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Special 50th Anniversary Issue: Honoring the Past and Looking to the Future: Updates on Seminal Behavior Therapy Publications on Current Therapies and Future Directions, Part II

Individualized Behavior Therapy for Alcoholics – *Republished Article* ☆

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[Individualized behavior therapy for alcoholics](#)*Behavior Therapy, Volume 4, Issue 1, January 1973, Pages 49-72*

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Abstract

A behavior therapy for alcoholism was designed based on the rationale that alcoholic drinking is a discriminated, operant response. Treatment emphasized determining setting events for each subject's drinking and training equally effective alternative responses to those situations. Seventy male, hospitalized, Gamma alcoholics were assigned to a treatment goal of either nondrinking ($N = 30$) or controlled drinking ($N = 40$). Subjects of each group were then randomly assigned to either an experimental group receiving 17 behavioral treatment sessions or a control group receiving only conventional treatment. Treatment of experimental groups differed only in drinking behaviors allowed during sessions and electric shock avoidance schedules. Nondrinker experimental subjects shaped to abstinence, while controlled drinker experimental subjects practiced appropriate drinking behaviors with little shaping, a result attributed to instructions. Follow-up measuring drinking and other behaviors found that experimental subjects functioned significantly better after discharge than control subjects, regardless of treatment goal. Successful experimental subjects could apply treatment principles to setting events not considered during treatment, suggesting the occurrence of rule learning. Results are discussed as evidence that some "alcoholics" can acquire and maintain controlled drinking behaviors. Traditional treatment of alcoholics may be handicapped by unvalidated beliefs concerning the nature of the disorder.

Until recently, behavioral studies of alcoholism have emphasized classical aversive conditioning and neglected the instrumental nature of drinking. [Rachman and Teasdale \(1969\)](#) have thoroughly reviewed the aversive-conditioning literature and pointed out that the primary purpose of such techniques is to suppress drinking responses. Seldom have attempts been made concurrently to train socially acceptable behaviors in the place of heavy drinking. Lack of generalization has been perhaps the most severe problem plaguing such studies, but it is a problem not unexpected if heavy drinking is considered to be an operant, i.e., controlled by its consequences. These consequences are usually

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absent in a treatment environment but are an integral part of our society.

[Cohen, Liebson, and Faillace \(1971\)](#) have recently provided convincing demonstrations that the drinking of alcoholic beverages by alcoholics can be regarded as an operant response and manipulated according to the various laws of operant psychology. They also demonstrated that Gamma alcoholics could maintain a pattern of moderate drinking of 95-proof ethanol for extended periods, if reinforcement contingencies were appropriately arranged. In a very real sense, their results have shown that one can buy controlled drinking behavior from an alcoholic — if the price is right!

The Rationale of the Work Reported Here

Several studies using both animal and human subjects have investigated the hypothesis that a voluntary increase in alcohol consumption is associated with increases in stress. [Clark and Polish \(1960\)](#) conducted a well-controlled baseline replication design study in which rhesus monkeys could drink either water, a solution of 20% alcohol in water, or both during initial baseline (no treatment) sessions, followed by electric shock avoidance sessions, and finally, baseline sessions once again. They reported that: “Alcohol consumption increased during, and decreased after, avoidance sessions. Water intake remained the same or decreased during avoidance sessions and stayed at this level after the sessions (p. 223).” In another animal study, [Cicero, Myers, and Black \(1968\)](#) found that hooded rats increased their intake of ethanol in the presence of cued unavoidable electric shock. More recently, [Von Wright, Pekanmäki, and Malin \(1971\)](#) found that Wistar albino rats increased their alcohol intake significantly when subjected to an approach-avoidance conflict. They also present a critical review of additional experiments investigating the stress-reduction hypothesis.

[Hershenson \(1965\)](#), in a study based on self-reports by problem drinkers, concluded that their use of alcohol was stress induced. Also working with human alcoholic subjects, [Schaefer, Sobell, and Mills \(1971b\)](#) found substantial indirect evidence indicating that binge drinking could be stress induced. [Bandura \(1969\)](#) provided an excellent review of other studies supporting a stress-reduction hypothesis.

A behavioral approach to alcoholism which has been proposed by various investigators ([Masserman and Yum, 1946](#), [Conger, 1951](#), [Bandura, 1969](#) and [Lundin, 1969](#)) but never developed into a full treatment design, considers heavy drinking of alcoholic beverages as an alcoholic individual’s predominant learned response to a stressful, anxiety-laden situation. The response of drinking is conceived as having been acquired because the problem drinker has been rewarded, consciously or not, for such drinking. Among the possible rewarding consequences which could result from heavy drinking in a stressful situation are:

1. Alcohol is an extremely effective sedative ([Carpenter, 1957](#) and [Lienert and Traxel, 1959](#)), and thus, by drinking, a person experiencing an aversive situation may significantly reduce the physiological components of that state. Once a drunken stupor is reached there is little doubt that a complete, although temporary, escape from the aversive situation has been attained.
2. Alcohol consumed in large quantities is physically debilitating. During a debilitated state the drinker can avoid participating in many situations which, for whatever reasons, he finds unpleasant. Knowledge of this means of avoidance could lead a person to initiate a binge. At the very least, if the person is made to go through the aversive situation, the sedative nature of intoxication would reduce the magnitude of the accompanying anxious state.
- 3.

Alcohol intoxication is socially accepted as an excuse for engaging in certain otherwise inappropriate behaviors, such as extremes of flirtation, extremes of aggression, or homosexuality, which are generally considered socially unacceptable when engaged in by a sober individual, but are tolerated from a person who is drunk. Consequently, the opportunity to engage in these behaviors with minimal chastisement can act as a reinforcer for the drinking behavior.

While it is our contention that the alcoholic's primary use of alcohol is to escape from or avoid stressful or potentially stressful situations, other contingencies might also control the excessive drinking response to some extent. [Cohen et al. \(1971\)](#) have remarked that many powerful reinforcers, such as medical and psychiatric care, attention, money, welfare, rehabilitation programs, guidance and counseling are: ". . . sometimes dispensed when the alcoholic is sober, but they are often dispensed during or following excessive drinking (in press)."

