

**A NATURALISTIC COMPARISON OF OUTCOMES
AT SOCIAL AND CLINICAL MODEL SUBSTANCE
ABUSE TREATMENT PROGRAMS***

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ABSTRACT

Since the 1970s, much of the public treatment system in California has been based on a social model orientation to recovery for alcoholics, but there has been minimal research on program outcomes. This article reports on follow-up interviews conducted with a representative sample of 722 people who had entered treatment about a year earlier in public and private programs, including publicly-funded social model detoxification and residential programs, and clinical model programs in hospitals and HMO clinics. Social model clients came to treatment with more severe legal and employment problems, whereas those seeking treatment at clinical programs reported more severe family problems. At follow-up, clients at both types of programs reported attending a similar number of Alcoholics Anonymous (AA) meetings, but social model clients reported going to more Narcotics Anonymous (NA) meetings and being involved in more AA activities. Social model clients were less likely than clinical model clients to report problems with alcohol or drugs at follow-up, but the odds of reporting other problems (e.g., medical, psychological, legal, family/social) were similar. The program effect for better alcohol outcomes at the social model programs was partially

*This research was supported by the National Institute for Alcohol Abuse & Alcoholism (NIAAA grants R01 AA09750-04 and P50 AA05595) and the Center for Substance Abuse Treatment (CSAT)/National Evaluation Data Technical Assistance Center (NEDTAC contract 270-94-0001).

explained by their clients' higher levels of 12-step program involvement during follow-up, which strongly predicted an absence of alcohol problems. Social networks supportive of abstinence also were predictive of reporting no alcohol problems at follow-up. In contrast, subsequent detoxification treatment events between baseline and follow-up were associated with a higher odds of reporting alcohol, drug, psychiatric and family/social problems at follow-up. These findings are consistent with the growing body of literature reporting higher rates of abstinence among those who are able to construct more positive social networks, and who attend and become involved in 12-step programs during and following treatment. It is important that these results be replicated, as they suggest that social model programs are successful in engaging their clients in AA activities and in NA meeting attendance, and could represent for some an effective alternative to clinical model treatment programs.

INTRODUCTION

Although a single dominant orientation to alcohol treatment is sometimes used in programs today (as with Project MATCH) (Project MATCH Research Group, 1993), hybrid approaches that integrate biological, psychological, and social emphases are increasingly evident in public and private treatment settings (Institute of Medicine, 1990). Here we report on outcomes for clients from two hybrid models, a clinically oriented "bio-psychosocial" model and a community-oriented social model (Institute of Medicine, 1990).

The bio-psychosocial model (referred to subsequently as the "clinical model" because of its emphasis on professional staff and clinical services) shares the *philosophy* of the 28-day inpatient Minnesota Model, which combines professional diagnosis and treatment with the 12 steps of Alcoholics Anonymous (AA) in clinical or medical settings (Institute of Medicine, 1990). However, aiming to contain costs, this model also includes outpatient and shorter-stay inpatient programs (Schmidt et al., 1998; Schmidt & Weisner, 1993). By contrast, the social model program focuses primarily on 12-step program involvement and social community from within non-clinical detoxification and recovery settings (Institute of Medicine, 1990; Borkman et al., 1997). Having evolved within the California public sector, this model resists professional domination and eschews the medical and psychological orientation of the Minnesota Model.

Although social model programs are predominantly thought of as California-based, the approach has elements in common with programs found elsewhere, such as Oxford Houses and Therapeutic Communities (Borkman et al., 1996, 1997, 1998) as well as other 12-step-based treatment programs including Twelve Step Facilitation (TSF) (Project MATCH Research Group, 1995). A key ingredient of the social model approach is immediate and ongoing involvement in AA, NA (Narcotics Anonymous), and with the recovering community of AA/NA members, friends and families. Social model was developed for treating alcoholics

but has evolved to also treat drug addicts. Social model programs have historically dominated public treatment in California (60% of the licensed residential programs in 1998 defined themselves as social model) (Kaskutas et al., 1999), but their outcomes have not been rigorously assessed.

A comprehensive comparative process evaluation of social and clinical model treatment programs sponsored by the Center for Substance Abuse Treatment (CSAT) was recently conducted to capture the active ingredients of treatment, finding qualitative differences in services (Kaskutas et al., 1996). Compared to the clinical model, highlights of the social model included: all staff in recovery, and no licensed staff or medical services (Room, 1998a); a less didactic, more discussion-oriented “experiential” (Borkman, 1983) approach to addiction education (Kaskutas et al., 1998b); using time during treatment for non-substance abuse-specific issues such as vocational rehabilitation (Room, 1998c); client-driven recovery planning as opposed to staff-managed treatment planning (Borkman, 1998b); no psychologically-oriented therapy groups, but sustained involvement with AA-based social networks that goes beyond introduction to AA/NA meetings and the steps (Barrows, 1998); and client responsibility and governance in running the program (Borkman, 1998a).

