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Random Assignment to Abstinence and Controlled Drinking: Evaluation of a Cognitive-Behavioral Program for Problem Drinkers

M. Sanchez-Craig, H. M. Annis, A. R. Bornet, and K. R. MacDonald
Addiction Research Foundation, Toronto, Ontario, Canada

A cognitive-behavioral program with a goal of either abstinence or controlled drinking was assessed. The 70 early-stage problem drinkers were randomly assigned to one of the two goal conditions, and within each condition to one of two therapists. On average they received six individual weekly sessions, each lasting approximately 90 min. Both groups were taught to indentify risk situations and existing competencies, to develop cognitive and behavioral coping, and to assess their progress objectively. The controlled-drinking group was also taught procedures for moderate drinking. Over the 2-year follow-up period, no significant differences were found between the groups in reported alcohol consumption. Six months after treatment drinking had been reduced from an average of about 51 drinks per week to 13, and this reduction was maintained throughout the second year. Reports of drinking were corroborated by independent measures. Although the outcomes of the groups were similar, controlled drinking was considered to be a more suitable goal; it was more acceptable to the majority of the clients, and most of those assigned to abstinence developed moderate drinking on their own.

There have been many research reports over the past 20 years of alcoholics who developed moderate-drinking patterns after being treated in traditional abstinence-oriented programs (e.g., Davis, 1962; Emerick, 1974; Gerard & Saenger, 1966; Polich, Armor, & Braiker, 1981; Sanchez-Craig & Walker, 1982). Alcoholics who have successfully resumed moderate drinking on their own tend to be younger, more socially stable, and less chronic (e.g., Heather & Robertson, 1981; Miller & Caddy, 1977; Polich et al., 1981; Popham & Schmidt, 1976). The overall rates of moderation reported for unselected alcoholics treated with an abstinence orientation have been modest. In the most extensive study of traditional alcoholism programs conducted to date (Polich et al., 1981), 18% of 548 patients were found to be drinking moderately without apparent problems at 4 years following treatment, compared with 28% who had been abstinent at least the previous 6 months. Much higher success rates, ranging between 60% and 70%, have been reported when selected socially stable problem drinkers have been trained in controlled-drinking techniques (Heather & Robertson, 1981; Miller & Hester, 1980).

At present little is known about the comparative efficacy of abstinence versus controlled drinking. Only three studies have been reported in which the two goals have been explicitly included in the treatment programs. Two of the studies involved "gamma" alcoholics (Foy, Rychtarik, & Nunn, 1982; Sobell & Sobell, 1973, 1976) and the third involved socially stable "middle-income problem drinkers" (Pomerleau, Pertschuck, Adkins, & Brady, 1978). The objective of the three studies was to test the hypothesis that a behavioral program with a controlled-drinking goal would prove superior to a traditional abstinence-oriented program. In all of these studies the goals of abstinence and controlled drinking were embedded in very different treatment interventions; thus, the question of whether the

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Requests for reprints should be sent to M. Sanchez-Craig, Addiction Research Foundation, 33 Russell Street, Toronto, Ontario, Canada M5S 2S1.

outcome of the studies was due to drinking goal per se or to the nature of the interventions cannot be answered.

To date, no adequately controlled study has been reported on the outcome of clients assigned to comparable programs differing only in treatment goal. The principal objective of this study was to attempt such comparison with a population of early-stage problem drinkers. Specifically, the objectives of the study were (a) to assess the effect of a cognitive-behavioral program with a goal of either abstinence or controlled drinking, using the 6-month outcome for principal comparative analyses; (b) to determine the stability of the drinking measures and measures of social adjustment over a 2-year period; and (c) to examine the relationship between independent corroborators of alcohol consumption and self-reported drinking. The treatment approach used is heavily influenced by the cognitive model of emotions and psychological stress described by Arnold (1960, 1969) and by Lazarus (1966, 1968). Based on findings of previous controlled-drinking studies, it was hypothesized that clients assigned to a goal of controlled drinking would have a better outcome than clients assigned to a goal of abstinence.

Early findings of this study have already indicated that controlled drinking was a more acceptable goal than abstinence and that clients assigned to controlled drinking consumed significantly less alcohol during the initial stages of treatment (Sanchez-Craig, 1980). Levels of reported drinking at this time were corroborated by analyses of repeated psychological testing (Wilkinson & Sanchez-Craig, 1981). Clients reporting abstinence or consumption of less than one drink per day showed improvement in cognitive functioning, whereas clients reporting an average consumption of four drinks per day failed to improve.

Method

Selection Criteria and Assignment to Treatment

The 70 clients were selected to participate in a treatment program described as being suitable for heavy drinkers whose consumption of alcohol had recently begun to interfere with work, studies, or other important life areas. In order to ensure that those admitted to the program had an alcohol problem at an early stage, a set of screening criteria were provided to the Assessment Unit of the Addiction Research Foundation (ARF). The criteria served to identify socially stable persons with relatively short histories of problem drinking, normal cognitive functioning, and no evidence of medical problems for which moderate use of alcohol would be contraindicated. Potential candidates had to agree to attend an average of eight outpatient therapy sessions and to provide the name of two collaterals who would be willing to discuss the client's progress. (For a detailed description of these criteria see Sanchez-Craig, 1980.)

Clients were recruited from the population presenting for treatment to ARF, and through advertisements of the program in local newspapers in which no mention was made of treatment goals. Referrals were also accepted from the Donwood Institute in Toronto. Upon a comprehensive medical and psychosocial assessment, persons meeting the selection criteria were invited to participate in the study; all those approached agreed to participate. The assessment worker outlined the objectives of the program (except for drinking goals), and a statement of consent was signed by each client.

