Treatment Retention and Outcome Among Cocaine-Dependent Patients With and Without Active Criminal Justice Involvement

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In this study, we examined differences between cocaine- and alcohol-dependent patients with and without active criminal justice involvement. Data were combined from two randomized controlled trials, in which 243 participants were randomly assigned to manual-guided behavioral therapies and medication (either disulfiram or placebo). Fifty-five (23%) participants of the combined sample had active criminal justice involvement, defined as being referred to treatment by a court official or a probation or parole officer. Regarding treatment outcome, there were no significant differences between participants with and without criminal justice involvement with regard to frequency of cocaine or other substance use during the three months of study treatment or the one-year follow-up. Although the criminal justice-referred group had significantly more new arrests during the one-year follow-up, when antisocial personality disorder was utilized as a covariate, there were no significant differences between criminal justice groups in number of arrests at the one-year follow-up. These data suggest that participants with active criminal justice involvement do not necessarily have poorer retention or substance use outcomes than do individuals who are self-referred or referred by other sources when treated in well-defined protocols.

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There is a well-established link between substance use and criminal behavior.[1–6] Many substance users have some form of criminal justice involvement at the time they seek substance abuse treatment.[6] However, little is known about how individuals who are referred to treatment by the criminal justice system differ from those who seek treatment for other reasons (e.g., voluntary clients), in baseline characteristics or treatment outcomes.

The literature is inconclusive regarding how substance abusers with active criminal justice involvement differ from substance users without criminal justice involvement across substance use, legal, medical, employment, and psychiatric characteristics, both in their functioning at the time they present for treatment and how they respond to treatment. Some studies report that there are no differences between clients with and without criminal justice involvement on baseline characteristics and substance abuse treatment outcomes, whereas others suggest there are significant differences in motivation levels, retention, and substance abuse outcomes between individuals who are referred to treatment by the criminal justice system and those who are referred from other venues. The mixed nature of the literature may in part be due to whether the data are derived from program evaluation studies or randomized studies that are not well-controlled clinical trials.[7–12]

Of the program evaluation studies that exist, several report differences between clients with and without criminal justice involvement, in baseline characteristics, motivation to change substance use, and treatment outcomes. For example, Marshall and Hser[7] described differences in baseline characteristics among several groups of individuals receiving community-based substance abuse treatment: clients legally mandated to treatment from the criminal justice system ($n = 124$), clients currently involved with the criminal justice system in which treatment was

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not legally mandated ($n = 77$), and clients who had no criminal justice contact ($n = 364$). The results of this study suggest that the group not mandated by criminal justice and the group with no criminal justice contact were more similar than were the clients who were legally mandated to treatment. For example, both the nonmandated group and the group with no criminal justice contact were more likely than the legally mandated group to have received other treatment in the past year for alcohol or substance abuse. The two nonmandated groups were also more similar to one another than to the mandated treatment group in their drug use profiles. However, although this study utilized a large sample size, it did not use standardized assessments to evaluate drug use, psychiatric disorders, or medical health-related problems, nor did it use objective indicators for detection of alcohol and drug use, all of which may limit the inferences that can be drawn from the data.

In a program evaluation study that assessed motivation levels and substance abuse treatment outcomes, Sinha *et al.*[8] evaluated 434 substance abusers entering treatment at a large, urban outpatient substance abuse treatment facility. Clients were referred by probation and were divided into two groups: young adults (18–25 years) and older adults (26–45 years). The results suggested that the younger probation-referred group had poorer motivation to change substance abuse behavior across a variety of motivation/change readiness subscales than did the older adult group. In addition, a higher percentage of the young adults did not complete outpatient substance abuse treatment and were "drug-positive" at discharge, compared with older probation-referred adults. However, this study was limited in that it did not include biological measures or standardized assessments of outcome.