It is not generally known whether these differences translate to better substance abuse and related outcomes following treatment in those models; for example, do social model program clients have fewer problems with alcohol and drugs post-treatment, possibly because of the stronger immersion in the AA culture? Conversely, due to the availability of medical treatment, psychologists, and group therapy sessions during treatment, do clinical model program patients have less severe medical or psychiatric problems a year after entering treatment in those programs? This report begins to answer those questions, using survey data (described in Kaskutas et al., 1997) captured naturalistically from representative samples of clients entering clinical and social model programs in the same county in which the process evaluation was conducted.

The only two other reported studies of social model outcomes have also been based on naturalistic designs (for details, see Borkman et al., 1996, 1998). The first evaluation study followed public social model treatment clients in San Diego County (California) at 18 months, finding 33% abstaining, 21% improved, and 45% unimproved (i.e., multiple problems or heavy drinking), but this study had no non-social model comparison group. Within these social model programs, women were more likely than men to be abstinent at 18 months, and abstinence rates were lowest for those seen in detoxification type programs and highest for those treated in recovery homes. There were also improvements in other life areas, such as income (50% higher) and employment (50% higher). The study reported that social model recovery homes cost \$17 per day (San Diego County Department of Health Services, 1983; University of California San Diego Extension, 1993).

Using a retrospective design, the later CALDATA study (Gerstein et al., 1994a; Gerstein et al., 1994b) compared outcomes of social model clients to those for

clients from other types of public programs (e.g., non-social model residential programs oriented toward individual counseling and a classical staff/therapist model, outpatient programs, and outpatient methadone maintenance programs). At 15 months post-treatment, there was a 36% reduction in the number of months of post-treatment substance use for social model programs of less than 30 days (compared to 47% for non-social model residential programs), and a 52% reduction for social model programs with longer stays (versus 63% for non-social model residential programs). These somewhat higher rates for non-social model residential stays of comparable length were obtained at a higher cost: \$61/day for non-social model stays vs. \$34/day for social model stay of same length (for more details, see Borkman et al., 1996, chapter four). Of particular note, reductions in criminal activity were greater among social model clients, especially among those in programs with longer stays.

Hallmarks of the social model approach include non-clinical, home-like settings; recovering, non-medical (usually non-licensed) staff; and an intense emphasis on integration with AA and sober networks (for details, see Kaskutas et al., 1998a, 1998b; Room, 1998, 1998a, 1998b). Social model's informal setting is conducive to conversation and peer interaction, often with sober members from the community; a "good" social model program will have alumnae lead groups and frequent the AA/NA meetings held on-site (Borkman et al., 1998; Kaskutas et al., 1998a).

Sustained opportunities for practicing sober behavior and for integrating with AA/NA are presented due to emphasis on sober events and community involvement. Social model programs stress the value of friendships with sober people and the danger of "wet" environments from one's past. Thus, it has been hypothesized (see Kaskutas, 1998) that people treated in the social model would at follow-up be more connected with AA, and have larger social networks supportive of abstinence (compared to those treated in other models). Although sound from a theoretical standpoint, this has not been tested empirically. However, we are able to begin to address those issues here, and additionally consider the extent that 12-step program involvement and sober networks contribute to sobriety a year following a treatment entry experience.

Clinical model programs as defined here also address the importance of AA and of supportive social networks, but their primary foci reflects the demands for professional treatment of the medical and psychological sequelae of substance abuse, complemented with education about the nature of addiction (Institute of Medicine, 1990; Schmidt & Weisner, 1993). Groups for special recovery, spirituality, and 12-step are run by program alumni, AA Hospital & Institutions, or recovering staff (if available). However, the main treatment (and family) groups at clinical model programs are led by licensed, multi-disciplinary staff including psychiatrists and psychologists, psychiatric nurses, and social workers, some of whom may be in recovery. Unlike the social model, being in recovery is not generally seen as a job requirement, where special training in the fields of

psychology and addiction medicine are in addition highly valued. Rather than relying mainly on the experiential knowledge gained in recovery (as at the social model), clinical model staff draws on their professional training in running groups (Borkman, 1990; Kaskutas et al., 1998b). Thus, they are able to offer psychological interpretations to experiences and concerns discussed by patients (Institute of Medicine, 1990; Kaskutas et al., 1998b). Such expertise is not available at social model programs; clients in need of mental health counseling use external existing community resources (Borkman et al., 1998). Similarly, although clinical model programs are equipped to deal directly with patients' medical problems, social model programs address client medical needs via referral to outside health providers (Barrows, 1998; Borkman et al., 1998).

Social model programs strive to also address clients' legal, family and employment problems (Barrows, 1998; Room, 1998c), but this again is accomplished with help from outside agencies (who are invited to give seminars on resume building, how to apply for available training or legal aid programs, etc.). At the clinical model, such issues are generally left for the patient to handle on his/her own after treatment; the during-treatment focus is on treating alcohol-related physical and mental symptoms and introducing patients to AA. Learning how to effectively use community resources, not only including medical and mental health services but also legal aid, family services, job boards, employment counseling, etc., is part of the recovery regime at a social model program.

