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A COMMUNITY-REINFORCEMENT APPROACH TO ALCOHOLISM*

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Summary—Several theoretical approaches to alcoholism exist. An operant reinforcement approach was used in the present study to develop a new procedure that rearranged community reinforcers such as the job, family and social relations of the alcoholic such that drinking produced a time-out from a high density of reinforcement. The results showed that the alcoholics who received this Community-Reinforcement counseling drank less, worked more, spent more time with their families and out of institutions than did a matched control group of alcoholics who did not receive these procedures. This new approach appears to be an effective method of reducing alcoholism. An analysis in reinforcement terms is presented of the etiology, epidemiology, and treatment of alcoholism.

ALCOHOLISM is perhaps the number one public health problem in the United States: alcoholics number approximately 10 million (Wilkinson, 1970); half of all fatal accidents involve a drunken driver (Wilkinson, 1970); cirrhosis of the liver, heart disease and suicide have been linked to alcoholism (Wallgren and Barry, 1970). Yet, as two recent reviews have concluded (Hill and Blane, 1967; Wallgren and Barry, 1970) alcoholism continues to be a major problem for which even a partial solution is being sought. A variety of approaches for treating alcoholism have been developed including the psychodynamic and psychoanalytic model (Freytag, 1967), transactional analysis (Steiner, 1969), the medical and physiological approach (see review by Jellinek, 1960; Wallgren and Barry, 1970), the anxiety model (Vogel-Sprott, 1967) and the peer-friendship model of Alcoholics Anonymous (Alcoholics Anonymous, 1960). A fairly recent emphasis has been the learning theory approach which uses the Pavlovian reinforcement model (see review by Rachman and Teasdale, 1969).

Another learning theory approach is the operant reinforcement approach (Skinner, 1938). The operant approach stresses the interaction between behavior and the environment whereas classical conditioning stresses the associations between different environmental events. With the exception of a case study by Sulzer (1965), an operant approach to alcoholism treatment has not been evaluated.

One method of developing an operant method of deterring alcoholism is to examine the natural deterrents of alcoholism and conceptualize them in operant terms. The principles of operant conditioning might then be used to alter these natural deterrents to maximize their

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effectiveness. It appears that individuals are deterred from drinking because of the interference that drinking produces with other sources of satisfaction. In the alcoholic state, one may incur social censure from friends as well as from one's family. Discharge from one's employment is likely. Pleasant social interactions and individual recreational activities cannot be performed as satisfactorily, if at all, when one is alcoholic. Conceptually, this state of affairs may be characterized in learning terms as a postponement or omission of positive reinforcers as a result of alcohol intake. This statement suggests that deterrents will be maximized if the postponed reinforcers are of maximum quality, frequency, varied in nature and regularly occurring. The general process seems to be that of time-out from positive reinforcement (Leitenberg, 1965; Ferster, 1958; Holz and Azrin, 1963) which has been studied extensively and has been applied to a variety of clinical situations including classroom disorders (Wahler, 1969), tantrums (Wolf, Risley and Mees, 1964) and self-injurious behavior (Bucher and Lovaas, 1967). An additional major factor is the distribution of these reinforcers in time. Time-out from positive reinforcement cannot be a new event if the natural distribution of reinforcers is such that extended interruptions normally occur. Consequently, for maximum effectiveness of this time-out dimension, the normal reinforcers should be grouped closely together in time, as well as being of qualitatively great value.

This type of operant reinforcement approach to alcoholism incorporates essential features of the recent emphasis in mental health programs known as the community mental health approach, (Bindman and Spiegel, 1969; Caplan, 1964; 1970; Klein, 1968). This approach may be characterized by a realization that mental disorders result from forces operating in and by the community on the individual and suggests that treatment be conducted by rearranging these community influences on the patient in the community rather than in a hospital. Examples of community based treatments include the home care program for schizophrenics (Pasaminick, Scarpitti and Denitz, 1967), the home based reinforcement program for school aged children (Tharp and Wetzel, 1969), the community located business owned and operated by former mental patients (Fairweather, Sanders, Maynard and Cresslor, 1969) and an open facility for skid-row alcoholics (Meyerson and Mayer, 1967). Since the operant based model described above deals with the rearrangement of the alcoholics' vocational, social, recreational and familial satisfactions, most of which are found in the community, this approach is in accord with the general community treatment approach and may be designated therefore, as a Community-Reinforcement approach to alcoholism.