It deserves mention that not all experimental studies have supported the stress-reduction hypothesis. [Nathan, Titler, Lowenstein, Solomon, and Rossi \(1970\)](#) reported that, although alcoholic subjects said they drank to decrease anxiety and depression, when put to the test of actual intoxication they behaved as though their anxiety and depression had increased. Likewise, [McNamee, Mello, and Mendelson \(1968\)](#) found that 9 of 12 alcoholic subjects who became inebriated as part of an experiment experienced an increase in anxiety and depression after the first day or two of drinking. In each of these studies, however, the subjects were volunteers from correctional institutions who probably: (1) had lower pre-experimental levels of stress and anxiety than the typical nonincarcerated alcoholic who is about to begin a drinking binge, and (2) were aware that they would eventually (at the designation of the experimenters) have to "dry out" and return to institutional life. Given these conditions, one might expect an increase in anxiety above preexperimental levels as drinking progressed.

Treatment Goals

Among professionals in the field of alcoholism there is a predominant belief that excessive drinking of alcoholic beverages signifies a progressive disease which can be arrested, but is irreversible ([Williams, 1948](#), [Jellinek, 1960](#) and [Knott and Beard, 1966](#)). Many have considered the basis of this view as axiomatic (e.g., [Lemere, 1963](#) and [Thimann, 1963](#)), but contradictory evidence is mounting. There is an ever-increasing amount of reports demonstrating that persons who were at one time unquestionably "alcoholic" have been able to acquire, of ten without therapeutic intervention other than detoxification, a pattern of social, normal, or controlled drinking ([Lemere, 1953](#), [Selzer and Holloway, 1957](#), [Pfeffer and Berger, 1957](#), [Davies, 1962](#), [Mukasa et al., 1964](#), [Kendell, 1965](#), [Bailey and Stewart, 1967](#), [Mukasa and Arikawa, 1968](#), [Reinert and Bowen, 1968](#), [Anant, 1968](#), [Quirk, 1968](#) and [Mills et al., 1971](#)). Excellent reviews of this literature have been published by [Pattison \(1966\)](#) and [Pattison, Headley, Gleser, and Gottschalk \(1968\)](#). They, as well as [Gerard, Saenger, and Wile \(1962\)](#), also found no necessary association between abstinence and other criteria commonly accepted as indices of emotional adjustment. In short, while there is presently no evidence that controlled drinking by former alcoholics is impossible; there is extensive evidence to the contrary. Certainly the pattern of moderate drinking acquired by a former alcoholic is a special kind of drinking. [Reinert and Bowen \(1968\)](#) have suggested using the term "controlled drinker" to identify such persons. By their definition, the controlled drinker, unlike the normal or social drinker, "...must be on guard... must choose carefully and even compulsively the time, the place, and the circumstances of drinking, and he must rigidly limit the amount he drinks (p. 286)."

Persons working in the field of alcoholism, however, have been slow to accept these repeated findings of successful drinking by former alcoholics. For instance, when Davies innocently reported some positive results in a 1962 follow-up study, the report elicited a

deluge of negative comments (see *Quarterly Journal of Studies on Alcohol*, 1963). The basis for much of the concern seemed to be a fear that the report might somehow mislead alcoholics the world over into beginning their own form of therapy aimed at controlled drinking. What some of the commentators (e.g., [Lemere, 1963](#) and [Bell, 1963](#)) overlooked, however, is that such a treatment goal should be the result of a treatment program and not merely acquired as a result of the patient's own initiative.

As long as the objections of traditionalists to controlled drinking had been mentioned, the other side of the issue should also be explored. The question asked is how many persons consistently deny that they have a drinking problem until they have truly become chronic alcoholics—and how much is such a denial based upon a resistance to being condemned to abstinence for life? Others have pondered this question as well ([Gerard et al., 1962](#), [Brunner-Orne, 1963](#), [Pattison, 1966](#) and [Reinert, 1968](#)).

Any effective form of therapy must consider the kinds of behavior which our society reinforces. If the goal of therapy is to be abstinence, then the patient must be prepared to identify with certain social groups (e.g., AA, certain religious groups, etc.) which specifically reinforce nondrinking. If a patient cannot, or chooses not to identify with social groups supportive of abstinence, then the constraint of nondrinking might actually be a stressor for that patient rather than a support. The majority of our society reinforces a pattern of moderate drinking. If controlled drinking is the treatment goal which is most practical and potentially beneficial for a given individual, it should be the one pursued.

The experiment reported in the remainder of this paper was designed in accordance with the preceding rationale. Treatment sessions dealt directly with the inappropriate behavior of excessive drinking and emphasized a patient's learning alternative, more appropriate responses to stimulus conditions which had previously functioned as setting events for his heavy drinking. The treatment took into account the learning history of each individual patient and was specifically tailored to meet each patient's needs.

Method

Subjects

Seventy male patients who had voluntarily admitted themselves to Patton State Hospital for treatment of alcoholism and volunteered to serve in research studies were used as subjects. All subjects were screened for health problems and psychosis by a thorough medical and psychiatric examination. The staff then interviewed each subject for 45 min to determine his desire for treatment and which of the two treatment goals offered was most appropriate: nondrinking or controlled drinking. Those subjects who could socially identify with AA, requested abstinence, and/or lacked outside social support for controlled drinking were always assigned to nondrinking. Subjects who requested controlled drinking, had available significant outside social support for such behavior, and/or had successfully practiced social drinking at some time in the past were considered potential candidates for the controlled drinking goal. After a majority staff decision had determined a subject's treatment goal, the subject was then randomly assigned to either a control group receiving only the conventional hospital treatment (large therapy groups, AA meetings, drug, physio-, and industrial therapy), or an experimental group receiving 17 behavioral treatment sessions in addition to the conventional hospital treatment.

Statistics describing educational, demographic, and sociological characteristics of subjects in each of the four groups appear in [Table 1](#). All subjects had experienced some withdrawal symptoms, damaged their physical health, finances, and social standing as a result of excessive drinking. Thus, all subjects met the criteria of [Jellinek's \(1960\)](#) Gamma alcoholics. There were no statistically significant differences between respective experimental and control groups, with the exception that nondrinker, experimental subjects had a significantly ($p < .05$) higher level of education than nondrinker, control subjects.