Consistent with the different areas of treatment philosophy emphasized, we hypothesized that clinical and social model clients would have stronger outcomes in their respective priority areas. For example, due to the social model's strong focus on the environment (via immersion in AA, NA, and clean and sober networks), their clients might be expected to have more involvement in AA and NA, larger sober social networks, and fewer problems with alcohol and drugs at follow-up. The availability of medical and psychiatric expertise and services at clinical model programs may translate to fewer (or less severe) medical and mental health problems for their patients at follow-up. Social model clients might have fewer problems with employment and possibly even with the law, because of help received in those areas during treatment. In other areas, where the distinction is less (such as family issues, which both models appear to address), no difference would be expected. These hypotheses are generated from the literature on clinical and social model programs, and will be tested here.

METHODOLOGY

Sample

As part of a larger NIAAA-funded study (R01 AA09750-04), subjects were recruited upon treatment entry at 10 representative public, private, and HMO (health maintenance organization) programs in the same northern California

county. The study county was chosen for its heterogeneity; we have compared relationships between population characteristics and alcohol measures between a 1989 general population survey in that county and a 1990 national survey, finding differences to be small (Greenfield & Weisner, 1995); and treatment programs and policy are similar to others in the country. Programs were included if they had at least one new admission per week. The social model programs studied here were two public detoxification programs and two public residential recovery homes. The other programs studied were clinical models: two public outpatient clinics; two private, hospital-based programs providing detoxification and inpatient care; and two HMO substance abuse clinics providing only outpatient detoxification and treatment. Staff at the social model programs were paraprofessionals in recovery (i.e., some were credentialed; none were licensed). All of the other programs used clinically oriented approaches with medical and professionally licensed staffs; some but not all of the clinical programs had recovering addiction counselors on staff. Length of stay varied from three-day detoxification to 90-day residential at the social model sites, and from three-day detoxification to short (3- to 14-day) inpatient stays and year long outpatient care at the clinical model sites.

This article focuses on an analysis of the differences between the social and clinical model programs. We note that all of the programs were influenced by the 12-step movement, using the 12 steps of Alcoholics Anonymous to some extent during the treatment regime, and recommending AA/NA attendance during treatment and as a form of aftercare. As described above, the clinical model programs are similar in description to Minnesota model type programs (Institute of Medicine, 1990), with a formal treatment methodology involving medical records, assessment and diagnosis; lectures about AA/NA and the disease concept; individual and group counseling; and medical and psychiatric services (McElrath, 1997).

In-person interviews were conducted in private locations with consenting subjects within three days of treatment entry at the detoxification, inpatient and residential programs, and within three weeks at the outpatient programs. A total of 926 individuals consecutively admitted to treatment at the 10 study sites were successfully recruited (an 80% response rate overall; 87% for social model sites, 78% for clinical model sites). Of these, 879 agreed to a subsequent follow-up interview (referred to here as longitudinal subjects—220 social model clients, 659 clinical model clients), and 12-month follow-up interviews were successfully completed with 75% of the longitudinal social model clients ($n = 164$) and 85% of the clinical model clients ($n = 558$). The overall “ n ” reported in analyses here is thus 722. Data are weighted to adjust for differences in recruitment with respect to age, gender, ethnicity, and the unequal recruitment periods needed to achieve approximately equal quotas of clients from public, private, and HMO programs. N s reported here are unweighted; statistical results use weighted data. (For further study design information, see Kaskutas et al., 1997.)

Measures

Baseline interviews were about one hour in length. To assess alcohol and drug problems, as well as substance abuse related problems (i.e., medical and psychological, family/social, employment and legal), a modified form of the Addiction Severity Index (ASI) was used at admission and 12-month follow-up (McLellan et al., 1992). In each of the problem areas, scalable questions were asked that measure the number, frequency, and duration of problem symptoms (past 30 days). Composite scores ranging from a low of 0 to a high of 1 were calculated. For all of the seven ASI problem areas, a dichotomized variable indicating problem free status (i.e., no problems in the last 30 days; ASI composite = 0) versus some problems (ASI composite > 0) was also created.

The follow-up telephone interviews lasted about 35 minutes, and involved a subset of the baseline questions covering substance use, subsequent treatment events, involvement in AA/NA, social networks, and use of health and human service agencies. Questions about demographics and readmission at an alcohol or drug treatment program during the follow-up period are derived from the Alcohol Research Group's Community Epidemiology Laboratory instruments, used in surveys of the general population and of health and human service clients in the study county for the past 20 years (see Weisner & Schmidt, 1995). Length of stay was evaluated by asking participants at follow-up for the total number of days they spent in treatment and in aftercare.