The present study developed a method of treating alcoholics and evaluated the effectiveness of this Community-Reinforcement procedure with hospitalized alcoholics, a group which is known to have an extremely poor prognosis. A matched control group was included since recent reviews (Hill and Blane, 1967; and Wallgren and Barry, 1970) have concluded that virtually no treatment procedure can be stated to have been effective because of the lack of a suitable control group against which to evaluate that procedure.

METHOD

Subjects

The population consisted of those patients admitted to a State Hospital for treatment of alcoholism who suffered withdrawal symptoms and were diagnosed alcoholic. This institution was responsible for the hospital treament of all alcoholics and mental patients in a

sparsely populated rural Midwestern region. Sixteen males were selected from this population. Patients were excluded who had serious medical ailments which precluded employment.

Design for evaluation

Eight available alcoholics were selected arbitrarily and then matched individually with eight others on the basis of employment history, family stability, previous drinking history, age and education (see Table 1). The rationale for the matching according to these characteristics is based on studies by Gerard and Saenger (1966) and Schmidt, Smart and Moss (1968). A coin flip determined which member of each pair received the Community-Reinforcement counseling. The other pair member did not receive the Community-Reinforcement counseling procedures. Both groups received the same housing, didactic program and other serivces of the hospital.

TABLE 1. PATIENT CHARACTERISTICS

	Control (Mean)	Reinforcement (Mean)
Age	36.75	39.87
Education	11	10.2
Number of hospitalizations	2.5	2.6
Marital status	5 M—3 S	5—M—3S
Recent job	5 yes—3 no	5 yes—3 no

The Community-Reinforcement program

The Community-Reinforcement program was designed to rearrange the vocational, family and social reinforcers of the alcoholic such that time-out from these reinforcers would occur if he began to drink. On the first day, a brief description of the nature of the procedures, and the reasons for them were presented to the alcoholic. For example, he was told by the counselor that extensive research and experience have shown that the alcoholic's chances of staying sober are improved if he has a satisfying steady job. Therefore, one part of this counseling program involved helping him achieve a satisfactory job. The family and social adjustment procedures were introduced to the alcoholic in a similar manner. Also, on the first day, the alcoholic was asked if he had any pressing problems. If he had a legal problem, he would be referred to a lawyer. If his major problem was financial, then the job-finding procedures would begin immediately. The clients' reluctance to attempt these large scale changes was overcome by assuring him that such changes were possible and that the counselor would be accompanying him at every step of the way.

The specific manner and sequence in which these procedures were carried out varied somewhat from patient to patient depending on the specifics of his situation. For example, if he stated that he was happy with his job, and it seemed that he did not drink at work, the family counseling procedures were begun. Typically there was continued overlap in the procedures.

Vocational counseling

Those patients without jobs were instructed to (1) prepare a resumé, (2) read the pamphlet "How to get the job" (Dreese, 1960), (3) call all friends and relatives on the phone to inform them of the need for employment and ask them for job leads, (4) call the major factories and plants in the area, (5) place a 'Situations-Wanted' advertisement in the local papers, (6) rehearse the job interview and (7) place applications and interview for the jobs which are available. While the alcoholic was following the above procedures, the counselor was physically present and actively assisted the client. He stood by while phone calls were made, role-played interviews with the client and arranged for typing of the resumé. Also, he escorted the alcoholic to the job interviews and immediately following the interview discussed the results. These procedures are based on recent studies concerning the relevant considerations in successful job-finding (Jones and Azrin, 1972; Sheppard and Belitsky, 1966). As soon as the patient acquired a job, which he said would be satisfactory to him, he was released from the hospital. The counselor typically accompanied the client to the job on the first day. The counselor arranged for transportation to work by friends when necessary. In some cases employer–employee situations were role-played.

