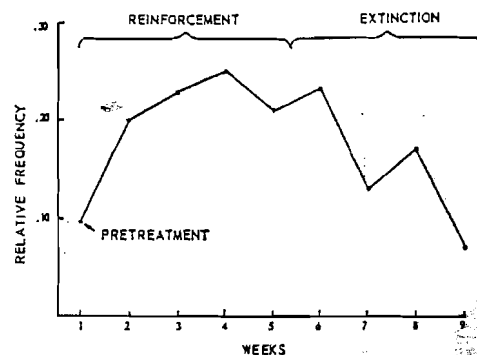


FIGURE 3 Reinforcement and subsequent extinction of the response "being on the floor."

It was clear that being on the floor was incompatible with the fighting behavior and that the latter could be controlled by reinforcing the former. During the period of reinforcement for being on the floor, she attacked a patient once; but during the period of extinction, she made eight attacks on others. Her approaches to nurses increased over-all during the 4 weeks of reinforcement, but they decreased during the last 4 weeks, even though they were still being reinforced. This decrease paralleled the decrease in being on the floor. While being on the floor was undergoing extinction, attacks on the patients and nurses increased in frequency, and the nurses decided to return to the practice of restraining the patient. The program was terminated at this point.

The patient's failure to make the transition from being on the floor to approaching

the nurses suggests that the latter response was poorly chosen. It was relatively incompatible with being on the floor. This meant that a previously reinforced response would have to be extinguished before the transition was possible, and this, too, was poor strategy with a violent patient.

Weak Behavior Strengthened by Escape and Avoidance Conditioning

Two female patients generally refused to eat unless aided by the nurses. One, Janet, had to be forcefully taken to the dining room, where she would permit the nurses to spoon-feed her. The other patient, Mary, was spoon-fed in a room adjacent to the dining room. Both patients had little social contact with others and were reported to be relatively indifferent to attention by the nurses. Both were also reported to care only for the neat and clean appearance of their clothing. Mary had been at the hospital for 7 months, and Janet had been there for 28 years. These two patients were in different wards and apparently did not know each other.

The program involved a combination of escape and avoidance conditioning, with food spilling as the aversive stimulus. All spoonfeeding was to be accompanied by some food spilling which the patient could escape by feeding herself after the first spilling, or avoid by feeding herself the entire meal. Social reinforcement was to be given contingent on feeding herself.

It was hoped that once self-feeding began to occur with some regularity, it would come under the control of environmental variables which maintain this behavior in most people, such as convenience, social stimulation at meal time, etc. In both cases, the program ultimately resulted in complete self-feeding, which now has been maintained for over 10 months. Janet's behavior change was complicated by a history of religious fasting, and her change took a little longer. Mary's case will be given here in detail.

The following instructions were given to the nurses: "Continue spoonfeeding the patient; but from now on, do it in such a

careless way that the patient will have a few drops of food fall on her dress. Be sure not to overdo the food dropping, since what we want to convey to the patient is that it is difficult to spoonfeed a grown-up person, and not that we are mean to her. What we expect is that the patient will find it difficult to depend on your skill to feed her. You will still be feeding her, but you will simply be less efficient in doing a good job of it. As the patient likes having her clothes clean, she will have to choose between feeding herself and keeping her clothes clean, or being fed by others and risking getting her clothes soiled. Whenever she eats on her own, be sure to stay with her for a while (3 minutes is enough), talking to her, or simply being seated with her. We do this to reinforce her eating on her own. In the experience of the patient, people become nicer when she eats on her own."

During the 8-day pretreatment study, the patient ate 5 meals on her own, was spoonfed 12, and refused to eat 7. Her weight at this time was 99 pounds. Her typical reaction to the schedule was as follows: the nurse would start spoonfeeding her, but after one or two "good" spoonfuls, the nurse would carelessly drop some food on her dress. This was continued until either the patient requested the spoon, or the nurse continued spoonfeeding her the entire meal. The behaviors the patient adopted included (a) reaching for the spoon after a few drops had fallen on her dress; (b) eating completely on her own; (c) closing her mouth so that spoonfeeding was terminated; or (d) being spoonfed the entire meal. Upon starting the schedule, the most frequent of all these alternatives was the first; but after a while, the patient ate on her own immediately. The relevant data are shown in Fig. 4. On the 12th day, the patient ate all three meals on her own for the first time. Four meals were refused out of the last 24: one meal was missed because she stated she didn't like "liver" and the other three because she said she was not hungry. Her weight when she left the hospital was 120 pounds, a gain of 21 pounds over her pretreatment weight.

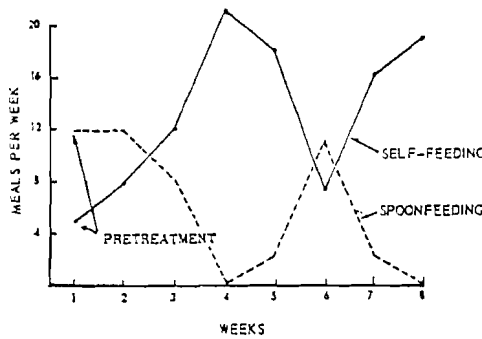


FIGURE 4 Escape and avoidance conditioning of self-feeding.