Table 1.

Summary of Descriptive Statistics for Subjects in Four Experimental Conditions

Descriptive variable	Experimental condition ^a			
	CD-E	CD-C	ND-E	ND-C
Age (years)				
Mean	40.30	41.25	40.40	43.27
SD	9.42	10.58	9.32	10.06
Education (years)				
Mean	12.60	12.45	13.03	11.27
SD	1.54	2.35	2.29	2.09
Drinking problem (years)				
Mean	9.70	8.65	11.33	11.86
SD	6.21	4.51	6.95	8.16
Alcohol-associated arrests (no.)				
Mean	6.25	5.70	8.85	9.86
SD	6.99	5.33	10.06	13.96
Prior hospitalization for alcoholism (no.)				
Mean	2.10	1.90	3.43	4.13
SD	2.83	1.29	4.97	2.83
Marital status				
Married	6	4	3	6
Single	4	5	3	2
Divorced, Separated	10	11	9	6
Widower	0	0	0	1
Religion				
Protestant	16	13	13	13
Catholic	2	5	1	1
L.D.S.		1	1	1
Agnostic	1	1	0	0
Occupation				
Blue collar	17	16	11	15
White collar	1	2	3	0
Retired	1	1	1	0
Student	1	1	0	0
Withdrawal symptoms				
Tremors, sweating	9	12	5	5
convulsions, blackouts	4	4	3	2
hallucinations, delirium tremens	7	4	7	8
<i>N</i>	20	20	15	15

a Experimental conditions were controlled drinker, experimental (CD-E), controlled drinker, control (CD-C), nondrinker, experimental (ND-E), and nondrinker, control (ND-C).

Table options ▼

Facilities

The research ward at Patton State Hospital contained the central research facilities, a simulated bar and cocktail lounge, and a simulated home environment. The bar environment, which has been fully described elsewhere ([Schaefer et al., 1971b](#)), was equipped with a television camera which could be remotely controlled from an adjacent room which contained videorecording apparatus.

The simulated home environment was located immediately adjacent to the bar and separated from it by heavy, floor-length draperies. It was carpeted and included a sofa, a love seat, a soft chair, two end tables with lamps, two coffee tables, a pole lamp, a television set, and a phonograph.

Operant conditioning equipment which independently controlled two shock generators (1 BRS Foringer, 1 Grason-Stadler) was located behind the bar and could be operated by hand-held push button switches. The same shock equipment could be used in the home environment by attaching longer cables to the electrodes and switches. A large variety of confiscated alcoholic beverages were supplied by the California State Alcoholic Beverage Control Board.

Procedure

The 17 experimental treatment sessions emphasized specifically defining prior setting events for heavy drinking, and training the subject in alternative, socially acceptable responses to those situations. The treatment was designed so that each subject's sessions could be individually tailored for specific setting events and alternative responses appropriate to his case. Stimulus control variables, or setting events, for drinking were defined as those specific factors which had either immediately preceded or accompanied the onset of heavy drinking in the past. Intervening variables such as "depression" were not considered as stimulus controls for drinking unless the various defining situations could be precisely specified. A subject was always asked to generate a universe of possible alternative responses to each setting event and then evaluate each alternative for its appropriateness (effective as compared to self-destructive consequences) for the situation. To discriminate effective from ineffective responses, situations were constructed to practice various alternative responses. For each subject a cumulative treatment file of all delineated stimulus control variables and alternative responses was maintained.

In all except probe sessions (8, 12, and 16), inappropriate drinking behaviors (relative to treatment goal) were punished by electric shocks delivered on a variable ratio 2 (VR 2) avoidance schedule. An avoidance rather than escape schedule was used because of its potential for shaping self-control. A VR 2 ratio was used in order to increase resistance to extinction. A larger ratio schedule (e.g., VR 3, VR 10) was not used because it was suspected that the reinforcing effects of drinking might be sufficient to completely nullify the occasional receipt of shocks. Probe sessions during which drinks were available but shock contingencies absent made it possible to assess whether the drinking patterns demonstrated in shock sessions could be expected to generalize to situations not having immediate aversive consequences for inappropriate drinking.

The types of drinks available during sessions were: (1) mixed—1 oz liquor (43% alcohol content) with 2 oz mixer, (2) beer—12 oz (3–4% alcohol content), (3) wine—2 1/2 oz (20% alcohol content) or 4 oz (12% alcohol content), and (4) straight—1 oz liquor (43% alcohol content) served in three one third-oz portions to guard against taking advantage of the variable shock schedule.

When shock contingencies were in effect, nondrinker subjects occasioned a 1-sec shock (delivered on a VR 2 schedule) by ordering any drink. The drink was then served and subjects occasioned a continuous shock from the time they touched the glass until the time they released it (the drink could be consumed). Rules for controlled drinking were derived from actual data collected from social drinkers who had participated in experimental baseline drinking studies conducted in the simulated bar ([Sobell et al., 1972](#) and [Schaefer et al., 1971a](#)). Controlled drinker subjects occasioned a 1-sec shock (delivered on a VR 2 schedule) for the following inappropriate drinking behaviors: (1) ordering a straight drink, (2) taking a sip larger than one sixth (mixed) or one twelfth (beer) of the drink's total volume (glasses were demarcated), (3) ordering a drink within 20 min of previously ordering a drink, or (4) ordering any more than three total drinks. After consuming three drinks within a session, controlled drinker subjects were placed on the same shock contingencies as nondrinker subjects.

[Table 2](#) presents a description of session characteristics, and the following describes the experimental procedures used in more detail:

Table 2.
Characteristics of Experimental Sessions^a

Session number	Type of session	Shock avoidance contingencies	Max. alcohol available (oz) ^b
1–2	Drunk, videotaped, 3 hr ^c	No	16
3	Education, 90 min	No	N.A.
4–5	Videotape replay, 90 min ^d	Yes	6
6	Failure experience, 90 min	Yes	6
7	Stimulus control, 90 min	Yes	6
8	Stimulus control, probe, 90 min	No	6
9–11	Stimulus control, 90 min	Yes	6
12	Stimulus control, probe, 90 min	No	6
13–15	Stimulus control, 90 min	Yes	6
16	Stimulus control, probe, videotaped, 90 min	No	6
17	Summary, videotape contrast, 90 min	N.A.	N.A.

a A more detailed description of experimental procedures is included in the expanded version of this manuscript, available from the authors upon request.

b An ounce was defined as 1 oz of 86-proof liquor or its equivalent in alcohol content.

c During these sessions only, subjects were run in pairs and allowed to consume up to 16 drinks during each session. Sessions were conducted in the experimental bar and were separated by 1 sober day. The final 90 min of each session were videotaped.

d Replay was of sessions 1 and 2, respectively. These sessions, as well as session 6, allowed an evaluation of each subject's responses to a novel stressful situation.