Marital and family counseling

The marital counseling attempted to (1) provide reinforcement for the alcoholic to be a functioning marital partner, (2) provide reinforcement for the spouse for maintaining the marital relation and (3) to make the drinking of alcohol incompatible with this improved marital relation. The first sessions usually took place in the hospital, the remainder in the home after discharge. The alcoholic and his wife were given the Marriage Adjustment Inventory (Manson and Lerner, 1962) which identified twelve specific problem areas in the marriage, including money management, family relations, sex problems, children, social life, attention, neurotic tendencies, immaturity, grooming, ideological difficulties, general incompatibility and dominance. The husband and wife met jointly with the counselor who assisted them in listing specific activities which each spouse agreed to perform to make the other spouse happy in the identified problem area, thereby providing reciprocal benefits to each other. This list typically included preparing meals, listening to the partner with undivided attention, picking up the children from school, redistributing the finances, engaging in sexual activities of a particular type or at a minimal frequency, visiting relatives together and spending a night out together. To facilitate communication about sexual interaction, a marriage manual with specific instructions on sex (Ellis, 1966) was given to the partners. Absolute sobriety was a stipulation by all of the wives as one of the agreements. The rationale for this general approach to marital counseling has been described by Stuart (1969).

For unmarried patients living with their families, a similar procedure was used of providing reciprocal benefits between the patient and his parents, to be maintained only when the patient was sober. For patients with neither a marital or parental family attempts were made to arrange a 'synthetic' or foster family. The synthetic family consisted of those persons who might have some natural reason for maintaining regular interactions with the patient: relatives, or an employer or a minister. These synthetic families were encouraged to invite the ex-patient over for dinner on a regular basis, and to expect him to help with chores or offer his services in some other way. Again, sobriety was made a condition for maintaining these 'family' benefits.

Several major problems arose in attempting to carry out the marital and family counseling procedures. A list of the major problems and the attempted strategy for solution is

presented as follows: (1) Both the client and his wife often refused to engage in marital counseling on the grounds that the marital situation was so distressful that neither of them had a desire to return to it. The strategy for overcoming this objective was to strongly assure both the client and his spouse that no attempt would be made to return to the marital situation until the spouse had given convincing assurance that the distressful problems would be eliminated. (2) Great difficulty was often experienced by the patient and his wife in designating activities that would make their marriage a pleasant one, often because of their lack of verbal articulation and often because of general reticence and skepticism. The strategy used in overcoming these problems was for the counselor to suggest satisfactions that other married persons enjoyed, to phrase possible satisfactions in specifiable terms, to have the clients imagine what an ideal marriage would consist of, and to ask what satisfactions they might have received in the past or had expected to receive when first married. (3) They often expressed doubt that they could discontinue providing the agreed upon satisfactions when the client began drinking. The strategy for solving this problem was to advise the wife to discontinue physical and social contact with the client as much as possible during that time; in the extreme case she was advised to move out of the house into a motel or with a relative until the client in a sober state requested her return. (4) The client sometimes refused to initiate any unaccustomed activity that had been requested by the spouse such as different type of sexual behavior, the visiting of a particular relative or attending a social club together. The strategy for solving this was the principle of Reinforcer Sampling (Ayllon and Azrin, 1968) in which the clients were asked to "just try it for one week and then we will decide after that whether to continue it". (5) Even after agreements had been made and the couple was following them, a frequent difficulty was that new problems arose that were not covered by the agreements or some of the old agreements were found to be distasteful. The solution was to teach the couple how to draw up these reciprocated agreements on their own.

About five marital and family counseling sessions were conducted in drawing up the complete set of agreements between the spouses or between the patient and his parental or synthetic family.

Social counseling

Most social interaction of the alcoholic had been reduced to a small circle of friends who also had a severe drinking problem. Consequently, drinking became a behavioral prerequisite for maintaining those social relationships. A social counseling procedure was developed which attempted to restore and improve the client's social relationships and to make continuation of these improved relationships dependent upon sobriety rather than upon drinking. The clients were counseled to schedule social interactions with friends, relatives and community groups with whom alcoholic drinking was not tolerated. At the same time they were discouraged from interacting with those friends known to have a drinking problem. In many instances the client's circle of friends had become circumscribed because of his drinking problem. Hence, a more structured method of creating these incompatible social reinforcers was devised. A former tavern was converted into a self-supporting social club for the clients. This organization provided a band, jukebox, card games, dances, invited female companions, picnics, fish fries, bingo games, movies and other types of social activities. The wives of the clients were strongly invited to attend and often did. Each client was given paid membership to the club for a period of one month, after which he paid his own membership dues. Each member was encouraged to invite personal friends to the

club as guests. The club's principal meeting was on Saturday night. For those members without transportation, the other club members made a deliberate effort to provide transportation. Alcoholic beverages were strictly forbidden at the club and any member who arrived at the club with any indication of drinking was turned away. In this manner the clients experienced a greatly improved social life which was incompatible with alcoholic drinking.