AA activities at follow-up were measured using a subset of the items used in the AA Affiliation Scale administered at baseline (Humphreys et al., 1998), and assessed whether respondents currently had a sponsor, currently were a sponsor, had a spiritual awakening in the past 12 months since leaving treatment, and had read AA literature in the past 12 months. The items were similar in wording and focus to those used by other investigators (e.g., Humphreys et al., 1999; Tonigan et al., 1996). Items were coded dichotomously (0 = no, 1 = yes), and were summed to produce a total count of the number of AA activities currently endorsed by the respondent (which ranged from 0 for no AA affiliation to a maximum of 4 for high engagement with AA). Two more questions were asked to respectively measure the number of AA or NA meetings attended in the past year, and are used here as continuous variables. Social support for abstinence was assessed by asking how many people "actively support your effort to reduce your alcohol or drug use?" The converse, social support for using, was similarly assessed by asking how many "encourage you to drink or use drugs?" In addition to the count variables derived from these questions, the proportion(s) of the network supportive of cutting down (and of using) also were calculated. Subsequent substance abuse treatment was measured by inquiring if the client had attended each of the following agencies since leaving treatment: "a DUI program," "a detox center," or "any other inpatient or outpatient alcohol or drug treatment program."

Analysis

Bivariate analysis of categorical variables used Pearson's Chi Square; analysis of continuous variables used *t*-tests comparing differences at baseline, and paired *t*-tests comparing pre- vs. post-values. Significance levels below .05 are reported. Bonferroni adjustments were implemented to adjust for multiple comparisons of program differences in the seven ASI problem severity domains at baseline ($p < .007$), the four measures of social networks at baseline and follow-up ($p < .0125$), the three specialty alcohol and drug treatments that were considered at follow-up ($p < .017$), and our five follow-up measures of self-help ($p < .01$). *P*-values that were no longer significant due to Bonferroni correction are shown in parentheses in Table 1 (baseline differences) and Table 2 (differences at follow-up).

Multivariate analysis was conducted using forced entry logistic regression to predict problem status (any problem level versus none) in the seven ASI problem areas. Dichotomized variables were created from the continuous ASI variables in each area, with the 0 value reflecting a zero score on the ASI composite measure in each area and a 1 value reflecting a non-zero score (indicative of at least some problems in the area). Although continuous variables do tend to have higher power than their dichotomous counterparts for hypothesis testing in regression models, the original distributions of these continuous variables were highly skewed, with a large proportion of the mass of the distribution on zero on the continuous ASI composite score for all but employment problems, where scores of "1" on the continuous scale predominated. Efforts to improve the distribution of the continuous variables, such as Box-Cox transformations, are not effective in these situations, producing distributions nearly as skewed as the original. In such cases, the assumptions of the models proposed are strongly violated and the reasonable choice in such situations is to dichotomize the variable. Logistic regression models thus predict having an alcohol problem at follow-up, using this dichotomized version (1 = yes, 0 = no) of the ASI problem severity composite measure; similar logistic models predict having a drug problem, a medical problem, a psychiatric problem, a family problem, a legal problem, and an employment problem.

The baseline ASI composite measures for alcohol, drug, medical and psychiatric problems were considered in all the regression models. When predicting family, legal, and employment problems at follow-up, we additionally included those respective baseline continuous ASI composite measures. Predictor variables were otherwise consistent across the seven regression equations. Other independent variables included type of treatment (social model vs. clinical model), and whether or not the respondent had received each of three specialty alcohol or drug treatments (DUI treatment, detoxification, or any other type of program) during the follow-up period (yes vs. no). Demographic predictors included age (continuous), education (high school or more vs. less than high school), marital

Table 1. Differences between Clients at Baseline: Social Model vs. Clinical Model

	Social model (N = 296)	Clinical model (N = 426)	Significance ^a
Mean age ± S.D. (years)	37 (±8)	39 (±11)	*
Marital status			***
Married/living together	16%	40%	
Separated/divorced	37	32	
Widowed	1	3	
Single, never married	46	25	
Gender			***
Male	74%	59%	
Female	26	41	
Ethnicity			***
White	32%	69%	
Black	55	19	
Hispanic	4	6	
Other	10	6	
Education			***
< High school	27%	16%	
High school	55	52	
Some college/technical	14	18	
College grad	4	15	
Income			***
< \$10,000/yr	65%	27%	
\$10,000-\$35,000/yr	24	30	
> \$35,000/yr	11	44	
Insurance status			***
Uninsured	41%	5%	
Publicly insured	46	29	
Privately insured	13	67	
ASI composite ± S.D.			
Alcohol	.37 (±.32)	.36 (±.33)	
Drugs	.14 (±.13)	.12 (±.13)	(*)
Medical	.26 (±.36)	.30 (±.37)	
Psychological	.40 (±.23)	.40 (±.25)	
Family	.28 (±.30)	.34 (±.31)	**
Employment	.83 (±.26)	.64 (±.36)	***
Legal	.17 (±.20)	.11 (±.19)	***
Social networks			
No. of people against using	2.97 ± 3.38	4.40 ± 5.00	***
No. of people pro-using	.55 ± 4.00	.24 ± 1.46	
Proportion pro-abstinence	.82 ± .34	.76 ± .36	(*)
Overall network size	4.01 ± 5.88	6.17 ± 8.17	***

^aLack of significance due to Bonferroni correction is indicated in parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Differences in Social Networks and Services Used After Treatment Entry: Social Model vs. Clinical Model