Clients were assigned on a random basis to a goal of abstinence or controlled drinking. Within each goal condition, clients were assigned at random to one of two therapists, both of whom had formal training in psychotherapy. Clients were unaware of the alternative treatment condition and were not informed of their drinking goal until the first counseling session. Clients assigned to a goal of abstinence were not allowed during treatment to change their goal. However, due to ethical considerations clients were permitted to shift from a goal of controlled drinking to a goal of abstinence. Initial assessment and assignment of clients to conditions were conducted independently of the therapists.

Initial Assessment and Client Characteristics

The information required to screen clients was obtained by means of various standard procedures. A physician assigned to the project ensured that there were no medical contraindications for a client to participate in the study. Liver function was assessed by routine laboratory tests including determination of serum gamma-glutamyl transpeptidase (GGT) and serum glutamic-oxalacetic transaminase (SGOT). Information was recorded on demographic characteristics, history of previous alcoholism treatment, consumption of other drugs, and social and vocational status. The Lifetime Drinking History (LDH; Skinner & Sheu, 1982) questionnaire was used to obtain information on drinking patterns in terms of typical quantities, frequencies, and beverages consumed. A quantitative index of consequences related to alcohol abuse was obtained by the Michigan Alcoholism Screening Test (MAST; Selzer, 1971; Skinner, 1979), and an index of severity of alcohol dependence was provided by the Alcohol Dependence Scale (ADS; Skinner & Allen, 1982). Estimates of cognitive functioning were obtained by applying the Raven's Progressive Matrices, a test of visuospatial problem solving (Raven, 1960); the Benton Visual Retention Test, a measure of short-term memory (Benton, 1963); the Digit Symbol Substitution Test, a subscale of the Wechsler Adult

Intelligence Scale (WAIS; Wechsler, 1958); and the Clarke WAIS Vocabulary Test, a measure of verbal ability (Paitich, 1970). Functions assessed by the first three tests of cognitive functioning tend to be impaired in chronic alcoholics. In contrast, performance on tests of vocabulary tends to be normal in chronic alcoholics (Parsons & Farr, 1982; Wilkinson & Carlen, 1980).

The characteristics of clients assigned to the abstinence (AB) and the controlled drinking (CD) condition are presented in Table 1. As a check on the randomization procedures, *t* tests were performed on the continuous variables and chi-square tests on the categorical variables. The groups were found not to differ significantly in social and demographic characteristics, level of cognitive functioning,

Table 1
Characteristics of Clients in Both Treatment Groups

Variable	Abstinence (N = 35)	Controlled drinking (N = 35)
Social and demographic		
Age (years)		
M	33.4	36.2
SD	9.4	11.5
Sex		
Males	71.4%	77.1%
Females	28.6%	22.9%
Marital status		
Single	31.4%	40.0%
Divorced/separated	11.4%	22.9%
Married/common-law	57.2%	37.1%
Present accommodation		
Rents house/apartment	65.7%	60.0%
Owns house	34.3%	40.0%
Years of education		
M	14.5	13.3
SD	3.0	3.2
Weeks worked full time (past 6 months)		
M	23.2	24.1
SD	6.8	4.9
Present income (thousands/year)		
M	18.4	18.5
SD	15.2	11.7
Cognitive functioning		
Raven's Progressive Matrices		
M	85.7	84.8
SD	16.4	20.6
Clarke WAIS/Vocabulary Test		
M	12.4	12.3
SD	1.9	1.9
Digit Symbol Test		
M	11.9	11.6
SD	2.3	2.0
Benton Visual Retention Test		
M	7.9	8.1
SD	1.3	1.3
Alcohol use		
Years of problem drinking		
M	5.2	4.8
SD	2.6	3.8
Quantity (past 3 months)		
M	9.5	9.6
SD	5.4	4.3
Frequency (past 3 months)		
M	5.5	5.4
SD	2.0	2.0
Weekly quantity (past 3 months)		
M	51.5	50.4
SD	29.3	27.5
Level and severity of drinking		
Abstinent	0.0%	0.0%
Moderate/with problems	0.0%	0.0%
Moderate/without problems	11.4%	11.4%
Heavy/without problems	0.0%	0.0%
Heavy/with problems	88.6%	88.6%
Modal beverage		
Beer drinkers	37.1%	45.7%
Wine drinkers	2.9%	2.9%
Liquor drinkers	45.7%	37.1%
Drinks more than one above	14.3%	14.3%
Consequences of alcohol use		
MAST score		
M	19.0	18.3
SD	6.3	6.7
ADS score		
M	14.3	13.5
SD	6.8	7.5
Use of other drugs		
Cannabis (past year)	31.4%	40.0%
Barbiturates (past year)	2.9%	5.7%
Amphetamines (past year)	0.0%	2.9%
Tranquilizers (presently using)	20.0%	8.6%

Note. WAIS = Wechsler Adult Intelligence Scale; MAST = Michigan Alcoholism Screening Test; ADS = Alcohol Dependence Scale.

measures of drinking behavior, alcohol-related consequences, and consumption of other drugs ($p < .10$ in all cases).

The variables related to alcohol use, that is, quantity (mean drinks per drinking day), frequency (mean days drinking per week), and weekly quantity (a combined index of quantity–frequency), were estimated for the 3 months prior to treatment. The investigators considered that this period was long enough to detect low-frequency intermittent drinking and short enough to avoid problems of recall. For the subjects, one drink was defined as 1.5 oz of liquor 40%, 5 oz of wine 12%, 3 oz of fortified wine 20%, and 12 oz of beer 5%. Each one of these units contains approximately 0.60 oz (13.6 g) of ethanol. The variable *level and severity of drinking* was constructed using a mean of 20 drinks per week to separate "moderate" from "heavy" drinkers; the modifier *with problems* indicated a positive answer to one or more items of the MAST or the ADS concerned with having experienced blackouts or shakes, having missed meals or work because of drinking, or having been frequently intoxicated.