Reinforcer-access counseling

An improved adjustment in the aforementioned three areas of the family, the job and the social life was often hindered by the absence of facilities that are commonly available to the non-alcoholic. For example, one might find it difficult to obtain employment without a telephone or newspaper. Successful social adjustment was also often hindered by this inability to call and speak with friends, by the absence of transportation facilities (no public transportation was available in this rural area) and by the absence of timely topics of conversation (some of the clients did not read newspapers, listen to the radio or watch television). The attractiveness of the home or family situation was also diminished by the absence of these facilities. In order to make the home a more attractive place, to facilitate communication with potential employers, and to increase access to friends and social occasions, the counselor encouraged and arranged for the clients to obtain a radio and/or television set in their home, to subscribe to the area newspaper, to subscribe to magazines, to obtain an automobile or driving license and to have a telephone installed in their home. If necessary, the counselor arranged for payment of the initial costs in order to prime the activity. So, for example, the required installation charge by the telephone company was paid by the counselor but not the monthly payments thereafter; likewise the first month's payment on the newspaper but not the succeeding months. The rationale for priming these activities was to increase the ease with which the alcoholic could engage in the areas of vocational, marital, and social activities, these three areas of activities already being incompatible with drinking. A second reason why these 'access' activities would be expected to be incompatible with drinking is that most of these activities required continued payments and thereby provided an additional incentive for the client to maintain his remunerative employment. Also it might be expected that these activities would reduce the need for obtaining reinforcement from drinking by providing alternative sources of reinforcement.

Existing hospital program

Both the reinforcement and control groups received the counseling and instruction that was standard at the institution. This consisted of approximately 25 one-hour didactic sessions which presented by means of lectures and audio-visual aids: (1) a description of the basic workings of Alcoholics Anonymous, (2) information regarding the statistics on drinking and the problems of alcoholics, (3) examples of alcoholics' behavior, (4) examples of physiological pathologies resulting from alcoholism, (5) examples of sex problems caused by alcohol and the means of overcoming the problems and (6) other related topics.

Community maintenance

For the first month after discharge, the alcoholic was visited by the counselor once or twice a week. During these visits he was reminded of the reinforcers which existed for family, job, and social life participation. Also, any problems which might have arisen in following the procedures were discussed and several alternative solutions were offered. The visits also functioned as a means of following up the progress of the ex-patient in terms of his

sobriety, employment, and social life. After the first month, these visits continued on the average of twice a month, then decreased thereafter to once a month. If the alcoholic attended the social club, contact was made on a more frequent, although more informal basis.

Recording and reliability

On every visit, the counselor obtained information about the days unemployed, days drinking occurred and days spent away from home. In most cases, a member of the family was present for the purpose of helping the ex-patients to remember the exact situation. In addition, an assistant who was in no way connected with the counseling, and was unaware that the patients were treated differently, called on the ex-patients after the 6 months period and explained that he was collecting information for the purpose of better understanding alcoholism. The information he collected correlated with that of the counselor at greater than 0.95 using the Pearson *r* (Edwards, 1969).

RESULTS

Figure 1 shows that the mean per cent of time spent drinking, unemployed, away from home, and institutionalized was more than twice as high for the control group as for the Community-Reinforcement group. The mean per cent of time spent (1) drinking was 14 per cent for the reinforcement group and 79 per cent for the control group; (2) unemployed was 5 per cent for the reinforcement group and 62 per cent for the control; (3) away from family or synthetic family was 16 per cent for the reinforcement group and 36 per cent for the control group; (4) institutionalized was 2 per cent for the reinforcement and 27 per cent for the control group. The *t* test of differences for paired comparisons (Edwards, 1969) yielded significant differences ($p<0.005$) for all measures. The dependent measures were calculated by dividing the number of days the patient was drinking, unemployed, away from home, and institutionalized by the total number of days since discharge. For the drinking measure, time spent in an institution was not included. If a person had a job but did not work because of temporary weather conditions, illness, being on vacation or weekends or holidays, he was still considered to be employed full-time.