	Social model (<i>N</i> = 296)	Clinical model (<i>N</i> = 426)	Significance ^a
Social networks (mean ± <i>S.D.</i>)			
No. of people against using	6.60 ± 7.68	8.20 ± 8.87	(*)
No. of people pro-using	0.54 ± 1.69	0.39 ± 1.58	
Proportion pro-abstinence	0.66 ± .41	0.74 ± .43	(*)
Overall size of network	11.01 ± 14.50	11.61 ± 12.87	
Specialty alcohol or drug treatment (%)			
DUI	8	8	
Detox	26	14	***
Any other program	31	22	**
Self-help			
AA (%)	82	59	***
NA (%)	60	34	***
AA involvement scale (0-4) (mean ± <i>S.D.</i>)	1.69 ± 1.20	1.15 ± 1.25	***
AA meetings (mean ± <i>S.D.</i>)	76 ± 95	60 ± 98	(*)
NA meetings (mean ± <i>S.D.</i>)	37 ± 67	18 ± 53	***

^aLack of significance due to Bonferroni correction is indicated in parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

status (married or living together vs. single, widowed, or divorced), gender (female vs. male), and income (under \$10k and over \$35k vs. between \$10k-\$35k). The numbers of people in the social network who were supportive of cutting down/abstinence from alcohol and drugs (“dry support”) and of continued use of alcohol and drugs (“wet support”) were included as continuous variables. Significant odds ratios (ORs) are reported for the results from these logistic regression models, and indicate the increased or decreased likelihood of having a problem at follow-up associated with each predictor variable.

To evaluate the relationship between the clients’ length of treatment stay and their problem status at follow-up, seven subsequent logistic regression models were conducted for the seven ASI problem areas. Whenever length of stay was found to be a significant predictor of problem status, it was then added to the full model (described above), in order to assess whether length of stay influenced any previously obtained results.

A formal test of mediation was conducted post-hoc, to explore the possibility that immersion in AA might help to explain the program effects. Thus to study alcohol problems, the number of post-treatment AA activities and the number of AA meetings attended in the past year were added in a second set of regressions, and compared to the original regressions; if AA mediation were present, the program effect would shrink when the AA variables were included. In studying drug problems, we similarly included the AA involvement measure but substituted the number of AA meetings with the number of NA meetings the participant had attended in the past year.

A final set of analyses was conducted to address whether women fared better in social or in clinical model programs, and whether those who had more severe problems did better in one type of program. If gender, program type, or baseline severity were significantly associated with a problem in any of the domains (alcohol, drug, medical, psychiatric, family, legal, or employment), the corresponding interaction term was added into the model (i.e., gender by program; or baseline severity by program).

RESULTS

At baseline, social model clients were slightly younger, more likely to be African American, single, without a high school degree, earning less than \$10,000 per year, and uninsured or publicly insured (Table 1). Clinical model clients had more severe family problems ($p < .007$) at baseline, yet had larger social networks supportive of abstinence ($p < .013$). In contrast, social model clients came to treatment with more severe employment ($p < .007$) and legal ($p < .007$) problems.

At follow-up, no differences between the two types of programs were found in the proportions of the participants' social networks supportive of abstinence (Table 2). Compared to participants from the clinical model programs, more social model clients reported additional detoxification treatment ($p < .017$) and other non-DUI specialty treatment programs ($p < .017$), as well as more use of AA ($p < .01$) and NA ($p < .01$) during the follow-up period. Social model clients also attended significantly more NA (but not AA) meetings ($p < .01$), and were involved in more AA activities than the clinical model study participants ($p < .01$).

We conducted separate analyses of changes in problem severity between baseline and follow-up among social model clients, and among clinical model clients separately (not shown). Measures included ASI composite scores as well as individual ASI questions measuring days of use and frequency of problems. We found significant improvement for both the social model and the clinical model clients in all areas except number of days of painkiller use, where only the clinical model clients reported significant declines.

Alcohol Problems

At follow-up, 57% of the social model clients reported no alcohol problems, compared to 49% of the clinical model clients ($p < .05$). In the multivariate analysis, significant predictors of reporting alcohol problems at follow-up (independent of ethnicity, gender, education, marital status, and income) included younger age, higher alcohol problem severity at baseline, and attendance at a detoxification program during the follow-up period. Additionally, as expected, the size of the respondent's social network supportive of abstinence, and having been admitted to a social model program, were associated with a decreased odds of alcohol problems at follow-up.

Drug Problems

Fewer clients in the clinical model programs reported having no drug problems a year later (51%) compared to the social model clients (59%; $p < .05$). In the logistic regression predicting drug problems at follow-up, no demographic variables emerged as significant at the $p < .05$ level. Those with higher medical or drug problems at baseline, and those who had attended detoxification during the follow-up period, were at significantly higher odds for drug problems at follow-up. As hypothesized, social model program clients were significantly less likely than other subjects to report drug problems at re-interview.