In view of the controversy surrounding controlled drinking, it is important to note that clients scored significantly lower on both the MAST and ADS than an ARF outpatient sample receiving individual counseling and an inpatient sample receiving conventional alcoholism treatment (Skinner & Allen 1982; Skinner & Horn, 1984). Compared to the ARF population and to populations treated in traditional alcoholism clinics in the United States, the sample of this study is less deteriorated. Nonetheless, the mean score of the clients is substantially above the cutoff for "alcoholism" proposed by Selzer (1971). Consumption of drugs other than alcohol during the year preceding treatment was rare; clients using tranquilizers (except for one CD client) reported taking them as prescribed.

Treatment Procedures

The treatments applied in the AB and CD conditions were identical, except for the training in controlled drinking that was introduced in the fourth treatment session to clients in the CD condition. The treatments were applied individually in weekly sessions of approximately 90 min. Their basic components were as follows:

Introduction. The first session began with an outline of the objectives of the program. To summarize, clients were told that the aim of the program was to teach methods for identifying situations associated with excessive drinking and for developing more appropriate coping responses. According to the assignment, clients were notified that abstinence or moderation would be the objective of treatment and were asked to rate the acceptability of the assigned goal. Five of the 35 CD clients rejected the goal of moderation, and they were told that the procedures in the program were also applicable to a goal of abstinence and were allowed to pursue this goal. Of the 35 AB clients, 23 either rejected the goal or expressed reservations about it. Characteristic expressions were "I cannot accept that I have to give up alcohol altogether" or "I can accept abstinence temporarily, but not for the rest of my life." These clients were told that the therapist could only teach them strategies to achieve abstinence. Clients were advised that they would be required to complete homework assignments and to attend therapy sessions regularly and that failure to comply with these requirements could result in discharge from the program.

Request for an initial period of abstinence (CD condition only). Clients assigned to controlled drinking were requested to abstain for the first 3 weeks of treatment. The following rationales were given: Regular consumption of high levels of alcohol tends to dull cognitive abilities that typically recover again after 3 weeks of abstinence. Because the program emphasizes the teaching of principles of self-control, optimum cognitive functioning is desirable. In addition, this brief period of abstinence should give an opportunity to identify strategies spontaneously used to cope with urges to drink and social pressures. Recognition of such strategies would probably save therapy time and effort because one could capitalize upon existing competencies. The AB clients were given the same rationales without a time limit.

Self-monitoring of drinking behavior. During the first session all clients were introduced to a *drinking diary* in which they were instructed to record their abstinent and drinking days. For drinking days space was provided to specify the number of drinks consumed, types of beverages, drinking companions and environments, and times of drinking. The completeness of the records was checked by the therapist each week, and the information was used during treatment to identify risk situations and to develop coping strategies.

Identification of risk situations and existing competencies. During the first session all clients were also instructed in the use of two questionnaires: The Drinking Episodes Questionnaire, designed to specify incidents of problem drinking, and the Urges to Drink Questionnaire, designed to identify successful coping with urges to drink. Incidents of problem drinking were specified in terms of their antecedents (physical and social context, client's feeling and thoughts, and functions attributed to alcohol) and consequences (those experienced after consuming two–three drinks and after the drinking episode). As part of homework, clients were instructed to describe as many incidents from the past as they could remember well. Such descriptions were used during treatment to give clients practice in problem solving (i.e., for each incident clients were asked to generate cognitive and behavioral responses that could have prevented excessive drinking). Once a number of descriptions had accumulated, the therapist used them to identify areas of risk and to ensure that responses for effective coping were developed. Existing competencies were identified by asking clients to record incidents where they had been able to cope with strong desires to drink. This request was made during the first 3 weeks of treatment when all clients were expected to abstain. Such incidents were specified in terms of their antecedents and the cognitive and behavioral responses employed to forestall drinking. During treatment clients were asked to comment on the appropriateness and effectiveness of their responses. Where responses produced undesirable consequences (e.g., alienation of friends), alternative responses were considered.

Development of coping strategies. Because most of the incidents of problem drinking were associated with negative emotions and interpersonal problems, two strategies were used extensively to deal with these kinds of problems. Both strategies encompassed the same series of steps but differed in the types of coping responses that they were mainly designed to develop. The *strategy for interpersonal*

problems emphasized the development of behavioral coping designed to produce direct changes in the social environment. The development of new behaviors was facilitated by the reappraisal of the aversive social stimuli and the client's responses, including the use of alcohol to cope. The *strategy for negative emotions* emphasized the development of cognitive coping (i.e., self-statements) designed to serve the following functions: (a) reappraise negative emotional states and the role attributed to alcohol, (b) counteract rationalizations for drinking, (c) consider the consequences of drinking, and (d) initiate actions other than drinking. This strategy was mainly applied to situations where clients could not pin-point the source of the negative emotions. Clients were also taught to use this strategy to deal with unexpected urges to break the drinking rules and with the negative feelings and thoughts typically associated with relapses (Marlatt, 1978). Other problems identified in treatment (e.g., use of alcohol as a medication or as a means of recreation, financial difficulties) were handled by a *general problem-solving strategy* similar to the problem-solving procedures described by D'Zurilla and Goldfried (1971). This more general strategy attempted to develop in clients the attribute of approaching problems of daily living in an objective manner, of entertaining a variety of possible solutions, and of systematically assessing the effectiveness of selected solutions.