Mary's relapse in the fifth week, after she had been eating well for 2 weeks, was quite unexpected. No reasonable explanation is suggested by a study of her daily records; but, after she had been spoonfed several meals in a row, the rumor developed that someone had informed the patient that the food spilling was not accidental. In any event, the failure to feed herself lasted only about 5 days.

Since the patient's hospital admission had been based on her refusal to eat, accompanied by statements that the food was poisoned, the success of the program led to her discharge. It is to be noted that although nothing was done to deal directly with her claims that the food was poisoned, these statements dropped out of her repertoire as she began to eat on her own.

Strong Behavior Weakened through a Combination of Extinction for Social Attention and Stimulus Satiation

For 5 years, several mentally defective patients in the same ward, Harry, Joe, Tom, and Mac, had collected papers, rubbish, and magazines and carried these around with them inside their clothing next to their body. The most serious offender was Harry, whose hoarding resulted in skin rashes. He carried so much trash and so persistently that for the last 5 years the nurses routinely "dejunked"

him several times during the day and before he went to bed.

An analysis of the situation indicated that the patient's hoarding behavior was probably maintained by the attention he derived because of it and by the actual scarcity of printed matter. There were few papers or magazines in the ward. Some were brought in occasionally; but since they were often torn up and quickly disappeared, the nurses did not bring them in very often.

It was expected that flooding the ward with magazines would decrease the hoarding behavior after the paradigm of satiation. Similarly, the availability of many magazines was expected to result in their being the major object of hoarding. The latter would facilitate an easier measurement of this behavior.

In addition, social reinforcement was to be withheld for hoarding magazines and rubbish. The results for all patients were essentially similar: a gradual decrease in hoarding. After 9 weeks of satiation and extinction, the program was terminated, since hoarding was no longer a problem. This improvement has been maintained for the last 6 months.

The following instructions were given to the nurses: "During this program the patients Harry, Mac, Joe, and Tom must not be given reinforcement (attention) for hoarding. There will be a full supply of magazines in the dayroom. Every night, after all patients have gone to bed, replenish the magazine supply in the dayroom. Every night while the patients are in bed, check their clothes to record the amount of hoarding. Do not, however, take their hoarding from them."

The original plan was to count the number of magazines in the patients' clothing after they had gone to bed. This is, in fact, the dependent variable shown in Fig. 5 for Joe, Tom, and Mac. The recording for Harry had to be changed, however; after 4 days of the program, he no longer carried the rubbish or magazines in his clothing. Instead, he kept a stack of magazines on his lap while he was sitting in the dayroom. The

number of magazines in his stack was counted when he left the dayroom for supper, and this is the dependent variable shown for Harry in Fig. 5. (Mac was out of the ward for 3 weeks because of illness.)

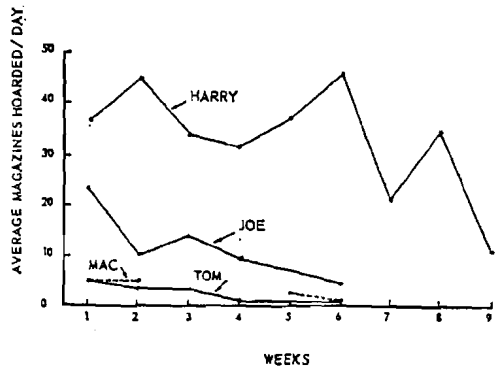


FIGURE 5 Satiation and extinction of two forms of magazine hoarding.

Prior to the program, one of the nurses questioned the possibility and even advisability of changing Harry's behavior. Her argument was that "behavior has its roots in the personality of the individual. The fact that he hoards so much indicates that Harry has a strong need for security. I don't see how we are going to change this need, and I also wonder if it is a good thing to do that." This was a point of view commonly encountered, especially regarding relatively nonverbal patients.

It would seem in this case that Harry transferred his security needs from hoarding rubbish and magazines to sitting in the dayroom and looking at magazines, especially during T.V. commercials. The transfer occurred with no apparent signs of discomfort on his part.

Other Cases

Combinations of extinction, reinforcement, and avoidance programs were set up for three patients; in two of these the problem behavior was eliminated in only a few weeks. The program of the third patient was followed for 20 days and then terminated.

since he had shown no changes by that time. An interpretation of the outcome of each of these programs is rendered questionable by the number of controlling variables involved and the nature of the changes.

The pretreatment study of four additional patients showed that the problem behavior of three of them did not occur often enough to justify carrying through a program; and in the fourth case, no easily controllable variables were available and, again, no program was undertaken.