Medical Problems

The proportions of social and clinical model clients who reported no medical problems at follow-up were similar (about two-thirds). The only variables in the multivariate model that predicted medical problems at follow-up were medical and psychiatric problem severity at baseline. Those with higher medical or psychological problems had about three times the likelihood of reporting medical problems at follow-up. Program type was not significant.

Psychiatric Problems

Similar percentages of clients from social and clinical model programs reported no psychiatric problems at follow-up (36% and 40% respectively). In the multivariate model, African-American clients had significantly higher odds of reporting psychiatric problem(s) at follow-up, whereas a higher income was associated with a decreased odds in psychiatric problems. Those who were more likely to report psychiatric problems at follow-up had higher levels of such problems at baseline. Subjects with psychiatric problems at follow-up also were more likely to have been to DUI or detoxification programs during the follow-up period. In addition, those with a large social network supportive of abstinence had reduced odds, those with a network supportive of using were at an increased odds, for psychiatric

problems at follow-up. As with medical problems, program type did not emerge as significant here.

Family Problems

Three-quarters of the study participants in the social and in the clinical model programs reported no family problems at follow-up. Clients most likely to report family problems at follow-up were younger, had reported higher family problems at baseline, and had attended a detoxification program during the follow-up period. Having a larger social network supportive of abstinence led to a decreased likelihood of family problems at follow-up. As expected, type of program was not significant.

Legal Problems

The proportion of clinical model participants reporting no legal problems at follow-up was slightly higher than for the social model clients (93% vs. 88%, $p < .05$). Three variables emerged as predictors of legal problems at follow-up in the logistic regression. Compared to other ethnicities, African Americans were at a reduced odds for legal problems. An increased likelihood of legal problems was associated with more severe legal problems at baseline and having reported a specialty substance abuse treatment other than DUI or detoxification only during the follow-up time period. There was no program effect.

Employment Problems

Fewer social model clients reported no employment problems at follow-up (as compared to the clinical model clients (3% vs. 10%, $p < .001$)). Baseline employment problem severity and baseline drug problem severity were significantly related to having employment problems at follow-up, with baseline drug severity being the stronger predictor. Type of program was not a significant predictor of employment problems.

We also evaluated whether length of treatment stay was related to any of the 12-month outcomes. As the only variable in the model, a longer length of stay was inversely related to reporting alcohol problems ($p < .01$), drug problems ($p < .05$), legal problems ($p < .05$), and employment problems ($p < .01$). When included in the full model, length of stay remained a significant predictor for alcohol problems ($p < .001$), legal problems ($p < .05$), and employment problems ($p < .05$). It did not alter the effect of program type related to alcohol problems or any previously significant variables in any of the models.

To test whether the social model program effects for alcohol and drug problems were due partly to their clients' stronger immersion into the AA and NA cultures, we added a final step to the regression equations predicting alcohol (Table 4) and drug problem status (results not shown), in which self-help at follow-up was

Table 3. Odds of Having Problems in Seven ASI Areas at 12 Month Follow-Up ($N = 722$)

	Alcohol	Drug	Medical	Psychiatric	Family	Legal	Employment
Age	.98*	—	—	—	.97**	—	—
Education (vs. < high school)							
High school or more	—	—	—	—	—	—	—
Gender (vs. men)							
Women	—	—	—	—	—	—	—
Marital status (vs. separated/ widowed/single, never married)							
Married/living together	—	—	—	—	—	—	—
Ethnicity (vs. all others)							
African American	—	—	—	1.60*	—	.47*	—
Income (vs. \$10-\$35k)							
< \$10,000/yr	—	—	—	—	—	—	—
> \$35,000/yr	—	—	—	.56*	—	—	—

Baseline ASI Problem Severity Scores							
Alcohol	2.49***	—	—	—	—	—	—
Drug	—	12.26***	—	—	—	—	207.99**
Medical	—	2.16**	3.72***	1.74*	—	—	—
Psychiatric	—	—	2.98**	17.95***	—	—	—
Family	n/a	n/a	n/a	n/a	3.04**	n/a	n/a
Legal	n/a	n/a	n/a	n/a	n/a	5.32***	n/a
Employment	n/a	n/a	n/a	n/a	n/a	n/a	3.12*
Attended DUI treatment during follow-up period (vs. not)	—	—	—	2.71**	—	—	—
Attended detoxification during follow-up period (vs. not)	2.80***	1.74*	—	2.32**	2.91***	—	—
Attended other specialty substance abuse tx during follow-up period (vs. not)	—	—	—	—	—	2.28*	—
Support Network							
Size of network supportive of using	—	—	—	1.26*	—	—	—
Size of network supportive of abstinence	.96***	—	—	.96***	.97*	—	—
Social Model vs. Clinical Model	.55**	.46***	—	—	—	—	—
Modex χ^2	70.85	75.02	83.79	124.67	66.39	50.39	41.85
df	17	17	17	17	18	18	18
p-value	.000	.000	.000	.000	.000	.000	.001

* $p < .05$. ** $p < .01$. *** $p < .001$, n/a/: not applicable; not included in model.