Controlled-drinking training (CD condition only). Part of the fourth session was spent in formulating the pattern of moderate drinking and in identifying aids to facilitate adherence to the selected pattern. Clients were advised that moderate drinking typically involves abstinent days, consumption of no more than four drinks on drinking days, and consumption that does not exceed 20 drinks per week. Clients were then helped to specify the frequency with which they would drink, the maximum number of drinks they would consume on drinking days, and the types of beverages they would drink. Guidelines that clients were asked to adopt were as follows: Avoid drinking in the morning, avoid drinking in situations where drinking had been a problem, and avoid using alcohol as a coping device. Aids to facilitate moderate drinking included the following: pacing of drinking (e.g., by measuring, sipping, and spacing drinks), preparing in advance to avoid heavy drinking (e.g., by deciding on the number of drinks that would be consumed on a given situation, by devising strategies for coping with potential difficulties, by soliciting help from others), and developing enjoyable activities to fill the times previously spent in heavy drinking. The therapist ensured that drinking patterns were congruent with the client's life-style. As treatment progressed drinking patterns were modified, when necessary, in order to make them more suitable.

Termination. Treatment was terminated when clients achieved proficiency in problem solving and self-monitoring procedures. Proficiency in problem solving was assessed through hypothetical examples. At the end of treatment, clients were informed of the follow-up procedures. They were advised of the importance of maintaining drinking records and were instructed to bring these records with them to each follow-up appointment. Clients were also told that the therapist would be available, if they required further consultation.

Follow-Up Assessments

During the first 6 months after discharge from treatment, attempts were made to interview clients monthly and, thereafter, at 12, 18, and 24 months. All interviews were conducted face-to-face, and information was obtained for the interval since discharge, or since the last follow-up period. Areas assessed included employment, marital status, type of accommodation, treatment received from the therapist or other professionals, consumption of other drugs, drinking contexts, consequences of drinking, self-ratings of improvement as a result of treatment (drinking problem was improved, did not change, got worse) and self-ratings of satisfaction about the job, relationship to significant others, leisure activities, physical health, and the helpfulness of treatment (a 5-point scale was used, with 5 indicating *extreme satisfaction*). Consequences of drinking were assessed on items drawn from Armor, Polich, and Stambul (1976). Information on drinking was recorded on an abbreviated form of the Lifetime Drinking History questionnaire. The Digit Symbol Substitution Test was readministered 3 months after discharge from treatment to corroborate self-reported drinking. The levels of GGT, SGOT, and HDLc (high-density lipoproteins cholesterol) were also determined at various follow-up points to be used as potential corroborators of self-reported drinking. These tests of liver function have been shown to be sensitive to levels of reported alcohol consumption (Castelli et al., 1977; Pomerleau et al., 1978; Reyes & Miller, 1980).

At the end of 24-month follow-up period, clients were debriefed about the objectives of the study. They were first asked to report if they knew of the alternative treatment goal. All clients were then informed of the alternative option and were told that training in such an alternative was available if they wished to consider it.

Results

Treatment-Related Measures and Self-Reported Drinking

As part of the outcome of the study a number of treatment variables were examined to determine whether differences existed between the groups in amount of counseling received, time spent in treatment, rate of program completion, after-care by therapist and other professionals, and self-ratings of improvement and the helpfulness of treatment. Changes in quantity and frequency of drinking from intake to the end of treatment were also assessed. The values on the variables examined for both treatment groups can be found in Table 2.

Treatment was open ended in the sense that treatment was not terminated until the client achieved proficiency in problem solving and self-monitoring procedures. In the AB group the number of treatment sessions ranged from 2–12, in the CD group, from 3–11. Two AB

subjects and 1 CD subject did not complete the training. Before discharge from treatment, no significant differences were found between the groups in number of counseling sessions, number of weeks in treatment, and rate of attrition. During the first 6 months after discharge from treatment, however, significantly more AB clients received additional counseling from their therapist, $\chi^2(2, N = 59) = 8.72$, $p < .02$; although one third of AB clients requested counseling from three to five times, only 1 CD client requested this amount of counseling. On drinking measures (obtained directly from the drinking logs) no significant differences were found between the groups for quantity or frequency. However, a significant difference was obtained on weekly quantity, with the controlled-drinking group reporting fewer drinks during treatment, $t(68) = 2.12$, $p < .05$. On self-ratings of improvement and the helpfulness of treatment obtained 6 months after discharge from treatment, no significant differences were found between the groups.

Table 2
Performance of Both Treatment Groups on Treatment-Related Variables

Variable	Abstinence	Controlled drinking
Within treatment		
Counseling sessions		
M	5.7	5.6
SD	2.0	1.7
Weeks in treatment		
M	7.4	7.3
SD	3.4	2.8
Completed treatment	94.0%	97.0%
Quantity		
M	3.8	3.4
SD	3.0	2.3
Frequency		
M	2.4	1.6
SD	2.2	1.6
Weekly quantity*		
M	13.6	6.6
SD	17.3	8.4
Posttreatment discharge		
Aftercare by therapists**		
0 sessions	46.6%	65.5%
1–2 sessions	20.0%	31.0%
3–5 sessions	33.3%	3.5%
Aftercare by other professionals		
0 contacts	86.6%	89.7%
1–2 contacts	6.7%	3.4%
3 or more contacts	6.7%	6.9%
Self-rating of improvement		
Improved	65.5%	80.8%
No change	31.0%	15.4%
Got worse	3.4%	3.8%
Self-ratings of helpfulness of treatment		
M	4.1	4.1
SD	1.0	0.9

Note. Sample sizes for the abstinence and controlled-drinking groups within treatment were 35 and 35, respectively; at posttreatment discharge, 30 and 29, respectively.
* $p < .05$. ** $p < .02$.