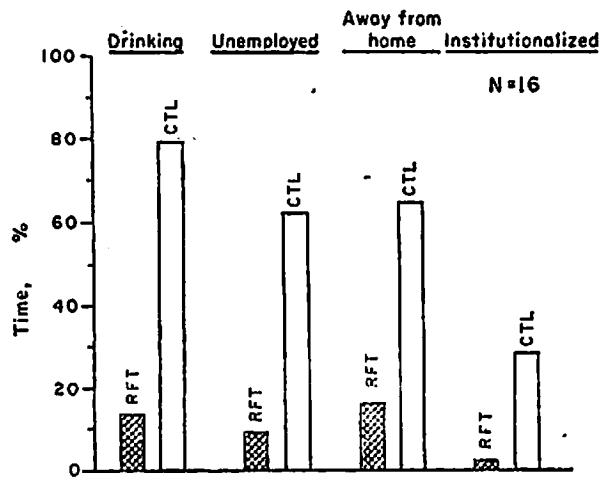

FIG. 1. A comparison of the key dependent measures for the reinforcement and control groups since discharge: mean percentages of time spent drinking, unemployed, away from home and institutionalized.

Figure 2 shows that the mean per cent of time spent for all measures computed monthly remained stable over the 6 month period. In no month was there a major fluctuation in any of the measures. For every month and for every measure, the t test of differences yielded significant differences between the control group and the Community-Reinforcement group ($p<0.005$).¶ Analysis of the earnings of the patients revealed that the reinforcement group, having a mean income of $355 per month per patient, made more money than did the control group which had a mean income of $190 per month. Analysis of the patients' social activities showed that the Community-Reinforcement patients spent a mean of 13 weekends per patient in a structured social activity out of the home whereas the mean of the control patients was four such weekend activities.

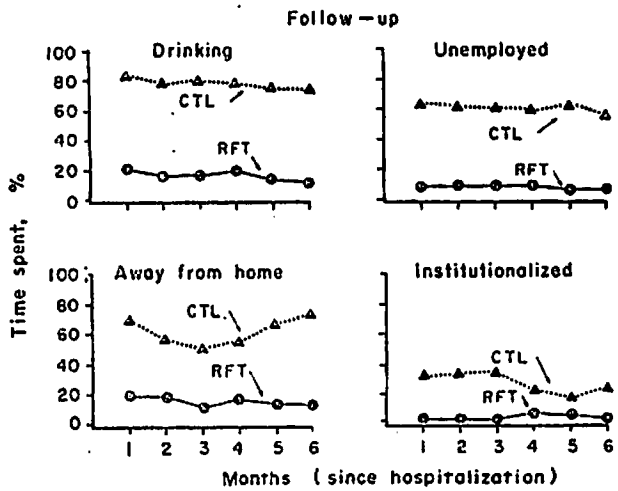

FIG. 2. The stable difference between groups over the 6 months after discharge of the key dependent measures: mean percentages of time spent drinking, unemployed, away from home and institutionalized.

Figure 3 shows the per cent time spent drinking for each of the matched pairs. For 6 of the 8 pairs, the counseled group differed radically from the control group. However, both members of pair 7 remained sober and neither member of pair five remained sober. The counseled member of pair 5 was the only patient for whom counseling produced only minimal changes. He was retarded (IQ=70), remained single, lived with his alcoholic father, had a low status job, did not attend the social club, and even though a synthetic family was arranged, they lived eight miles away and lack of transportation seemed to prohibit active involvement with them. This patient had the least resources of all patients in this study prior to counseling, and seemed to change the least. Also, he was accidentally discharged from the hospital without the counselor's consent and before the initial hospital-based portion of the counseling was completed. The control member of pair 7 was the highest functioning member in the control group. He returned from the hospital to his well-established family and job situation. Not only did he express satisfaction with his well-paid job as manager of a dairy business, but he also seemed happy with his family and regularly participated in Alcoholics Anonymous.