Table 4. Effects of AA Involvement on Alcohol Problems at Follow-Up^a

	Odds ratio
Program effect:	
Social model vs. Medical model	.65*
Number of AA activities	.67***
Number of AA meetings	.99

^aModel controls for all variables in Table 3.

* $p < .05$. ** $p < .01$. *** $p < .001$.

entered into the models. Specifically, in the model for alcohol problems we added the count of AA activities and the number of AA meetings attended at follow-up; and when predicting drug problems, we entered the count of AA activities (we had not asked about NA activities) and the number of NA meetings at follow-up. The number of AA activities (but not AA meetings attended) in the follow-up period was a significant predictor of alcohol problems at follow-up ($OR = 0.67, p < .01$), and the odds ratio for the treatment model changed as well—weakening in magnitude and significance: When AA activities (and meetings) were considered, the OR for social vs. medical model treatment was $0.65, p < .05$ (Table 4), whereas it had been $0.55 (p < .01; see Table 3)$.

These results are consistent with mediation; that is, the number of AA activities helped to explain why the social model clients were significantly less likely to report alcohol problems at follow-up, and the effect of having been in a social model program was not quite as strong as before. However, these findings were not replicated for drug problems at 12 months; that is, neither AA involvement nor NA meetings significantly predicted the presence of drug problems. Since AA meetings might also have been helpful in addressing drug problems, we next considered a combined measure that reflected the number of AA and NA meetings reported at follow-up; this also was not significant in predicting drug problem status at follow-up.

Unlike the San Diego study (San Diego County Department of Health Services, 1983; University of California San Diego Extension, 1993) which had found higher rates of abstinence for women than for men 18 months post-treatment, we did not find a gender effect using our 12-month outcome measure (results not shown). As for program type having a differential relationship with problem severity, baseline drug severity was the only ASI severity domain for which we found a significant interaction with outcome at follow-up. Among social model clients, baseline drug severity was unrelated to drug problems a year after

treatment ($p > .05$), whereas it was strongly related to having drug problems among the clinical programs' clients ($p < .001$).

DISCUSSION

Predominantly reflecting the populations served in the public sector where social model programs are located, there were considerable demographic differences between the social and clinical model clients, with the former more likely to be unmarried, less well-educated, either uninsured or publicly insured, and of lower socioeconomic status (based on income and education). Those recruited from social model programs tended to have more severe employment and legal problems upon treatment entry, whereas those at clinical model programs reported more severe family problems. Based on these results, clinical programs might consider offering more (and varied) groups to address family issues, and actively work with their patients to help them connect with ongoing family support groups after discharge. Similarly, social model programs should renew their longstanding emphasis on vocational rehabilitation: once known for their focus on helping clients with job interviews, resumes, and how to deal with gaps in employment (Borkman et al., 1998; Room, 1998c), Medi-Cal restrictions and budget cuts have eroded those services over time (Keller, 1998; Keller and Kaskutas, 1998; Room et al., 1998).

Clients from both types of programs exhibited reductions on all seven of the ASI composite problem areas at follow-up. This is consistent with other studies which show improvement in physical, social, and emotional problems, if not always abstinence, following treatment entry (Gerstein et al., 1994b; Gwydish et al., 1997; McLellan et al., 1992; San Diego County Department of Health Services, 1983). In general, having more severe problems at baseline in a given ASI problem area increased the likelihood of reporting problems in that area at follow-up, reinforcing the need expressed by other researchers for services during treatment which address the problem areas clients face not just with alcohol and drugs, but in other life areas as well (McLellan et al., 1994, 1998; Weisner et al., 2001). As our earlier studies have described (Borkman et al., 1996; Kaskutas et al., 1996; Kaskutas, 1998; Room, 1998b), social model programs traditionally focused on social functioning, and clinical model programs have provided more medical and psychiatric services, leaving room for mismatches between client problems and services provided in a single treatment model. The trend in the treatment system toward a more hybrid approach could lead to an expansion of the services delivered in a program's usual repertoire, somewhat addressing this concern.

During the follow-up period, social model clients were more likely to receive additional detoxification and non-DUI substance abuse treatment. One interpretation of this result is that the social model treatment episode, which had begun when we interviewed them at baseline, had not been sufficient, so that more help was needed. Indeed, two of the four social model programs in the study

provided only three-day detoxification stays; unfortunately, the number of such clients ($n = 92$) is insufficient for conducting a disaggregated multivariate analysis of those treated in detoxification only, given the number of control variables required. Another reason for the additional treatment among social model clients could be that they had been successfully introduced into the treatment system by that visit, and went on to negotiate for further help with their substance abuse problem. This is consistent with the social model goal of empowering clients to avail themselves of existing services in the community. It could also be that the social model clients had more access to substance abuse treatment (via public sector programs) than clinical model clients whose private insurance may have only covered a single treatment episode over a 12-month period (the period of study here). More in-depth follow-up interviews, perhaps with qualitative components to allow better understanding of underlying rationale for service utilization patterns, could help resolve this question.