Pre–post changes in quantity, frequency, and weekly quantity were assessed using separate mixed-model analyses of variance (ANOVAs), with one group factor (abstinence vs. controlled drinking) and one repeated measure (intake vs. termination of treatment). For each of these variables the analyses showed no significant group effect and Group × Time interaction, but a significant time effect for quantity, $F(1, 68) = 109.2$, $p < .001$; for frequency, $F(1, 68) = 138.9$, $p < .001$; and for weekly quantity, $F = 175.5$, $p < .001$. From intake to the termination of treatment the mean number of drinks consumed per drinking day was reduced in both groups by approximately six drinks; the frequency of drinking per week was reduced by 3 days in the AB group and by almost 4 days in the CD group. On weekly quantity this represents a mean reduction of 38 drinks for the AB group and 44 drinks for the CD group.

Comparison Between Intake and 6-Month Outcome

For the following reasons the 6-month outcome was selected for principal comparative analyses: First, during this period drinking data were collected more frequently than in subsequent follow-up periods during which clients were interviewed only once. The mean number of interviews achieved for CD clients over the 6 months was 4.0 ($SD = 1.9$) for AB clients and 3.9 ($SD = 1.6$) for CD clients. Second, 70% of the clients had maintained drinking logs. During subsequent follow-up periods

drinking logs had been dropped by most clients and consumption data had to be obtained by the recall method. Evidence from the present study has shown that data obtained from drinking logs are significantly more valid than data obtained by recall (Sanchez-Craig & Annis, 1982b). Third, 6-month data could be considered to be less affected by events of daily living (e.g., changes in employment or marital status, health problems), which may have significant influence on drinking behavior. Finally, a higher rate of client follow-up period (84%) was achieved at 6 months than at any subsequent period.

Included in these analyses were 59 clients. From the initial sample of 70, 5 AB clients (4 males, 1 female) and 6 CD clients (5 males, 1 female) were not interviewed. Four of these clients could not be located, 4 refused to collaborate, and 3 kept postponing their appointments.

Self-reported drinking. To test for differences in drinking behavior between intake and the 6-month follow-up period, the following variables were examined: quantity, frequency, weekly quantity, and level and severity of drinking. The values on these variables for both groups at 6 months after discharge from treatment can be found in Table 3. The first three variables were analyzed using mixed-model ANOVAs. For each variable the analyses showed no significant group effect and Group × Time interaction, but did show a highly significant time effect for quantity, $F(1, 57) = 153.3$, $p < .001$; for frequency, $F(1, 57) = 71.2$, $p < .001$; and for weekly quantity, $F = 133.6$, $p < .001$. From intake to 6 months the mean number of drinks consumed per drinking day was reduced from almost 10 drinks to 4 drinks; the frequency of drinking per week was reduced in each group from about 5.5 days to 3 days. On weekly quantity this represents a mean reduction of 39 drinks for the AB group and 36 drinks for the CD group.

On level and severity of drinking, chi-square tests showed no significant differences between the groups at the 6-month follow-up period. At 6 months (like at intake), a mean of 20 drinks per week was used as a cutoff to separate "moderate" from "heavy" drinkers. To be categorized as a moderate or a heavy drinker "without problems," the client was allowed to

Table 3
Drinking Outcome and Social Adjustment at Discharge 6 Months After Treatment

Variable	Abstinence ($N = 30$)	Controlled drinking ($N = 29$)
Alcohol use		
Quantity		
M	3.7	4.2
SD	2.4	2.2
Frequency		
M	2.8	3.1
SD	1.8	2.2
Weekly quantity		
M	12.4	14.5
SD	13.5	12.7
Level and severity of drinking		
Abstinent	6.7%	3.4%
Moderate/problem free	43.3%	37.9%
Moderate/with problems	23.3%	31.0%
Heavy/problem free	0.0%	17.2%
Heavy/with problems	26.7%	10.3%
Modal beverage		
Beer drinkers	0.6%	57.1%
Wine drinkers	25.0%	14.3%
Liquor drinkers	14.3%	25.0%
Drinks more than one above	7.1%	4.6%
Social adjustment		
Weeks worked full time		
M	22.0	22.9
SD	8.5	8.1
Marital status		
Single	36.7%	27.6%
Divorced/separated	13.3%	24.1%
Married/common-law	50.0%	48.3%
Present accommodation		
Rents house/apartment	46.7%	37.9%
Owns house	53.3%	62.1%
Self-ratings of satisfaction		
Job		
M	3.4	3.5
SD	1.1	1.4
Leisure		
M	2.9	3.2
SD	1.1	1.2
Relationships to spouse/parent		
M	3.7	3.8
SD	1.1	1.0
Physical health		
M	4.1	3.7
SD	0.8	0.9

report up to six episodes of intoxication during the 6-month period, but none of the following consequences of heavy drinking: blackouts, shakes, morning drinking, or missed meals or work because of drinking. Pre–post changes were assessed using Wilcoxon matched-pairs signed-rank tests. For both groups the tests showed that from intake to the 6-month follow-up time there was a significant shift from the "heavy/with problems" category into the two moderate categories (for the AB group, $z = 4.02$, $p < .001$; for the CD group, $z = 4.37$, $p < .001$).

The approximate quantities and frequencies of drinking reported by clients in the various categories were as follows: moderate/without problems, 2.5 drinks, 2 days per week; moderate/with problems, 4.5 drinks, 3 days per week; heavy/without problems, 5 drinks, 6 days per week; and heavy/with problems, 7 drinks, 5 days per week.

Measures of social adjustment. The variables selected to represent social adjustment can be found in Table 3. Differences in weeks worked full time were tested using a mixed-model ANOVA. This analysis showed no significant effect for group, time, and for the Group × Time interaction. Similarly, no significant changes were observed in either group from intake to the 6-month follow-up time in type of accommodation (as indicated by McNemar tests) or in marital status (as indicated by Wilcoxon tests). To test for changes in marital status the proportion of clients who were married or living in common-law were compared to the proportion of clients who were single, divorced, or separated. In self-ratings of satisfaction about the job, leisure activities, relationship to spouse/parent, and physical health, t tests showed no significant differences between the groups.