Only a few randomized studies have evaluated outcomes for substance users with and without criminal justice involvement. Vaughn and colleagues[9] randomized 634 residential and 429 outpatient clients to one of the following three case-management conditions: case managers housed within the drug treatment agency; case managers housed at an independent social service agency; and case managers housed at the project research office. The latter case management condition utilized a telecommunication system to facilitate case-management services. A fourth condition was available to individuals who refused to participate in the study (standard drug treatment with limited case management). Data from this study suggested that criminal justice-referred clients were less likely to participate in the study and were less likely to be retained in treatment than were those not referred from criminal justice.[9] It should be noted that this study also lacked comprehensive diagnostic assessment batteries as well as objective indicators of substance use throughout treatment and follow-up. Moreover, there were variations in level and type of drug treatment that were not specifically addressed in the study (e.g., duration of treatment or use of evidence-based treatments within residential and outpatient facilities) which may have limited the generalizability of the findings.

In another study in which differences in substance abuse treatment outcomes were assessed between clients with and without active criminal justice involvement, Kaskutas and colleagues[10] studied a community sample of 271 adults (179 men) who were alcohol and/or drug dependent and randomized to either a medical day treatment program or a nonmedical, community-based treatment program. The findings of this study suggest that clients with criminal justice involvement had poorer substance abuse treatment outcomes than those not involved in the criminal justice system. For example, only 40 percent of the clients with criminal justice involvement were alcohol free at follow-up compared with 53 percent of the non-criminal justice clients in day hospitals and 60 percent of the non-criminal justice clients in community-based programs.

Another type of research with the criminal justice population, but still within the program evaluation domain, involves assessing very large sample sizes from national treatment surveys. Data from this type of study have suggested that retention and substance use outcomes may in fact be more favorable for individuals referred by the legal system compared with voluntary clients. For example, Hiller and colleagues[11] examined the association between legal pressure and treatment retention in a national sample of 2,605 clients admitted to 18 long-term residential facilities that participated in the Drug Abuse Treatment Outcome Study (DATOS). The results suggested that substance-abusing individuals in treatment with a moderate to high level of legal pressure remained in treatment significantly longer than those with little or no legal pressure. Furthermore, longer stays in treatment have been found to be as-

sociated with lower levels of drug use and criminal activity.[12]

To sum up, there are conflicting findings in the literature regarding differences in treatment outcome between substance-abusing clients with and without criminal justice involvement. Few studies have assessed differences between criminal justice and non-criminal justice clients in the context of well-controlled clinical trials. In fact, data from this type of research may be particularly important when trying to understand the relationship between criminal justice involvement and response to treatment because treatment duration, the nature of the treatment, and treatment outcomes are better defined and standardized. As already noted, much of the existing literature on differences between criminal justice and voluntary clients has been based on program evaluation and/or survey studies where the treatment content is not well defined, length of treatments are variable, client selection is unspecified, and there is often a lack of standardized comprehensive assessments to collect data. Furthermore, in well-controlled clinical trials, collection of key outcomes such as self-reported substance use and urine toxicology results are protected and hence independent from outcomes reported back to the criminal justice system, whereas in uncontrolled surveys, the studies may not protect the confidentiality of substance use data and participants may be motivated to misrepresent their outcomes.

Using data drawn from two randomized, controlled clinical trials evaluating behavioral treatments and pharmacotherapies for cocaine dependence,[13,14] we evaluated differences in baseline characteristics and treatment outcomes for participants with active criminal justice involvement (monitored by probation, parole or court) compared with participants without active criminal justice involvement. The following research questions were addressed: (1) Do participants with and without current criminal justice involvement differ in baseline characteristics in severity of substance use and legal problems? (2) Do the two groups differ in their motivation to change substance abuse before and after treatment? (3) Do the two groups differ in substance use outcomes (e.g., frequency of cocaine or other substance use) or in their response to specific treatment approaches? (4) Do the two groups differ in substance abuse outcomes during the one-year follow-up?