Table options ▼

Sessions 1 and 2, Drunk, Videotaped

Taking advantage of the sedative effects of alcohol, staff members probed each subject for stimulus controls for the drinking response, discussed fear-laden topics, and evaluated the subject's verbal and nonverbal reactions to potentially stressful situations. These sessions further served to demonstrate to each subject that he could become quite drunk and then sober up the next day without suffering from withdrawal symptoms or severe cravings for alcohol.

The majority of sessions 3 through 17 were conducted in either the home or bar environment, whichever most closely approximated the subject's usual drinking environment. In these sessions, subjects were run individually, with one staff member (determined on a rotating basis) assigned to each session.

Session 3, Education

The subject, irrespective of treatment goal, was instructed about: (1) when and why various shock contingencies would apply, (2) the occurrence of probe (no shock) days, (3) the treatment rationale—emphasizing that drinking is considered to be a learned behavior which occurs in certain stimulus situations and not in others (discriminated response) and is controlled by its consequences, and (4) a response repertoire for refusing alcoholic beverages—structured situations where subjects could practice resisting social pressures to drink were used. Additionally, controlled drinker subjects were trained in a response repertoire for mixed drinks, as a previous study (Sobell, Sobell, & Schaffer, 1971) had demonstrated that many Gamma alcoholics had a gross deficiency in familiarity with types of mixed drinks.

During sessions 4 through 16, data were recorded for the following quantifiable drinking behaviors: drinks ordered, infractions of controlled or nondrinking rules (shocks occasioned), shocks actually received, sips per drink, kinds of drinks ordered, and time (sec) between successively ordered drinks.

Sessions 4 and 5, Videotape Replay

Videotape self-confrontation of drunken behavior was used because it had been found to be quite stress inducing for sober alcoholics and had seemed to increase a subject's spoken motivation for changing his drinking behavior (Schaefer et al., 1971b). More importantly, it served to demonstrate various behavioral deficiencies (e.g., lack of overt emotional expression) as well as various setting events to a subject.

Session 6, Failure Experience

Twenty minutes before the session a series of plausible but impossible to complete tests were administered to the subject who was then informed of his poor test performance. The therapy session, conducted by a staff member other than the person who administered the tests, concentrated on the way the subject had responded to failure experiences, past and present. All subjects were debriefed after the session.

Sessions 7 through 16 stimulus Control

An emphasis was placed on: (1) elucidating stimulus controls for heavy drinking, (2) generating a universe of possibly effective alternative responses to those situations, (3) evaluating the probable consequences of exercising each response, and (4) practicing the most beneficial alternative responses under simulated conditions. Thirty minutes of session 16 were videotaped.

When a nondrinker subject ordered no drink for two consecutive sessions during sessions 4 through 16, a priming prompt of a free drink was offered at the start of the next session. If the subject consumed the free drink, any applicable shock contingencies were then reinstated. If he chose not to consume the drink, he had to pour it down the sink and this procedure continued at 15-min intervals for the entire session.

Session 17, Summary, Videotape Contrast

Selected replays of drunken behavior, which occurred during sessions 1 and 2, were contrasted with videotape of sober behavior during session 16. The subject's progress was discussed and he was presented with a wallet-sized research program card, which included a list of *Do's* and *Do Not's* specific to his treatment. He was encouraged to extend the principles of self-behavioral analysis and exercising alternative responses to all phases of his life.

In almost all cases, subjects chose to discharge from the hospital within 2 weeks after session 17. An in-depth interview was conducted with each subject before discharge, and after discharge continuous phone and personal contact was maintained with all experimental and control subjects and their respective collateral sources. Formal follow-up intervals of 6 weeks, 6 months, and 1 year were scheduled. For each subject the following information was obtained over each follow-up interval:

1. Drinking disposition (1 oz defined as 1 oz of 86-proof liquor or its equivalent in alcohol content)—(a) drunk days defined as any days during which 10 or more oz were consumed or any days more than 2 consecutive days when between 7 and 9 oz were consumed, (b) controlled drinking days defined as any days during which 6 oz or less were consumed or any isolated 1- or 2-day sequence when between 7 and 9 oz were consumed, (c) abstinent days, and (d) abstinent days resulting from hospital or jail incarcerations for alcohol-related incidents (all incarcerations were verified through the holding facility and by inspecting the subject's rap sheet).
2. Vocational status as to improved, same as, or worse than prior to treatment.
3. Use or nonuse of therapeutic supports outside the hospital after treatment (e.g., AA, community counseling services, etc.).
- 4.

Evaluation by a collateral of the subject's general adjustment to interpersonal relationships and stressful situations as compared to the year preceding his hospitalization (improved, same, or worse).

In all cases, both self-reports by the subject and collateral confirmation were sought in follow-up interviews.

Results

Nondrinker Experimental Subjects

Nondrinker subjects who drank during treatment sessions 4–16 could minimize the number of electric shocks they received by ordering straight drinks (minimizing drink volume) and consuming those drinks in the smallest number of sips possible. The 11 subjects who ordered drinks during these sessions ordered a total of 59 drinks, the majority (74.57%) being straight drinks. No subject ordered drinks during more than six treatment sessions. Additionally, subjects consumed all but one of the 44 straight drinks ordered in the minimum number (three) of sips possible.

As a result of the VR 2 avoidance schedule, subjects received only 61 of the 120 total shocks occasioned. A shaping effect over sessions is evident in [Figure 1](#) which presents the total number of drinks ordered as a function of treatment sessions. Some subjects apparently formed a discrimination between shock contingency sessions and probe (no shock) sessions, but all four subjects who ordered drinks during session 12, and one of the three subjects who ordered drinks during session 16 ordered only one or two of the six total drinks available without penalty.