Comparison Between 6-Month Outcome and Outcomes at 12, 18, and 24 Months

Follow-up rates. Follow-up rates dropped from 84% at 6 months to 74% at 12 months (25 AB and 27 CD clients), 74% at 18 months (26 AB and 26 CD clients), and 73% at 24 months (26 AB and 25 CD clients). No significant differences were observed between conditions in rates of follow-up for any of the periods studied. (2 CD clients died before the 18-month follow-up time of causes unrelated to posttreatment drinking.)

In order to test for the association between client characteristics and compliance with follow-up procedures, three groups of clients were studied: those attending all four follow-up sessions ($n = 43$), those attending some ($n = 18$), and those attending none ($n = 9$). One-way ANOVAs conducted on the intake and treatment variables included in Tables 1 and 2 showed significant differences only for the MAST score, $F(2, 67) = 4.21$, $p < .02$, and number of counseling sessions, $F(2, 67) = 3.52$, $p < .001$. Clients who complied with all four follow-up interviews had significantly lower scores on the MAST and attended significantly more counseling sessions than did clients who had no follow-up interview.

Self-reported drinking. In order to answer the question of whether the drinking levels observed at 6 months were also observed on subsequent follow-up periods, a multivariate approach for repeated measures was used to examine the drinking variables involved in the 6-month outcome. Included in these analyses were the 43 clients who complied with the four follow-up interviews (21 AB and 22 CD clients). Among the 16 clients excluded from this analysis, 9 were interviewed three times, 5 were interviewed twice, and 2 were interviewed only once. In terms of intake and treatment characteristics, the excluded group differed only in having a higher proportion of single/divorced/separated clients ($\chi^2 = 3.88$, $N = 70$, $p < .05$); there were no differences in alcohol-related measures.

Changes in quantity, frequency, and weekly quantity were assessed using multivariate analyses of variance (MANOVAs) for repeated measurements. For each variable the measures of the four follow-up periods were transformed into the following variables: (a) the overall mean, (b) the difference between 12 and 18 months, (c) the difference between 24 months and the average of 12 and 18 months, and (d) the difference between 6 months and the average of 12, 18, and 24 months. The last three transformations constitute a variation of the Helmert contrasts (Bock, 1975).

For quantity, the analysis showed that the differences among the four follow-up periods were not statistically significant for both treatment groups. Moreover, the groups did not

differ significantly in mean quantity over the 2 years. In other words, in both treatment conditions the mean number of drinks consumed per drinking day remained around four drinks from 6 months to the end of the second year. For frequency the analysis showed that the difference among the four follow-up periods was statistically significant. The significant difference was found between the frequency of drinking reported at 6 months and the mean frequency obtained for the last three follow-up periods, $F(1, 41) = 6.43$, $p < .02$. In both groups, there was an increment of 0.45 ($SE = .18$) for the last three follow-up periods, which represents less than half a day per week. However, the mean frequency over the 2 years did not differ between the groups. No significant differences for group and time were observed for weekly quantity.

To test for changes in level and severity of drinking, Friedman two-way ANOVAs were conducted for each treatment group. These analyses indicated that from 6 months to the end of the second year no significant changes occurred in either group in proportion of clients categorized as abstinent, moderate/with problems or without problems, and heavy/with or without problems.

Measures of social adjustment. A MANOVA for repeated measurements was used to analyze weeks worked full time. This analysis paralleled the procedures used in analyses of the consumption variables previously reported. The analysis showed that the difference among the four follow-up periods was statistically significant. The significant difference was found between weeks worked full time at 6 months and the mean of the last three follow-up periods, $F(1, 41) = 5.20$, $p < .05$. In both conditions after 6 months the mean number of weeks worked full time decreased by 1.53 ($SE = .67$). However, the mean weeks worked full time over the 2 years did not differ between the groups. Cochran Q tests conducted for each treatment condition indicated no significant changes from 6 months to the end of the second year in marital status or in type of accommodation.

Corroborators of Self-Reported Drinking

Collateral reports. Clients were asked to provide the names of two collaterals who could be contacted about their drinking over the follow-up period. Where two collateral reports were available, the report of the collateral who had more frequent contact with the client was selected for the analysis. If the frequency of contact of both collaterals was the same, the collateral who provided the most complete set of data was selected. At the 6-month follow-up period, collateral reports were available for 38 clients; 68% of these collaterals had daily contact with the client. At the 12-month follow-up period, reports were available for only 23 clients, with 64% of these collaterals having daily contact with the client. Comparative analyses of the reports by clients and collaterals at 6 and 12 months were conducted on the following variables: quantity/day, frequency of drinking/month, number of times intoxicated/past 6 months, drinking style (abstinent, social drinking, problem drinking on sprees, and steady problem drinking). The first three variables were examined using mixed-model ANOVAs, with one group factor (daily contact pair vs. nondaily contact pair) and one repeated measure (client self-reports and collateral reports). This model was considered most appropriate because it allows comparisons of differences for individual pairs. Analyses at 6 and 12 months indicated no significant difference in the reports of clients and their collaterals on any of the three variables, for both daily and nondaily contact groups. In addition, the average of the paired reports did not differ between the two groups. On drinking style, Cohen's Kappa showed a moderate degree of agreement between client and collateral reports at 6 months ($K = .48$); there was 100% agreement between collateral and self-reports for the four abstinent clients, 67% agreement for clients reporting social drinking and problem drinking on sprees, and no agreement with the report of the 1 client reporting steady problem drinking. At 12 months, Cohen's Kappa indicated no agreement between client and collateral reports of drinking style.