Methods

The two randomized outpatient clinical trials[13,14] from which data were combined for this report shared a number of methodological features. Both offered 12 weeks of manual-guided individual behavioral therapy; identical inclusion and exclusion criteria; random assignment to study treatments; use of psychotherapy manuals for all conditions; delivery of treatments by doctoral-level clinicians who received extensive training and ongoing supervision; assessment of outcome by independent evaluators who were blind to the participant's treatment assignment[15]; verification of patients' self-reported substance use by urine toxicology screening and breathalyzer analysis; evaluation of medication compliance by riboflavin testing; use of standardized assessment instruments; independent evaluation of therapists' adherence and competence[16,17]; and one-year follow-ups after the termination of the study treatments.[18,19]

Participants in both studies were recruited from the same outpatient treatment facility in New Haven, Connecticut, and from the general population, by public service announcements and newspaper advertisements. The Institutional Review Board of Yale University School of Medicine gave approval for both studies, and all participants provided written, informed consent. Individuals were included who met current criteria for cocaine dependence, were appropriate for outpatient treatment, and were at least 18 years of age. Individuals were excluded who were physically dependent on substances other than cocaine or alcohol, met lifetime criteria for a schizophrenic or bipolar disorder, or were determined by a physician to have a physical problem that contraindicated disulfiram treatment. Thus, participants were not screened out of either study due to any type of criminal justice involvement. Fifty-five clients (23% of the 243 in both studies combined) had criminal justice involvement (defined as having been referred to treatment by court, probation, or parole officers at the time of the pretreatment assessment). It is important to note that the court and probation referrals were not part of a legal stipulation or mandate. This study did not receive any documentation that stated clients were stipulated or mandated to treatment. They were on probation or had a court case pending at the time they were referred to treatment.

Overview of Study 1

A total of 122 individuals who met the criteria for both cocaine dependence and alcohol abuse or dependence were randomly assigned to one of five treatment conditions: cognitive behavioral treatment plus disulfiram, 12-step treatment plus disulfiram, clinical management plus disulfiram, cognitive behavioral therapy plus no medication, and 12-step treatment plus no medication.[13] Rates of retention were significantly higher for participants who received disulfiram than for individuals not taking the medication. In the main phase of the study, the two active psychotherapies (e.g., cognitive behavioral and 12-step) were associated with significant reductions in cocaine use over time compared with clinical management. Disulfiram treatment was associated with significantly better retention in treatment, as well as with longer duration of abstinence from both cocaine and alcohol use.

Overview of Study 2

A total of 121 individuals who met the criteria for cocaine dependence were randomly assigned to one of five treatment conditions: cognitive behavioral treatment plus disulfiram, interpersonal treatment plus disulfiram, cognitive therapy plus placebo, interpersonal therapy plus placebo.[14] Participants who received disulfiram reduced their cocaine use significantly more than those individuals assigned to the placebo condition, and those assigned to cognitive behavioral therapy reduced their cocaine use significantly more than those assigned to the interpersonal therapy condition.

Assessments

For both studies, primary measures for evaluating the effectiveness of treatment were percentage of days abstinent from cocaine and alcohol use, which was assessed through self-report and urine toxicology screens. Participants were assessed at baseline, weekly during the course of treatment, and monthly for up to 1 year after the completion of treatment (overall 12-month follow-up rates were 79% and 80% for Studies 1 and 2, respectively). Severity of substance use and legal problems were measured by composite scores of the Addiction Severity Index (ASI).[20] Higher scores on the ASI (e.g., approaching 1.0) indicate greater severity of problems. Diagnoses were obtained at baseline by using the Structured Clinical Interview (SCID) using DSM-IV criteria.[21,22] Motivation to change scores was assessed by using the six scales (precontemplation, contemplation, action, maintenance, pure action, and readiness) of the University of Rhode Island Change Assessment (URICA).[23] Higher scores on precontemplation indicate lower motivation to change. Higher scores on contemplation, action, maintenance, pure action, and readiness indicate higher motivation to change substance abuse behavior.