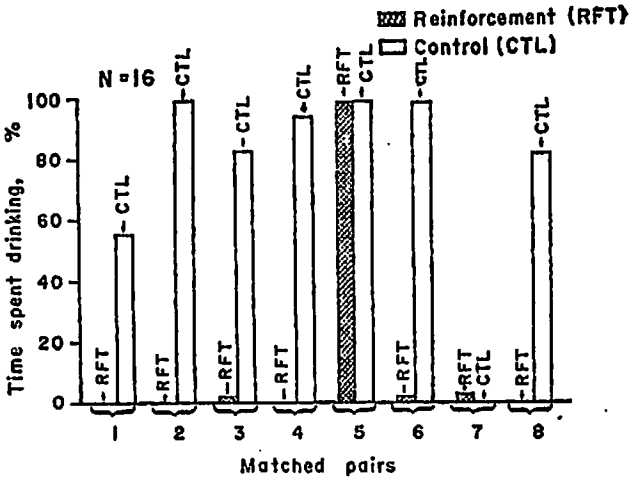

FIG. 3. Sobriety: a comparison of the matched pairs—one receiving the Community-Reinforcement procedures, the other the control-in terms of mean percentage of time spent sober since discharge.

The job-finding procedures led to satisfactory employment for 4 of the 8 counseled alcoholics. Two were located by systematically checking with the major places of employment. The other 2 were located through advertisement. One job proved unsatisfactory because it was too far from the alcoholic's home and after 2 weeks the job hunt procedures were resumed until a closer job was obtained. For one patient, the 'Situations Wanted' procedure located a variety of what seemed to be acceptable job leads. However, this alcoholic turned down every job offer since he was satisfied with his former job as a trade union construction worker. The remaining 4 counseled patients returned to former jobs. All jobs were located within 10 days after the procedures were started.

All 5 of the married couples in the Community-Reinforcement group initially suggested the possibility of divorce. Two had already separated by the time the husband was admitted to the hospital. Within a short time after counseling had begun, the couples decided to remain married for a while longer. It seemed that counseling was particularly valuable in pointing out the reinforcers which existed for remaining married. All 5 couples in the Community-Reinforcement group eventually remained together while two of the four control couples permanently separated or divorced.

The counseled group participated actively in the social club. Three of the 8 held offices in the club and attended over 80 per cent of the Saturday night meetings; 4 attended about 25 per cent; only 1 failed to attend. The club had been equally available to the control group alcoholics but without the special encouragement and structuring. Yet, only 2 members of the control group ever attended, and neither came more than 3 times.

DISCUSSION

Although the present procedure was tested in a hospital, the procedure does not require hospitalization except as a means of helping the patient through his withdrawal symptoms and physical debility, if any. The present results show that the patients who received the Community-Reinforcement procedures remained more sobor than their matched controls.

This improvement did not diminish over the 6 month period. The Community-Reinforcement patients also spent greater percentages of time gainfully employed, with their families, and out of institutions. Their average earnings were twice as great as the control group and they spent more time during weekends in acceptable social activities. These positive results for treating alcoholism are unusual in that no controlled study with state hospital patients has reported such general success (Chafetz, Hill and Blane, 1971; Hill and Blane, 1967; Mayer and Meyerson, 1971; Pittman and Tate, 1969).

To evaluate meaningfully the large benefits produced by the present procedure, it is necessary to compare the effects of the present procedure with the effects obtained by previous methods of treating alcoholism. In making such comparisons, a major problem is assuring that comparable populations was used since the rate of spontaneous recovery from alcoholism after hospitalization is often extremely high even among otherwise untreated patients. Improvement rates as high as 100 per cent have been reported for particular subgroups of alcoholics after simple hospitalization, such as the control group whose members refused treatment in one study (Voegtlin, Lemere, Broz and O'Hallaren, 1941), whereas improvement or cure rates have been as low as 20 per cent for other sub-groups, even with treatment (Pittman and Tate, 1969). A reported effectiveness of 90 per cent with a given treatment procedure may, therefore, reflect no improvement by that procedure, since that percentage may have been even less than the spontaneous rate of improvement. Conversely, a reported rate of improvement of only 20 per cent by a given treatment method may represent a substantial effect if the spontaneous rate would have been only 10 per cent. Thus, judgement of the effectiveness of a given treatment procedure requires a comparison with a comparable group of controls. Yet, as recent reviews of alcoholism treatment programs and related studies (Hill and Blane, 1967; Chafetz, Hill and Blane, 1971; Wallgren and Barry, 1970) have concluded, only a handful of studies have been conducted containing a comparable control group. Among this handful are the studies by Madill, Campbell, Laverty, Sanderson and Vandewater (1966); Pittman and Tate (1969) and Wallerstein (1957). Although their measure of sobriety and related social behaviors are presented in terms different from the present study, a general comparison indicates that the present Community-Reinforcement procedure was at least as effective.