Tests of cognitive functioning. The Digit Symbol Substitution Test was administered at admission and at the 3-month follow-up period. All scores were age scaled. Based on the number of drinks reported for the 3 weeks prior to retesting, 39 males and 13 females were categorized as abstinent, moderate ($M =$

29.6, range 1–63 drinks) or heavy drinkers (M = 89.7, range 66–136 drinks). Scores at the 3-month follow-up period were analyzed using an analysis of covariance (ANCOVA), with the intake Digit Symbol scores as covariate. The analysis showed a significant difference among the drinking categories, $F(2, 49) = 4.52$, $p < .02$. On average, the abstinent and moderate groups improved by 1.9 and 1.8, whereas the heavy-drinking group only improved by 0.40.

Biochemical markers. As further corroboration of self-reported drinking, GGT, SGOT, and HDLc were determined at various follow-up points, whenever clients agreed to give a blood sample. The advantage of a composite index of GGT and HDLc in discriminating abstinent/light, moderate, and heavy drinkers has already been published (Sanchez-Craig & Annis, 1981). These three groups were formed according to the number of drinks reported by 40 males at 6–12 months for the 3 weeks prior to the blood test. Although GGT was found to be more sensitive in detecting the abstinent/light and the heavy-drinking group, HDLc was more sensitive in detecting the moderate group. The overall rate of correct classifications was 62.5%. The advantage of combining GGT and HDLc was indicated again with data obtained from 31 males at the 18–24-months follow-up periods. The number of drinks reported over the 3 weeks prior to the blood test were found to be significantly correlated with levels of GGT, $r(29) = .44$, $p < .01$, but not with levels of HDLc, which tended to be elevated in moderate drinkers. The SGOT was insensitive to drinking reported by males at any point. Also, no significant relationships were found between levels of the three biochemical indexes and drinking reported by females (N = 15 at 6–12 months; N = 12 at 18–24 months).

Discussion

The results of this study did not support the hypothesis that assignment to a goal of controlled drinking would produce a better outcome than assignment to a goal of abstinence. The AB and CD clients were equally successful in reducing their drinking to moderate levels during the 2-year follow-up period. This finding was validated using three sets of independent corroborators of alcohol consumption. However, it can be argued that controlled drinking was a more suitable goal because (a) it was more acceptable for the majority of the clients, (b) CD clients drank less during treatment, (c) AB clients developed moderate drinking on their own, and (d) more AB clients requested and received additional counseling from their therapist after discharge from the program.

The absence of an experimental effect may be attributed to the manner in which the treatment for abstinence was presented, to the nature of some of the tasks involved in the training, or to the clients' determination to drink in moderation independently of assignment to goal. It may be argued that the abstinence treatment was not presented in the strongest possible manner. Although AB clients were always told that abstinence was the goal of the program, they were not told that their problem was a disease or that lifelong abstinence was essential. If such an approach had been followed, an experimental effect might have occurred because of an increased dropout rate in the AB group. Pomerleau et al. (1978) have documented such an effect. It is also possible that some of the tasks permitted AB clients to infer that moderation was acceptable. For example, the specification of incidents of problem drinking involved identifying consequences experienced after consumption of two–three drinks (usually positive consequences) and after the drinking episode (usually negative consequences); based on self-monitoring records, therapists tended to apply the problem-solving strategies to those days in which drinking had been heaviest. These procedures may have encouraged clients to assume that the therapist accepted drinking that occurred in moderation. An admission criterion was that the applicant should believe that drinking in moderation was an achievable goal. Most of the clients assigned to abstinence rejected this goal from the outset. Hence, it is possible that AB clients took from the program only those notions that would help them achieve a goal that they always had in mind. An important question to raise is why the specific training in controlled drinking did not confer an advantage to the CD clients after the completion of treatment.

The high rate of program completion in both groups and the reduction in alcohol consumption achieved by many AB and CD clients suggests that the treatments offered were acceptable. At the end of treatment alcohol consumption had been reduced by 74% in the AB group and by 87% in the CD group. The greater reduction in the CD group can be explained by the fact that during the first 3 weeks of treatment more of the CD clients (40% vs. 24%) complied with the request of abstinence, and fewer of them reported heavy drinking (Sanchez-Craig, 1980).

Overall, the percentage of successful clients (abstinent plus moderate drinkers) in the AB (73%) and the CD (72%) group is comparable to percentages reported in studies in which selected socially stable problem drinkers were trained in controlled-drinking methods (Heather & Robertson, 1981; Miller & Hester, 1980). These percentages would still be comparable if a reduction of about 10% is made to adjust the success rate of this study, so as to reflect clients missing at follow-up interviews as "failures." It should be noted, however, that the average intake level of consumption reported for clients in the present study (51 drinks per week or 693.6 g of ethanol) is higher than the average levels reported for clients in other controlled-drinking studies (Alden, 1978; Lovibond, 1975; Miller, 1978; Miller, Gribskov, & Mortell, 1981; Miller, Pechacek, & Hamburg, 1981; Miller & Taylor, 1980; Miller, Taylor, & West, 1980; Pomerleau et al., 1978; Vogler, Weissbach, & Compton, 1977). When adjustments are made for differences between countries in the amount of ethanol allowed in a standard drink (0.50 oz [11.7 g] in the United States and 0.60 oz [13.5 g] in Canada), the average intake level for clients in the present study is from 10% to 40% higher. It would appear that controlled-drinking strategies may be equally effective with early-stage problem drinkers who have fairly high intake consumption levels.