Data Analyses

Group differences in demographics, substance use, and legal variables were analyzed using analysis of variance (ANOVA) models for continuous variables and the chi-square test for categorical variables. To measure change in quantity and frequency of alcohol and cocaine use as well as change in number of new arrests and convictions, repeated-measures multivariate analysis of variance (MANOVA) were conducted on continuous variables (e.g., URICA, motivation to change substance use from before to after treatment).

Results

Were Study Participants Referred by the Criminal Justice System Different at Baseline From Voluntary Participants?

Of the 243 participants in the two studies, 73 percent were male, 48 percent were employed, and 40 percent were high school graduates; 51 percent were European American, 44 percent were African American, and 5 percent were Hispanic. The mean age of the sample was 32.6 years. Fifty-two percent met DSM-IV criteria for alcohol abuse; 48 percent met criteria for a lifetime diagnosis of alcohol dependence. Table 1 presents baseline variables by criminal justice status. Overall, there were few significant differences between the criminal justice and voluntary participants across most demographic variables, including age, race, gender, current employment, or occupation. However, there was a significant difference between the two groups on educational level; the criminal justice group was significantly less likely to have graduated from high school than was the voluntary group ($\chi^2(2,241) = 7.76$, $p < .021$). As would be expected, the criminal justice group had significantly higher rates of antisocial personality disorder ($\chi^2(1,241) = 3.9$, $p < .047$), as well as significantly higher scores on the ASI legal composite scores ($F(1,239) = 18.2$, $p < .000$), total number of arrests during their lifetimes ($F(1,237) =$

Table 1 Baseline Differences Between Cocaine Users With and Without Criminal Justice Involvement

Variable	No Criminal Justice Involvement (n = 188)	Criminal Justice Involvement (n = 55)	χ^2/F	p
A Baseline Differences Across Demographic and Psychiatric Characteristics				
Age, mean (SD) years	33.05 ± 6.60	31.18 ± 6.30	3.46	.06
Race, % (n)				
African American	42.5 (79)	47.3 (26)	5.45	.14
Hispanic	3.2 (6)	9.1 (5)		
White	53.8 (100)	41.8 (23)		
Male, % (n)	71.5 (133)	78.2 (43)	0.96	.33
Employed, %	51.1 (95)	40.0 (22)	2.08	.15
Married/cohabiting, %	21 (39)	12.7 (7)	1.87	.17
Education level, %				
High school, college or more	78.5 (68)	60 (14)	7.76	.02
Less than high school grad	21.5 (40)	40 (22)		
Lifetime psychiatric disorder, n (%)				
Alcohol dependence	51.1 (90)	35.3 (18)	3.98	.05
Antisocial personality disorder	38.7 (55)	55.8 (24)	3.94	.05
Any depressive disorder	25.1 (20)	27.1 (6.5)	2.97	.36
Any anxiety disorder	2.1 (4)	2.4 (1)	0.58	.45
B Baseline Differences Across Substance Abuse Characteristics				
Previous outpatient treatment	.83 ± 2.62	.75 ± 1.31	0.05	.83
Previous inpatient treatment	.61 ± 1.27	.94 ± 1.79	2.23	.14
Pretreatment drug use, mean (SD) days in past 28				
Cocaine	13.32 ± 8.38	14.40 ± 8.91	0.69	.40
Marijuana	3.50 ± 7.48	3.65 ± 7.17	0.94	.90
Alcohol	8.05 ± 12.92	5.81 ± 7.90	1.47	.23
Years of drug use, mean (SD)				
Cocaine	8.91 ± 5.92	9.29 ± 7.01	0.16	.69
Marijuana	8.45 ± 7.04	9.18 ± 7.15	0.41	.52
Alcohol	13.37 ± 7.82	11.22 ± 6.61	3.41	.07
ASI composite scores				
Medical	.11 ± .21	.08 ± .18	0.99	.32
Legal	.07 ± .15	.18 ± .23	18.21	.00
Alcohol	.25 ± .29	.37 ± .37	6.64	.01
Drug	.37 ± 34	.35 ± .32	0.23	.63
Employment	.54 ± .30	.67 ± .25	9.13	.00
Family	.22 ± .17	.25 ± .19	1.05	.31
Psychiatric	.20 ± .20	.20 ± .18	0.02	.90
Total time in jail or prison	4.70 ± 17.53	9.30 ± 19.20	2.75	.10
Number of arrests	5.94 ± 14.31	13.23 ± 20.21	8.97	.00
Number of convictions	1.62 ± 3.22	3.18 ± 4.09	17.38	.00

9.0, $p < .003$), and total number of convictions ($F(1,237) = 17.4, p < .000$).