Examination of the post-hospital conduct of the control group reveals what the spontaneous rate of improvement would have been without the special Community-Reinforcement procedure. The results show that in the absence of this treatment the patients spent most of their time drinking, worked very rarely, had few acceptable social activities and did not form stable family relationships. Correlational studies have demonstrated that patients exhibiting this type of life style have extremely poor prognosis under virtually all treatment procedures (Gerard and Saenger, 1966).

A question to be raised is whether the present results can be accounted for in terms of the time-out explanation. Did the procedure raise the actual reinforcement density and thereby make the time-out produced by drinking especially aversive? Two lines of evidence support an affirmative answer. First the density of reinforcement of the Community-Reinforcement group was definitely higher than that of the control group as seen by the increased amount of time at work, increased time spent with families, increased salaries and increased social life. Second, the Community-Reinforcement patients often reported spontaneously that they were now more satisfied with their life. Actually, time-out did not

occur in many cases since drinking never occurred. However, the patients all stated that time-out would occur if they did take a drink and this knowledge of the consequence seemed to be the deterrent.

The present study was concerned with specific variables such as time-out and immediacy of reinforcement. In a larger sense, the present results can be considered to offer support for a general Community-Reinforcement model for describing (1) the etiology of alcoholism, (2) the basis of effectiveness of current treatment methods, (3) the direction in which future treatment methods may have the greatest likelihood of success and (4) the epidemiological facts about alcoholism.

Consider first a reinforcement conceptualization of the etiology of alcoholism. Alcohol can be considered as a reinforcer. One source of reinforcement for drinking alcohol is probably the pleasant and relaxing subjective state which it produces. Purely taste factors seem to constitute another basis for the reinforcing value as seen in preferences for one specific type of alcoholic beverage. A third basis for the reinforcement value is the social reinforcement that is given by one's family, friends and peers directly for drinking as at a cocktail party or for drinking as part of a desired group activity, such as at a poker game. Or the social reaction may be that of social tolerance (non-punishment) of otherwise disapproved activities. A fourth source of reinforcement arises after prolonged drinking, namely, the individual becomes addicted to the alcohol and requires ever-increasing amounts to maintain the same subjective sensations and to avoid withdrawal symptoms. At this state the individual is usually characterized as being an alcoholic. In the absence of any inhibitory influences, these four combined sources of subjective, physical, social and addictive reinforcement could be expected to maintain drinking indefinitely, depending on the accumulated strength of these factors for a given individual.

Opposed to these factors that facilitate drinking are various influences that serve to inhibit drinking and which can be conceptualized as negative reinforcers. The major types of negative reinforcers correspond roughly to the major types of positive reinforcers. Under excessive alcohol consumption many of the subjective sensations become unpleasurable such as nausea, dizziness, incoordination and sexual impotence. Unpleasant social reactions rather than approval may result from one's friends, family, legal authorities and employers who then reject the alcoholic. The deterrent value of these negative reinforcers on a given individual will depend on whether they are operative on him (does he have a family or job), on the magnitude of the negative reinforcer (how much is lost when losing a given job or family) and the immediacy with which the negative reinforcer follows the act of drinking (how much does the employer tolerate drinking).

Current treatment methods may be conceptualized as emphasizing one or more of the above reinforcement influences. Shock-aversion therapy emphasizes the physical negative reinforcers and the importance of immediacy by arranging for very painful electric shocks to be delivered in an immediate association with the act or thought of drinking. Antabuse therapy emphasizes the importance of frequency of negative reinforcement by insuring that a painful, nauseous reaction will result shortly after each act of drinking. The Alcoholics Anonymous program emphasizes the social types of negative reinforcement by providing a social peer group which reacts negatively to drinking but arranges social positive reinforcement for non-drinking. Treatment approaches which include vocational and general counseling can be considered to be emphasizing the negative reinforcement influences in that by providing regular gainful employment to the alcoholic, he will be assured of a time-out from positive reinforcement resulting from drinking. The detoxification procedure that has

become standard in hospitals emphasizes the elimination of the withdrawal symptom as a source of reinforcement in that once the alcoholic individual has been forcibly kept sober for a period of time he no longer has the same want to keep drinking in order to avoid the withdrawal symptoms. Efforts to discover a central nervous system center for alcoholism can be considered to be an emphasis on discovering the neurological basis for the pleasurable subjective sensations caused by drinking (St-Laurent and Olds, 1967).