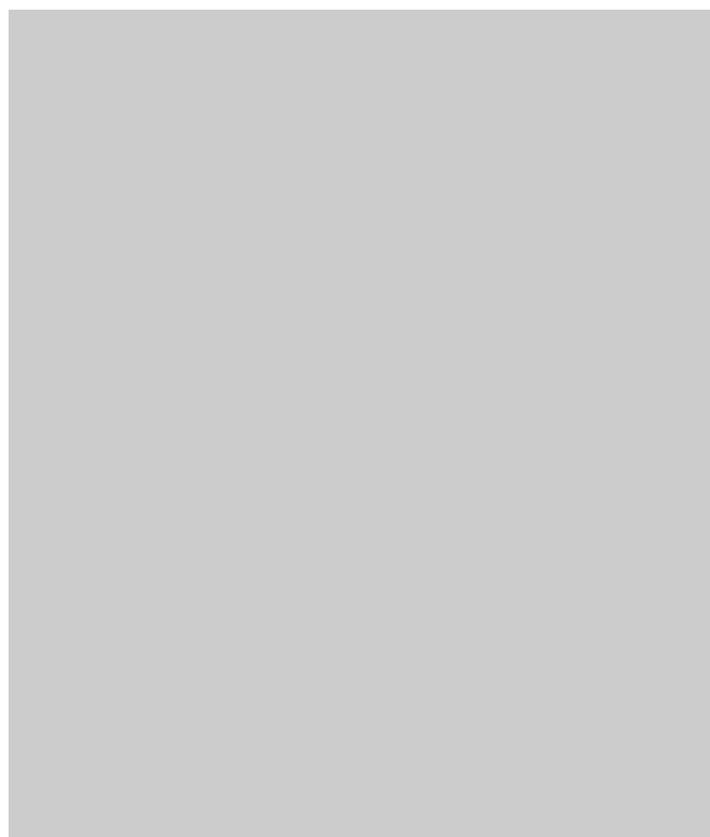


Figure 1.
Total number of drinks ordered per session by nondrinker subjects ($N = 15$) during experimental treatment sessions 4 through 16.

Figure options ▼

Drinks consumed as priming prompts (see Method) are not included in the data. Priming prompt drinks were offered to 11 subjects during a total of 17 sessions, but were consumed in only three cases. On each occasion when a priming prompt drink was consumed, the subject then proceeded to order and fully consume only one additional drink. Thus, there is no evidence that priming prompts were effective in producing increased drinking.

Controlled Drinker Experimental Subjects

All 20 controlled drinker experimental subjects ordered drinks at some time during sessions 4–16 with a mean of 27.80 drinks ordered per subject and a range from 9 to 43. Like the nondrinker subjects, controlled drinker subjects practiced drinking patterns which somewhat minimized the number of shocks they received. For instance, controlled drinker subjects never ordered straight drinks during any treatment session, and of the 556 total drinks ordered, 80.75% were mixed drinks, 13.48% were beer and 6.57% were wine. During only 14 total sessions did any subject order more than three drinks, with 11 of these occasions occurring on probe days and the remainder during session 6. During the 248 total sessions where drinks were ordered, the mean number of drinks ordered was 2.24 (SD = 0.92).

Table 3 displays the frequency with which drinking behaviors defined as inappropriate occurred during each treatment session and the number of subjects who engaged in those behaviors. Subjects received 30 total electric shocks for the total of 63 inappropriate behaviors in which they engaged. Fourteen subjects received two or fewer total shocks throughout the entire experiment, and the greatest number of shocks received by any single subject was six. Seven subjects never emitted an inappropriate drinking behavior. While receipt of electric shocks obviously was not important in controlling the subjects' drinking behaviors, there was evidence that the threat of shocks effectively suppressed inappropriate drinking behaviors. The number of inappropriate drinking behaviors emitted during probe sessions ($M = 18.67$) was considerably greater than the number of those behaviors emitted during other treatment sessions ($M = 2.20$). This difference is statistically significant ($t(11) = 7.84, p < .01$). As in the case of the nondrinker subjects, this difference could not be attributed to any particular small group of subjects.

Table 3.
Number of Inappropriate Drinking Behaviors Emitted by Controlled Drinker Experimental Subjects During Treatment Sessions. Figures in Parentheses Indicate the Number of Subjects Who Emitted the Inappropriate Behavior at Least One Time During That Session

Session number	Inappropriate behavior ^a			
	Ordering < 20 min apart	Ordering > three drinks	Sips > 1/6 of drink volume	Total inappropriate drinking behaviors
4	0	0	3(3)	3(3)
5	1(1)	0	0	1(1)
6	2(2)	2(1)	4(2)	8(3)
7	1(1)	0	1(1)	2(1)
8-Pr ^b	3(3)	4(3)	8(4) ^c	15(6)
9	0	0	0	0
10	1(1)	1(1)	0	2(1)
11	2(2)	1(1)	1(1)	4(3)
12-Pr ^b	8(4)	8(4)	9(4) ^c	25(7)
13	1(1)	0	0	1(1)
14	1(1)	0	0	1(1)
15	0	0	0	0
16-Pr ^b	8(6)	5(4)	3(2) ^c	16(6)

a Each inappropriate drinking behavior which occurred was counted separately.

b Pr indicates probe session, no shock contingencies in effect.

c Known minimum value. Total number of occasions when a drink was consumed in fewer than six sips.

Table options ▼

With the exception of subjects learning to drink with smaller sips, little or no shaping of drinking behavior was evident over sessions. This finding might be interpreted as reflecting a practice effect resulting from the instructions given subjects during session 3. The fact that no straight drink was ordered even during probe sessions also suggests that

the subjects sincerely practiced controlled drinking patterns. This interpretation is additionally supported by [Figure 2](#) which presents the mean number of ounces of 86-proof alcohol or equivalent which were actually consumed during each treatment session by those subjects who ordered drinks. With the exception of probe sessions, the initial drinking pattern was one of exaggerated sipping (more than six sips per drink) with sip size then increasing to fulfill the minimum requirements necessary to avoid shocks.