Regarding substance use and psychiatric characteristics, there were no significant differences between the two groups regarding a history of substance abuse or psychiatric treatment, frequency of cocaine use, alcohol or other drug use at baseline, or years of regular drug use. There were also no significant differences between the two groups regarding rates of current or lifetime DSM-IV affective or anxiety disorders. The group referred by the criminal justice system was significantly less likely to have a lifetime diagnosis of alcohol dependence ($\chi^2(1,239) = 4.00, p < .046$) than was the voluntary group, as well as significantly lower ASI alcohol ($F(1,239) = 6.4$, $p < .011$) and employment composite scores ($F(1,239) = 9.1, p < .003$).

Do the Criminal Justice and Voluntary Groups Differ in Their Motivation to Change Substance Use?

As shown in Table 2, there were no significant differences between the two groups at baseline on any URICA Scale. There was a significant time effect independent of group assignment across the precontemplation ($F(1,120) = 3.81, p < .05$), contempla-

Table 2 Motivation Scores Before and After Treatment by Treatment Group

	No Criminal Justice Involvement (Mean)	Criminal Justice Involvement (Mean)		Time	Time × Group	Group
Precontemplation	$n = 92$	$n = 28$				
Baseline	2.4	2.5	F	3.81	0.27	0.37
Post Tx	2.5	2.7	p	0.05	0.60	0.56
Contemplation	$n = 92$	$n = 28$				
Baseline	3.56	3.37	F	5.54	1.10	0.86
Post Tx	3.47	3.13	p	0.02	0.30	0.36
Action	$n = 93$	$n = 28$				
Baseline	3.4	3.34	F	1.62	2.60	0.41
Post Tx	3.41	3.13	p	0.20	0.11	0.52
Maintenance	$n = 92$	$n = 28$				
Baseline	3.35	3.24	F	2.08	1.96	1.44
Post Tx	3.35	3.03	p	0.15	0.16	0.23
Pure action	$n = 92$	$n = 28$				
Baseline	0.05	0.1	F	0.05	0.00	0.04
Post Tx	0.08	0.1	p	0.83	0.94	0.84
Readiness	$n = 90$	$n = 28$				
Baseline	8.03	7.45	F	7.32	2.39	0.94
Post Tx	7.8	6.6	p	0.01	0.12	0.33

Higher scores on precontemplation indicate lower motivation to change. Higher scores on contemplation, action, maintenance, pure action, and readiness indicate higher motivation to change substance abuse behavior. It is also important to note that the *n* changes per variable due to unequal numbers of subjects per cell. Tx, treatment

tion ($F(1,120) = 5.54$, $p < .02$), and readiness ($F(1,118) = 7.32$, $p < .01$) scales, indicating increases in motivation across time. However, there were no group × time interactions; that is, the two groups reported comparable levels of motivation at posttreatment.

Do Individuals Referred by the Criminal Justice System Differ From Voluntary Referrals in Treatment Outcome?

As shown in Table 3, the two groups did not differ in retention of treatment or compliance with study medication. Moreover, there were no differences between the two groups in any primary substance use outcomes, including frequency of cocaine or alcohol use during treatment. There were also no significant differences in number of arrests during treatment.

Overall, subjects on medication had fewer days of alcohol use during treatment ($F = 4.81$, $p < .05$), with subjects on probation/parole having the fewest days of alcohol use while on disulfiram (1.4 days) compared with subjects on probation/parole who were not on medication (7.1 days, interaction of legal status and medication, $F = 5.54$, $p < .05$).