Higher proportions of social model clients also reported having been to AA and NA during follow-up, they attended more NA meetings, and their involvement in AA activities tended to be greater. This is consistent with earlier work which has suggested that social model programs do a good job of thoroughly introducing clients to the AA and NA world—not just taking them to meetings, but helping them become integrated with the recovery community (Barrows, 1998; Borkman et al., 1998; Kaskutas et al., 1998a, 1998b). There is a growing body of literature (Morgenstern et al., 1997; Project MATCH Research Group, 1998) reporting better substance abuse-specific outcomes among those involved in AA, especially when AA involvement begins during treatment (McKay et al., 1994; Tonigan, 1999), and even more so when that treatment is 12-step-oriented (Humphreys et al., 1999). Since most of the clinical programs in this study were themselves 12-step-oriented, we were not able to study the interaction between AA treatment-orientation and AA involvement with this sample.

However, the study design did allow us to examine the mechanism(s) of action associated with treatment in a social model program, which had not yet been studied empirically. We found that AA involvement mediated, or partially explained, the relationship between social model program attendance and alcohol problem status at follow-up. Thus, social model programs appear to work, in part, by fostering effective post-treatment AA affiliation, and may represent a group-oriented, public sector alternative to the individual format Twelve Step Facilitation (TSF) approach studied in Project MATCH (Project MATCH Research Group, 1993, 1995, 1998). One limitation of the study in this regard is its naturalistic design. To more reliably understand the effectiveness of social model programs, health services studies involving the randomization of clients to social model programs (and to clinically-oriented comparison programs) are needed.

Despite the social model's purported emphasis on integrating clients with the recovering community (Barrows, 1998), the social networks of social and medical

model clients were similar at follow-up. This finding runs contrary to expectations, as social model programs historically have strongly emphasized the need for disconnecting from past “wet” people, places, and things, substituting instead AA meetings and friendships. However, this may be a reflection of the lower socioeconomic status and attendant smaller social support systems evidenced at baseline among the social model clients; for example, social model clients came to treatment with smaller social networks and with fewer persons who were against their alcohol and drug use. Perhaps their greater involvement in AA “inoculated” them from those otherwise negative influences, which would be consistent with findings from Project MATCH at the three-year follow-up (Longabaugh et al., 1998). Future research should study qualitatively the ways and extent that social model and other programs work with clients to help them actually change their networks and friends. This is especially important, since in this sample having larger social network support for one’s abstinence was predictive of a lack of alcohol, psychiatric and family problems at follow-up, whereas social networks supportive of using led to a higher likelihood for having psychiatric problems at follow-up. These results add to the accumulating literature regarding the major importance of social networks in extraction from substance abuse lifestyles and problems (Humphreys et al., 1999).

It is worth noting in this context that involvement in AA did not lead to a significant decrease in likelihood of problems in other life areas among our study participants, whereas social networks did. *Thus, both clinical and social model programs should not only stress AA, but also help clients to change their social networks.* This is especially important for those clients who resist attending AA, as they will not benefit from the supportive social networks associated with AA involvement (Kaskutas et al., 2002; Humphreys & Noke, 1997; Longabaugh et al., 1998).

We were not able to replicate the finding reported two decades ago, of better outcomes for women than for men in social model programs (San Diego County Department of Health Services, 1981, 1982, 1983). This may be due to the baseline differences in case mix (neither study was randomized), the difference in our follow-up interval (theirs was 18 months, ours 12 months), or changes in social model treatment associated with the passage of time since the San Diego study (which had begun recruitment in 1978).

In conclusion, after controlling for demographic characteristics and problem severity at baseline, social model program clients were less likely to report alcohol and drug problems at the one-year follow-up interview. This demonstrates an ability on the part of the social model programs to deal with the problems that drug users and poly-substance users bring to treatment; in contrast, the clinical model approach seen today is derived from the 28-day stay, Minnesota model which was developed to treat alcoholics as opposed to drug addicts. The social model clients also were of lower socioeconomic status (based on education and income), and had more severe employment problems and fewer people in their social networks

who were supportive of their abstinence—characteristics that generally prognosticate poor treatment outcome (Edmunds et al., 1997; Finney, 1997; Institute of Medicine, 1990; McLellan et al., 1997). Related, higher severity of drug problems at baseline among social model clients did not significantly affect the presence of drug problems at follow-up, whereas it did for the clinical clients. These results support the hypothesis that social model programs represent a viable alternative to traditional substance abuse treatment approaches for *both* drug and alcohol problems, and for clients with few economic and social resources. As managed care providers search for cost-effective alternatives, this is an important finding, especially given social model's lower costs (Asher et al., 1995; Borkman et al., 1998; Gerstein et al., 1994a, 1994b; San Diego County Department of Health Services, 1981, 1982, 1983) and the likelihood that health care cost containment strategies will continue to erode the extent of medical and clinical services covered. It will be important for researchers to take note of such different modalities, and conduct randomized control trials to replicate this result in a larger sample less subject to self-selection bias and system sorting.

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