Figure 2.

Mean number of ounces of 86-proof alcohol (or the equivalent in alcohol content) consumed per session by controlled drinker subjects who ordered drinks during experimental treatment sessions 4 through 16.

Numbers in parentheses indicate the number of subjects who ordered drinks during each session.

Figure options ▼

What Staff Members Learned

To the authors' knowledge, there is no reported precedent for the theoretical foundation of this experiment being as systematically applied to behavior therapy talk sessions as is here reported. This experiment, therefore, constituted a major learning experience for all of the staff members involved. The staff consisted of permanent, paid employees who were either upper division students at a local university, or research assistants who had already obtained their B.A. in psychology. Staff learning is documented in [Figure 3](#). A major stimulus control variable or alternative response was defined as meeting the criteria of specificity discussed in the Method section of this paper, as compared to vague descriptive terminology.

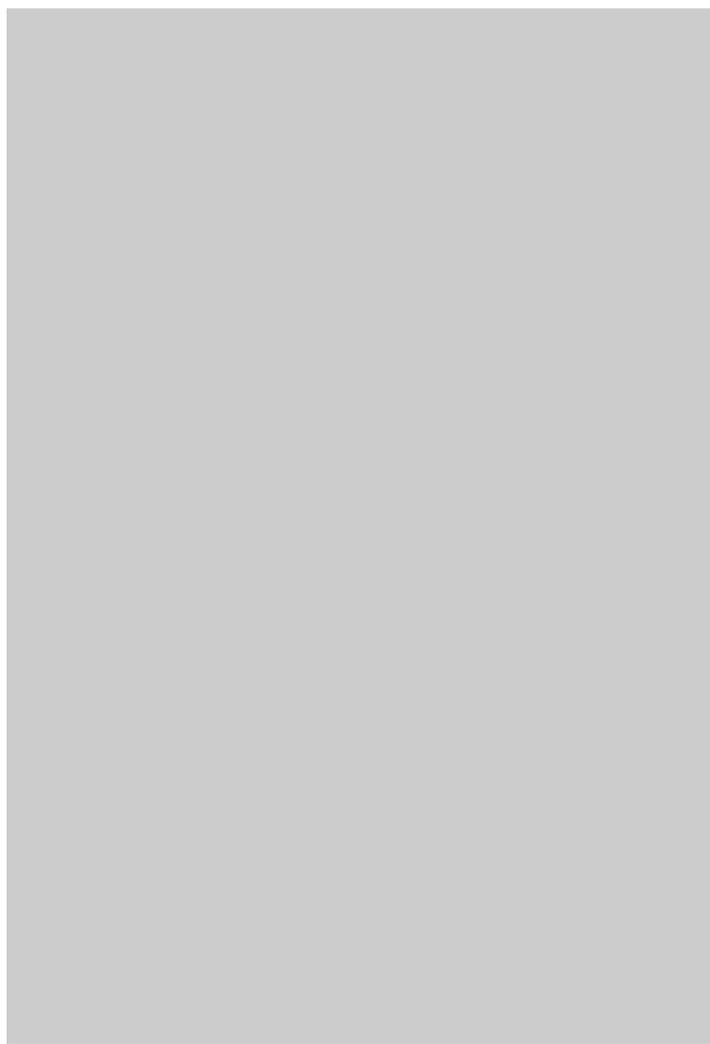


Figure 3.
Mean number of major stimulus control variables and alternative responses recorded by staff members in treatment notes for controlled drinker subjects ($N = 20$) and nondrinker subjects ($N = 15$) as a function of temporally consecutive groups of five subjects each.

Figure options ▼

Follow-Up Results

All 70 of the subjects had been discharged from the hospital for at least 6 weeks prior to the preparation of this report, and 48 subjects had been discharged for longer than 6 months. Table 4 shows the number of subjects from each experimental condition who were due for follow-up, the percentage of subjects located, and the percentage of cases in which one or more collateral sources were interviewed.

Table 4.
Summary of the Number of Subjects Due for Follow-up at 6-Week and 6-Month Intervals. Percentage of Subjects Found, and Percentage of Cases in Which One or More Collateral Sources Were Interviewed

Experimental condition ^a	<i>N</i> due for follow-up at this time	Found (%)	One or more collateral sources interviewed (%)
Six-week follow-up			
CD-E	20	100	90.0
CD-C	20	100	90.0
ND-E	15	100	93.4
ND-C	15	100	93.4
Total	70	100	92.9
Six-month follow-up			
CD-E	18	100	94.4
CD-C	10	100	80.0
ND-E	8	100	87.5
ND-C	12	100	100.0
Total	48	100	91.6

a Experimental conditions were controlled drinker, experimental (CD-E), controlled drinker, control (CD-C), nondrinker, experimental (ND-E), and nondrinker, control (ND-C).

Table options ▼

The use of controlled drinking as a treatment goal made it necessary to obtain estimates of daily alcohol consumption. The criteria for different drinking dispositions have already been discussed (see Method). In most cases, there was little difficulty in obtaining reliable data, although the accuracy of reports based on memory is, of course, open to some question. However, reports by collaterals typically agreed well with reports by subjects. When there was reason to question the accuracy of a report, the data recorded were secured from the source who could best present evidence to substantiate the data. This method of follow-up data collection was selected as being more representative of behavior occurring over the entire follow-up interval than more traditional probeday-status techniques.

Table 5 presents the drinking dispositions of subjects during a majority of the 6-week and 6-month follow-up intervals. Drinking dispositions were grouped according to whether the subject was functioning well (abstinent or controlled drinking days) or not functioning well (drunk or incarcerated, alcohol-related days). The one subject in the category of deceased, alcohol, or drug related will be discussed later in this paper.