For most outcome measures there was a uniform stability for both groups over the 2-year follow-up period. Measures of social adjustment were stable, except for a decrement in the number of weeks worked full time observed after the 6-month follow-up period. This decrement, however, was small (1.5 weeks) and may be accounted for by the worsening economic conditions within the country during the period of 1980–1982, when most of the follow-up sessions at 12, 18, and 24 months were conducted. On the consumption measures, although quantity remained stable at about four drinks per drinking day, frequency showed a significant increment, raising from an average of 2.8 days per week at 6 months to 3.3 days for all successive follow-up periods combined. This increment, however, did not significantly affect the mean weekly quantity, which remained stable at about 13 or 14 drinks per week on average. This finding suggests the importance of examining quantity and frequency separately, as well as combined, in treatment outcome research. In the present study it is difficult to say what the clinical significance might be of the small increment in mean frequency of drinking per week (0.45 days) observed for the last three follow-up periods combined. It may simply reflect the consolidation of new drinking practices following a phase of self-experimentation after treatment. Another possible explanation for the disparity may be that self-estimates of how often one consumes alcohol (frequency) and how much is actually consumed on those occasions (quantity) tend to be orthogonal dimensions, with frequency increasing and quantity decreasing with age (Hartford & Mills, 1978; Vogel-Sprott, 1974).

The independent corroborators of alcohol consumption employed in the study provided considerable support to the validity of clients' reported drinking. Valuable information gained from the use of the corroborators was the finding that consumption of an average of four drinks per day precluded significant improvement on tests of cognitive functioning, both during treatment (Wilkinson & Sanchez-Craig, 1981) and at the 3-month follow-up period. Similarly, this level of consumption was associated with significant but not abnormal elevations of GGT. This suggests that in controlled drinking conservative goals should be recommended to clients. Both the Digit Symbol Test and the biochemical markers used in the study appear to have sufficient sensitivity to validate group data on recent

consumption, but not to corroborate drinking for individuals. Because most clients were interested in the results of the tests of cognitive and liver function, the potential effect that objective feedback of this sort may have in motivating some problem drinkers to maintain abstinence or low levels of alcohol consumption is worth investigating.

The rates observed in this study of participation in follow-up interviews (between 73% and 84%) were lower than initially anticipated. Compared to more chronic problem drinkers with whom the authors had previous experience (Sanchez-Craig & Walker, 1982) the present sample tended to be less compliant with follow-up expectations and to be more likely to protest intrusions into their times and privacy. The rate of participation in follow-up interviews could have been higher if some interviews had been conducted over the telephone. However, a decision was made at the inception of treatment not to conduct telephone interviews because they would preclude obtaining independent corroborators of consumption. In retrospect, perhaps this decision was too restrictive. At least for clients who did not directly refuse to cooperate with follow-up requests, information could have been obtained over the telephone.

In summary, the results of this study indicate that most CD clients achieved moderation of alcohol use and that most AB clients failed to abstain but nonetheless moderated their drinking. Although no significant differences were found between the AB and the CD group in amount of reported alcohol consumption over the 2-year follow-up period, a question that remains unanswered is whether the drinking outcome in either group is mainly attributable to client background characteristics or to program factors (e.g., assignment to goal, drinking during program). In an initial evaluation of this study (Sanchez-Craig & Annis, 1982a), a significant positive relationship was observed between drinking (i.e., mean weekly quantity) reported at intake and at the 6-month follow-up period in the AB group. In the CD group, however, the two sets of measures were not significantly correlated. This finding suggests that different factors may be contributing to the similar outcomes of the groups. In subsequent analyses attempts will be made to identify predictors of outcome drinking.

Epidemiological studies indicate that the number of persons drinking at the level of the clients in this study constitute the larger proportion of the problem-drinking population (Cahalan, Cisin, & Crossley, 1969; Cahalan & Room, 1974). However, treatment procedures aimed at this group are very scarce. The majority of the treatment services are explicitly directed to alcoholics and tend to place demands on their clients, such as acknowledgement that one is an alcoholic, commitment to a goal of lifelong abstinence, and absence from work or family responsibilities to participate in treatment. These demands tend to be unattractive or unacceptable to the type of person recruited into the present program. Because the program was very successful in retaining clients in treatment and produced a satisfactory outcome for the large majority of the participants, similar programs are indicated as a measure of secondary prevention of alcohol problems. Further research is clearly needed to assess the minimum intervention that would be effective in treating this population.

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Correction to Knight

In the article "On Interpreting the Several Standard Errors of the WAIS–R: Some Further Tables" by Robert G. Knight (*Journal of Consulting and Clinical Psychology,* 1983, Vol. 51, pp. 671–673), the final column of Table 2 is entirely incorrect. The figures in the fourth column from the right-hand side were erroneously repeated in the final column. A corrected version of Table 2 is presented below. The assistance of Fred M. Grossman in drawing attention to this error is appreciated.

Table 2
Abnormality of Verbal–Performance IQ Discrepancies on the WAIS–R

% population obtaining a given or a greater discrepancy	Age range (in years)						
	16–17	18–19	20–24	24–34, 45–54, 65–69	35–44	55–64	70–74
50	7.5	7.8	7.6	6.9	6.3	6.6	7.9
25	12.9	13.2	13.0	11.8	10.8	11.4	13.4
20	14.4	14.8	14.5	13.2	12.1	12.6	14.9
10	18.4	18.9	18.7	16.9	15.5	16.2	19.2
5	22.0	22.6	22.3	20.2	18.4	19.3	22.8
2	26.2	26.8	26.5	23.8	22.0	23.1	27.1
1	29.0	29.8	29.4	26.7	24.4	25.5	29.9
.1	37.1	38.1	37.5	34.2	31.2	32.7	38.4

Note. WAIS–R = Wechsler Adult Intelligence Scale–Revised.