There were no medication effects or differences in frequency of self-reported cocaine use by legal status, and there was no significant interaction of legal status and medication on the percentage of total cocaine-

Table 3 Treatment Outcome by Group

Variables	No Criminal Justice Involvement ($n = 188$)	Criminal Justice Involvement ($n = 55$)	Total ($n = 243$)	F	p
Primary outcomes, mean ± SD					
Number of sessions attended	7.66 ± 5.07	7.61 ± 5.0	7.65 ± 5.02	0.00	.96
Days in treatment	46.5 ± 34	50 ± 33.5	47.3 ± 33.8	0.41	.52
Percentage days of alcohol abstinence	88.8 ± 19.98	92.7 ± 12.40	89.6 ± 18.6	1.56	.21
Percentage days of cocaine abstinence	42.92 ± 44.05	42.26 ± 43.84	42.78 ± 43.90	0.01	.93
Days of alcohol use	4.2 ± 7.50	4.22 ± 7.07	4.20 ± 7.39	0.00	.98
Days of cocaine use	7.51 ± 11.65	9.42 ± 10.85	7.93 ± 11.48	0.97	.33
Secondary outcomes-90 days in treatment mean ± SD					
Days employed	39.37 ± 27.31	30.90 ± 25.32	37.49 ± 27.02	2.32	.13
Days of family conflict	4.36 ± 9.58	5.10 ± 9.31	4.53 ± 9.49	0.14	.71

Table 4 One-Year Follow-up Outcome by Group

Variables	No Criminal Justice Involvement (n = 133)	Criminal Justice Involvement (n = 38)	Total (n = 171)	F	p
Total number of days used cocaine, mean ± SD	77.1 ± 82.7	56.7 ± 71.3	72.43 ± 80.5	1.96	0.17
Total number of days used alcohol, mean ± SD	66.3 ± 68.0	88.2 ± 80.1	71.3 ± 71.3	2.89	0.09
Total number of arrests, mean ± SD	0.24 ± 0.61	0.50 ± 0.83	0.30 ± 0.67	4.18	0.04
Total number of days spent in prison, mean ± SD	6.73 ± 34.9	15.23 ± 40.2	8.7 ± 36.2	1.62	0.21

negative urine specimens during treatment between subjects with criminal justice involvement and the voluntary patients ($F = 2.43$, $p < .12$).

Were There Differences Between the Two Groups During the One-Year Follow-Up?

As shown in Table 4, there were no significant differences between the two groups in frequency of cocaine or alcohol use over the one-year follow-up. There were, however, statistically significant differences in number of arrests in the year following the termination of study treatments ($F(1,168) = 4.9$, $p < .028$). However, when antisocial personality disorder was utilized as a covariate in the analysis, there were no significant differences between criminal justice groups in number of arrests at the one-year follow-up ($F(1,111) = 0.50$, $p < .44$).

Discussion

We evaluated differences between alcohol- and cocaine-dependent clients, with and without active criminal justice involvement before the initiation of treatment, during treatment, and throughout a one-year follow-up. Major findings were as follows: first, there were few baseline differences between the groups beyond differences that would be expected because of past criminal involvement (e.g., legal problems, ASI employment composites, diagnoses of antisocial personality disorder). There were, however, differences between the groups in current alcohol use. Second, there were no significant differences between groups in motivation as assessed by the URICA, either before or after treatment. Third, there was very little evidence of any significant difference in treatment adherence and outcome between the groups. The groups were comparable in retention in treatment, compliance with medication, and substance use outcome variables during treatment. Fourth, there were no significant differences between the two groups at the one-year follow-up in substance use or criminal justice involvement, when antisocial personality disorder was used as a covariate.