Table 5.
Drinking Disposition During Majority of Follow-up Interval for Subjects from Each Experimental Condition

Drinking disposition	Experimental condition ^a			
	CD-E	CD-C	ND-E	ND-C
Six-week follow-up				
Controlled drinking or abstinent, not incarcerated (%)	85.5	45.0	73.4	53.3
Drunk or incarcerated, alcohol-related (%)	15.0	55.0	26.6	46.7
Six-month follow-up ^b				
Controlled drinking or abstinent, not incarcerated (%)	77.8	30.0	75.0	16.7
Drunk or incarcerated, alcohol-related (%)	22.2	70.0	25.0	75.0
Deceased, alcohol or drug related (%)	0.0	0.0	0.0	8.3

a Experimental conditions were controlled drinker, experimental (CD-E), controlled drinker, control (CD-C), nondrinker, experimental (ND-E), and nondrinker, control (ND-C).

b Not all subjects were due for 6-month follow-up. Data are presented for 18 CD-E, 10 CD-C, 8 ND-E, and 12 ND-C subjects.

Table options ▼

Fisher–Yates Exact Probability Tests (McNemar, 1962) were calculated comparing respective experimental and control groups by drinking dispositions (functioning well, not functioning well) at the two follow-up intervals. Differences between the controlled drinker experimental and control subjects were found to be statistically significant ($p < .05$) for each follow-up interval. At the time of this report, only 48 of the 70 total subjects were due for 6-month follow-up. However, continuing follow-up suggests that complete 6-month data will substantiate the data in **Table 5**. Differences between the nondrinker experimental and control subjects at the 6-week interval are not statistically significant, although in the predicted direction. At 6 months, the difference between these groups is significant ($p < .05$). For this computation, the one subject who had died in an automobile accident was included as not functioning well. Although this subject had remained abstinent until the time of his death (about 2 months after discharge), an autopsy found a heavy incidence (0.4 mgm) of barbiturates in his blood. Once again, continuing follow-up suggests that the 6-month differences between groups will still be significant when data are complete.

Table 6, which presents the mean percentage of days spent in each drinking disposition by subjects from different experimental conditions for 6-week and 6-month follow-up periods, supports the data of **Table 5**. It is interesting that the majority of incarcerations of experimental subjects were in hospitals, while control subjects were predominantly incarcerated in jails. This difference might have been the result of voluntary hospitalizations among the experimental subjects, either to curb the start of a binge or to

avoid starting drinking at all. This particular behavior had frequently been discussed during sessions at an alternative favorable to starting or continuing to drink.

Table 6.
Mean Percentage of Days Spent in Different Drinking Dispositions by Subjects in Four Experimental Groups for 6-Week and 6-Month Follow-up Intervals

Drinking disposition	Experimental condition ^a			
	CD-E	CD-C	ND-E	ND-C
Six-week follow-up				
Controlled drinking ^b	41.80	10.70	7.20	12.93
Abstinent, not incarcerated	30.95	39.32	60.33	42.13
Drunk	17.55	42.70	23.20	41.60
Incarcerated, alcohol-related				
Hospital	9.15	2.00	6.94	3.20
Jail	0.55	5.35	2.33	0.14
Total	100.00	100.00	100.00	100.00
Six-month follow-up ^c				
Controlled drinking	27.33	9.10	2.87	14.54
Abstinent, not incarcerated	37.89	29.40	62.63	16.55 ^d
Drunk	20.33	50.50	19.38	40.91
Incarcerated, alcohol-related	12.12	4.10	12.25	8.09
Hospital				
Jail	2.33	6.90	2.87	19.91
Total	100.00	100.00	100.00	100.00

- a Experimental conditions were controlled drinker, experimental (CD-E), controlled drinker, control (CD-C), nondrinker, experimental (ND-E), and nondrinker, control (ND-C).
- b Thirteen of the CD-E subjects successfully practiced substantial controlled drinking, eight of them doing so for an average of more than 50% of all days since discharge, and the remaining five to a lesser extent (an average of about 30% of all days since discharge). One subject in each of the other three groups also successfully practiced substantial controlled drinking. The ND-E subject doing so was not yet due for 6-month follow-up. A more detailed description of the incidence of controlled drinking among subjects is included in the expanded version of this manuscript which is available from the authors upon request.
- c Not all subjects were due for 6-month follow-up. Data are presented for 18 CD-E, 10 CD-C, 8 ND-E, and 11 ND-C subjects. The one ND-C subject who died was not included in this presentation.
- d Abstinent, not incarcerated days reported for ND-C subjects at 6 months include 26 days when one subject was not drinking but used other drugs heavily.

Table options ▼

Three other indices of behavior change were obtained for all subjects in addition to drinking status. The measures of vocational status, use of therapeutic supports, and evaluation of subjects' general functioning by collateral sources have already been described (see Method). [Table 7](#) presents 6-week and 6-month adjunctive measure follow-up data for subjects from each treatment group. As is evident in [Table 7](#), these data support those reported earlier for drinking disposition. Continuing follow-up indicates that the figures reported in [Table 7](#) will not change substantially when 6-month follow-up has been completed.

Table 7.
Adjunctive Follow-up Measures for Subjects in Four Experimental Conditions

Adjunctive measure ^a	Experimental condition ^b			
	CD-E	CD-C	ND-E	ND-C
Six-week follow-up				
Vocational status				
Improved (%)	20.0	20.0	33.3	33.3

Same (%)	80.0	75.0	60.0	53.3
Worse (%)	0.0	5.0	6.7	13.4
Use of therapeutic supports				
Yes (%)	35.0	20.0	60.0	33.3
No (%)	65.0	80.0	40.0	66.7
Evaluation of general adjustment by collaterals				
Improved (%)	80.0	30.0	73.3	46.7
Same (%)	20.0	55.0	20.0	53.3
Worse (%)	0.0	15.0	6.7	0.0
Six-month follow-up ^c				
Vocational status				
Improved (%)	55.6	20.0	62.5	9.1
Same (%)	44.4	70.0	37.5	72.7
Worse (%)	0.0	10.0	0.0	9.1
Use of therapeutic supports				
Yes (%)	66.7	10.0	87.5	18.2
No (%)	33.3	90.0	12.5	81.8
Evaluation of general adjustment by collaterals				
Improved (%)	88.9	30.0	75.0	18.2
Same (%)	11.0	60.0	25.0	72.7
Worse (%)	0.0	10.0	0.0	9.1

a See text for fuller explanation of adjunctive measures used.

b Experimental conditions were controlled drinker, experimental (CD-E), controlled drinker, control (CD-C), nondrinker, experimental (ND-E), and nondrinker, control (ND-C).

c Not all subjects were due for 6-month follow-up. Data are presented for 18 CD-E, 10 CD-C, 8 ND-E, and 11 ND-C subjects. The one ND-C subject who died was not included in this presentation.