DISCUSSION

On the basis of this work, further research along the same lines is now under way.³ The present results are presented in this preliminary form in the hopes that they will provide encouragement to those who are in a position to conduct similar research. Therefore, it will be useful to mention a few other aspects of this work.

A major problem concerns the use of nurses as experimental assistants as well as substitutes for the recording and programming apparatus of the laboratory. There is no question as to the greater reliability of the ordinary laboratory component. In large part, however, the nurses' failures in carrying out *E*'s instructions were unsystematic with respect to the results obtained, and although undesirable, they do not by any means render this kind of work uninterpretable. Systematic errors in observation can be reduced to some extent by dealing with response classes that are relatively easily identified. But, of course, this problem will become more serious as efforts are made to alter more subtle aspects of behavior. Perhaps the only solution is to be dissatisfied with one's techniques and principles until the behavioral changes are so obvious as to render statistical analysis superfluous.

Another question concerns the acceptability of this approach to the hospital staff.

³ This new project is supported by a grant from the Commonwealth Fund, and is being conducted under the auspices of the Saskatchewan Hospital, Weyburn, Saskatchewan, Canada.

The nurses and psychiatrists who were familiar with the "reinforcement programs," as they were called, were given questionnaires and interviews to determine their attitudes toward this work. The results indicate a mildly favorable reception in general, with some enthusiastic support from both nurses and psychiatrists.

Regarding time actually spent in carrying out the programs, it might seem unreasonable to expect the already overworked nurse to devote 2 or 3 minutes every half-hour to observation and recording. However, this is only about 40 minutes of an 8-hour shift; and, besides, much of her work stems from patients' behavior problems, the elimination of which would make the 40 minutes an excellent investment of time.

Two sources of possible misunderstanding between *E* and nurses should be pointed out. First, when nurses were asked about the sort of problems they had in the ward, if no dramatic behaviors, such as attempts at suicide, or violent acts, had been recently reported, they often denied having any problems. Problems also went unrecognized because they were considered unsolvable. For example, since most nurses attributed the behavior of a patient to his diagnosis or age, little or no effort was made to discover and manipulate possibly relevant environmental variables.

Second, even after a behavior had been modified, it was not uncommon to hear nurses remark, "We've changed her behavior. So what? She's still psychotic." It seemed that once a persistent problem behavior was eliminated, its previous importance was forgotten and other undesirable aspects of the patient's repertoire were assumed to be the most important ones. In general, their specific expectations were unclear or un verbalized, and they tended to be somewhat dissatisfied with any change less than total "cure."

Finally, an objection often raised against this approach is that the behavior changes may be only temporary. However, permanent elimination of ward behavior problems requires a permanent elimination of the en-

vironmental variables that shape them up and maintain them. The clinical belief that a favorable behavioral change, if properly accomplished, will be permanent probably rests on a faulty evaluation of the role of environmental variables in controlling behavior. Certainly, it is not based on any actual accomplishments in the field of mental health.

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5 PRODUCTION AND ELIMINATION OF SYMPTOMATIC BEHAVIOR

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This report deals with some environmental events that exercise control over behavior. The behaviors studied were those characterized by a high frequency and repetitive nature. A female patient in a psychiatric hospital in Weyburn, Saskatchewan¹ was studied. In this one case a repetitive response was developed and then eliminated.

Repetitive responses that resist modification and tend to be "purposeless" often come to the attention of the psychiatric or psychological clinician. A variety of interpretations are often made regarding the etiology and current factors maintaining the responses at a high level. In many instances responses that are repeated with exaggerated frequencies are given a poor therapeutic prognosis. Such behavior problems are often those "that need the notorious 'long' analyses . . . and great energy expended" (Fenichel, 1945, p. 310). Most clinicians learn to identify persistent and repetitive behavior patterns and attempt to deal with them using available techniques. Many current therapeutic ap-

proaches are based on psychoanalytic or psychodynamic theories. Skinner (1953) pointed out the potential contribution of a behavioral analysis to the treatment of abnormal behavior patterns. Recent laboratory findings involving the application of behavioral analysis and the experimental analysis of human behavior (Ayllon, 1963; Ayllon and Michael, 1959; Ayllon and Haughton, 1962; Lindsley, 1956, 1960; Barrett, 1962; Holz, Azrin, and Ayllon, 1963) suggest new techniques for the attenuation of some types of excessive behaviors.

ENVIRONMENTAL CONTROL

This investigation was part of a program of research on the applications of operant conditioning techniques in a psychiatric setting. A ward of about forty female schizophrenic patients was made available for this purpose. The ward was an independent and self-contained unit. Staff comprised equal numbers of female aides and graduate psychiatric nurses with three years training. A ratio of ten patients to one staff existed from 7:00 A.M. to 11:00 P.M. A physician

¹This research was conducted in the Saskatchewan Hospital at Weyburn, Saskatchewan, and was partially supported by a grant from the Commonwealth Foundation, New York.