It is striking that, despite the large number of variables assessed, there were few significant differences between groups (other than legal status at baseline). The few baseline differences between groups that were observed in the criminal justice groups are consistent with baseline characteristics among drug court and prisoner populations.[1–6] In many of the drug diversion and prison release treatment studies, clients are often unemployed, are actively using substances, and are experiencing legal problems at the time they seek treatment.[5,24] Other investigators[25] report that drug-dependent offenders do not inevitably produce worse substance abuse treatment outcomes than do individuals in voluntary treatment, and, in addition, they report that individuals within the criminal justice population may be in various stages of the criminal justice process with different types of offenders. In our study, it is possible that we did not observe differences between the criminal justice and voluntary groups because participants in the active criminal justice group had more heterogeneous legal problems.

Second, there were no significant differences between groups in motivation levels. Hence, our findings were not consistent with those in other studies[7–10,26] that have reported that criminal justice clients have lower levels of motivation. Some researchers reported that mandated clients were less likely than nonmandated clients to recognize a need for treatment,[8,9] and reported both poorer motivation to change[8] and poorer substance abuse treatment outcomes.[8,9] Again, however, it is important to note that those findings were not based on well-controlled randomized studies, but rather, program evaluation studies. One explanation for our findings is that the active criminal justice group may simply have had different motivations to change their behavior than did the voluntary group. That is, regardless of the nature of a specific motivator (e.g., legal, financial, and/or family problems), any of these may be adequate to affect an individual's stated willingness to change substance use.

Third, there was very little evidence of any significant difference in treatment process and outcome between the groups. They were comparable in retention in treatment, compliance with medication, and substance use outcome variables during treatment, including those based on analyses of urine specimens which were collected weekly during treatment. Our results differed from those of Kaskutas and colleagues[10] in that the criminal justice clients in their study had a lower percentage of alcohol-free individuals at follow-up than did other noncriminal justice clients in day hospital and community-based programs. Our findings suggest that both the criminal justice and voluntary groups do not respond differently to the therapies evaluated here. This underscores that what brings someone into treatment is less important than that the person comes for treatment. Although these researchers postulate that legal pressure and length of treatment are variables related to positive treatment outcome, it was difficult to discern whether their study utilized methodology that described the duration and nature of the treatments. Our study was a well-controlled, randomized clinical trial that utilized evidenced-based, manualized psychotherapies designed to target and treat substance abuse.

An interesting and unexpected finding was that the criminal justice group had significantly more alcohol abstinence while on disulfiram than did voluntary clients on disulfiram. A possible explanation for this finding is that the individuals in the active criminal justice group had significantly higher alcohol-related problems at baseline (e.g., higher alcohol ASI composite scores), and hence, disulfiram was more effective for the criminal justice clients. In general, disulfiram treatment has been associated with significantly longer durations of cocaine and alcohol abstinence during treatment, regardless of criminal justice involvement.[13,14]

Fourth, it was striking that there were no differences between the groups through the one-year follow-up, as the legal pressure to change behavior was significantly reduced for most participants in the criminal justice group during this time (e.g., the criminal justice participants had completed their substance abuse treatment). This suggests that other intrinsic motivators were being utilized by the participants in the criminal justice group. Moreover, the substance abuse treatment outcomes seen here were also consistent with Ouimette and colleagues',[27] Kelly and colleagues',[28] and Hubbard and colleagues'[2] research on long-term follow-ups in the Drug Abuse Treatment Outcome Studies (DATOS), in that all studies showed stability of positive substance abuse treatment outcomes at the one-year posttreatment follow-up. However, the finding that the criminal justice group had significantly more new arrests at the one-year follow-up may be a function of the untreated legal problems that were present at baseline (e.g., legal problems related to drug use: disorderly conduct, driving under the influence, possession of narcotics). The focus of the treatment study was primarily designed to target maladaptive substance abuse behavior, which did improve.