Table options ▼

Discussion

The results of the present study can be succinctly summarized: Male Gamma alcoholics treated by the method of individualized behavior therapy described in this paper were found to function significantly better after discharge than respective control subjects treated by conventional techniques. Differences between experimental and control subjects were found not only for drinking behaviors, but for other adjunctive measures of functioning as well. Moreover, subjects who clearly met the criteria required by most experts for classification as “alcoholics” were able to acquire and maintain patterns of controlled drinking. These findings directly contradict the concept of irreversibility of alcoholic drinking which, lacking evidence, is but a *post hoc* tautology of little descriptive or predictive value.

A treatment goal of controlled drinking is uncommon and creates certain problems of data evaluation. The criteria used to distinguish controlled drinking days from drunk days were derived from data collected on actual social drinkers who had participated in baseline drinking behavior studies and, thus, were not completely arbitrary. The baseline data, however, were obtained from single drinking sessions. If a longitudinal baseline study were conducted, normal drinking patterns would probably be found to consist of a major proportion of abstinent days, a certain proportion of controlled drinking days, and a small proportion of drunk days. Thus, any appraisal of how well the controlled drinking patterns acquired by some of the subjects in this experiment approximated normal drinking behaviors must allow for a small proportion of drunk days. Furthermore, the extent of drunkenness which is typical among normal drinkers is probably greatly dependent upon socioeconomic status.

At times, many of the controlled drinker experimental subjects who were able to practice controlled drinking successfully after discharge from the hospital placed themselves on extended periods of abstinence. However, this self-imposed abstinence was not

maintained by a fear of the supposedly unavoidable consequences of drinking. Instead, subjects reported they were abstinent either because drinking now served no useful purpose, or because they were dealing with stress-inducing situations and believed drinking might interfere with their effective handling of those problems. For instance, in all cases the extended periods of abstinence were occasionally interrupted by one or two days of controlled drinking. It is reasonable to suppose that the degree of self-respect associated with this sort of abstinence is much greater than that accompanying a period of abstinence which is maintained by fear, and this might help the individual to deal better with problem situations.

While reports of successful controlled drinking by a small proportion of control subjects may surprise some readers, as substantiated by numerous studies cited earlier in this paper such findings are not at all unusual. No doubt, the nature of the follow-up results one obtains are in large part a function of the measures used. Thus, if a category of controlled drinking is not included in a follow-up scale, an acquiescent subject may soon realize that this is not an expected behavior for an alcoholic and fail to report incidents which have occurred.

In many cases, an insistence upon abstinence as the only possible treatment goal for alcoholics may even be unrealistic or harmful. For instance, consider a heavy drinker who has greatly identified with social groups whose members are mostly normal drinkers. Such a person may well decide to continue drinking until he is physically debilitated, rather than risking the loss of most of his friends by being abstinent. The issue here is not the morality of such social consequences, but their reality. If, by definition, an alcoholic may never drink in a fashion even approximating normal drinking and must always be "different" from most other individuals, then abstinence will not make an alcoholic a functioning member of society *per se*, but only a member of a special society—a subculture which specifically reinforces nondrinking. If faced with this choice, many individuals may well decide to continue drinking rather than change their social identification.

The same is true for the problem drinker, as traditional beliefs about alcoholism leave such individuals little to gain from curtailing their drinking, and, in fact, may provide an incentive for them to repeatedly attempt to prove that they are not "alcoholics." One would expect problem drinkers to find the controlled drinker treatment described in this report to be both appealing and acceptable.

The effects of certain of the various treatment procedures used in this study have already been discussed to some extent. However, stimulus control sessions constituted the bulk of the experimental treatment. It became rapidly apparent in conducting follow-up that, for some subjects, the effects of stimulus control sessions had been much more than learning how to handle specific situations. In particular, subjects who were found to be functioning well after discharge seemed to have experienced a more general form of learning sometimes called rule learning, or learning to learn. Typically, the successful subject could apply what he had learned to novel situations. For example, approximately 1 month subsequent to discharge, nondrinker experimental subject J. A. was able to analyze an experienced desire to drink as resulting from the fact that his brother was living in his house, free-loading off of him, and attempting to seduce his wife. J. A. then generated a number of possible responses to this situation, including migrating to Chicago. After analyzing the various alternatives in terms of long-range consequences, he decided to confront his brother and demand that he move out of the house. To J. A.'s amazement, his brother did move out, and J. A.'s marital relationship improved considerably thereafter.

While the contribution of each component of the treatment procedure used must be evaluated experimentally, it is our contention that stimulus control sessions not only constituted the bulk of the treatment sessions, but were primarily responsible for the behavior changes which later occurred. In a refined treatment, it would seem logical to

seek as a desired outcome the kind of rule learning which has just been described. Additionally, it would be desirable to conduct at least part of the treatment on an outpatient basis where the patient could deal with situations which were real, rather than simulated, setting events for drinking. If such a treatment approach continues to be successful as applied to drinking problems, it is possible that a modified version of the same treatment could be used for various of the neuroses, especially those which could be analyzed as involving escape and avoidance responses. The generality of these results remains to be evaluated for other subject populations such as females and subjects from other types of socioeconomic backgrounds. The subjects who served in this study—male, voluntary Gamma alcoholic patients in a state hospital—may have been more deficient in a knowledge of appropriate alternative responses to setting events for drinking than subjects with a higher education or income. It is reasonable to expect that working with middle and upper class individuals will require dealing with different and perhaps more sophisticated alternative responses.

The findings of the present study are indeed highly encouraging, but only on the basis of continued investigation and outcome studies can one expect to develop an effective and efficient short-term treatment for alcoholism. The scientific method requires that statements of opinion, such as the supposed irreversibility of alcoholism, be evaluated by experimental test if at all possible.

One such evaluative experiment is reported in this paper and clearly establishes that some alcoholic individuals can acquire and maintain controlled drinking patterns. Whether those patterns will persist over longer follow-up intervals can be determined only by continued follow-up.

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