This Community-Reinforcement model of alcoholism also appears capable of conceptualizing some of the major findings concerning the epidemiology of alcoholism. As noted below, the major association of alcoholism is with cultural factors (Bales, 1946; DeLint and Schmidt, 1971) which can be taken to mean that particular sub-cultures, such as the French and Italian, reinforce drinking whereas other sub-cultures, such as the Scandinavians, Jews and Moslems, give negative reinforcers for drinking. The lower rate of alcoholism among married individuals and those with stable families (Gerard and Saenger, 1966) is taken to show that negative reinforcers will be encountered to a greater extent by the time-out from positive family reinforcers. The finding that alcohol consumption decreases when the cost of alcohol is increased (DeLint and Schmidt, 1971) follows directly from the inhibitory properties of monetary cost as a negative reinforcer. Similarly, the lower rate of alcoholism among the regularly employed (Gerard and Saenger, 1966; Trice, 1962) is taken to be the result of the negative reinforcer of job dismissal that results only when one is regularly employed. The relatively high rate of alcoholism among the self-employed (Gerard and Saenger, 1966; Trice, 1962) can be explained on the basis of this negative reinforcer not being as immediate as when one is employed by others. The general observation of a higher rate of alcoholism during the 'off-seasons' for various employment categories shows that in the absence of regular vocational reinforcement, a time-out from reinforcement will not occur for drinking. The varying susceptability to alcohol by different individuals (Jellinek, 1960) is taken to indicate varying degrees of positive reinforcement and varying degrees of unpleasant medical reaction, i.e. negative reinforcement such as is normally encountered with all drugs (Wallgren and Barry, 1970). The common observation that some persons have a high level of social, economic and family satisfactions and yet become alcoholic can be analyzed by examining whether their drinking is immediately followed by loss of these satisfactions or whether a long delay occurs such as by the alcoholic's circumventing detection.

The relationship between the present model and the theory of tension reduction is especially relevant because of the general acceptance of that tension reduction theory as an explanation of alcoholic drinking. The tension reduction theory considers that alcohol is consumed primarily because it reduces anxiety or tension: the proposed model also assumes that alcohol is a reinforcer but not necessarily because of its ability to reduce tension. The Community-Reinforcement model assumes that alcohol is pleasant to drink (a reinforcer), that this reinforcement value will be great at moments of pleasure as well as stress, and that alcohol consumption will be governed by social, economic and other such reactions to the drinking. Only with respect to the stress of the withdrawal symptoms do the two theoretical statements necessarily coincide. Evidence in favor of the Community-Reinforcement theory over the tension reduction theory can be seen from two major sources: (1) As a very recent review has concluded, laboratory studies show that the evidence for the tension-reduction theory "is negative, equivocal and often contradictory" (Coppell and Herman, 1972). (2) As noted previously, epidemiological studies such as by DeLint and Schmidt (1971) show alcoholic consumption to be associated primarily with

social and cultural factors and not with factors that might be considered as stressful such as low income level (Schmidt *et al.*, 1968) and neurotic or anxious personality (Lisansky, 1967).

The promise of different alcohol treatment approaches may be estimated on the basis of the known correlates of alcoholism. In general, the search for genetic, personality and economic correlates of alcoholism have shown little association (Wallgren and Barry, 1970; Schmidt, *et al.*, 1968). The major factors associated with alcoholism have been the social–cultural and familial factors (Gerard and Saenger, 1966; Schmidt, *et al.*, 1968; Wallgren and Barry, 1970). These findings may be taken to indicate that the greatest progress in future treatment research will come from treatments that alter these social–cultural influences and that community-based treatment procedures therefore hold great promise.

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