The finding that the criminal justice group had significantly more new arrests at the one-year follow-up than did the voluntary clients could be related to the fact that significantly more participants in this group had a diagnosis of antisocial personality disorder. This disorder has been linked to criminality[29–32] independent of co-occurring substance abuse. Individuals with co-occurring antisocial personality disorder have higher rates of legal recidivism shortly after they are released from prison-based facilities.[32] It is possible that individuals within the active criminal justice group who had co-occurring antisocial personality disorder had various levels of legal history (e.g., felony offenses, violent offenses, or unresolved/pending court cases) within the criminal justice system and hence were more likely to be re-arrested. The drug court studies of Marlowe et al.[33] suggest that clients with antisocial personality disorder (e.g., high-risk offenders) had better outcomes with more intensive monitoring within the criminal justice system. It should be noted that in our study, after adjustment for antisocial personality disorder (e.g., using antisocial personality disorder as a covariate), the differences between groups in number of new arrests at the one-year follow-up were no longer significant, which suggests that antisocial personality disorder contributes to the differences observed in number of new arrests during the one-year follow-up.

This study had limitations that should be noted. First, it focused on cocaine users who agreed to participate in a clinical trial, and hence it is not clear whether these findings would apply to individuals who would refuse to participate in clinical trials or fail to meet inclusion/exclusion criteria (although there was no evidence that individuals with criminal justice involvement were more likely to refuse to participate or were screened out during the evaluation

process). Second, although this is the first study of its kind, and we increased statistical power by combining data from two parallel studies, the sample size was limited. Third, the data presented are correlational, and criminal justice involvement was not a stratification variable in the trials; hence, other variables that may be associated with criminal justice involvement may be reflected in some of these findings.

Nevertheless, this study may have important implications for treating drug users referred to treatment by the criminal justice system. Our data suggest that such individuals, despite their being treated involuntarily, may have rates of retention and substance use outcomes that are comparable with those of individuals who seek treatment voluntarily, at least when provided with empirically supported, well-structured treatments. Hence, our findings suggest that individuals referred by the criminal justice system and voluntary clients tend not to respond differently to empirically supported therapies and our findings argue against the need for specialized programs for the former group of individuals.

References

1. Sinha R, Easton C: Substance abuse and criminality. J Am Acad Psychiatry Law 27:513–26, 1999
2. Hubbard RL, Craddock SG, Anderson J: Overview of 5-year follow-up outcomes in the Drug Abuse Treatment Outcome Studies (DATOS). J Subst Abuse Treat 25:125–34, 2003
3. Flynn PM, Kristiansen PL, Porto JV, *et al*: Costs and benefits of treatment for cocaine addiction in DATOS. Drug Alcohol Depend 57:167–74, 1999
4. French MT, Zarkin GA, Hubbard RL, *et al*: The effects of time in drug abuse treatment and employment on posttreatment drug use and criminal activity. Am J Drug Alcohol Abuse 19:19–33, 1993
5. Kemp K, Savitz B, Thompson W, *et al*: Developing employment services for criminal justice clients enrolled in drug user treatment programs. Subst Use Misuse 39:2491–511, 2004
6. Marlowe DB: Integrating substance abuse treatment and criminal justice supervision. National Institute on Drug Abuse 2:4–17, 2003
7. Marshall GN, Hser YI: Characteristics of criminal justice and noncriminal justice clients receiving treatment for substance abuse. Addict Behav 27:179–92, 2002
8. Sinha R, Easton C, Kemp K: Substance abusing treatment characteristics of probation-referred young adults entering a community-based outpatient program. Am J Drug Alcohol Abuse 29: 585–97, 2003
9. Vaughn T, Sarrazin MV, Saleh SS, *et al*: Participation and retention in drug abuse treatment services research. J Subst Abuse Treat 4:387–97, 2002
10. Kaskutas LA, Witbrodt J, French MT: Outcomes and costs of day hospital treatment and nonmedical day treatment for chemical dependency. J Stud Alcohol 65:371–82, 2004
11. Hiller ML, Knight K, Broome KM, *et al*: Legal pressure and treatment retention in a national sample of long-term residential programs. Crim Just Behav 25:463–81, 1998
12. Anglin MD, Hser YI: Crime and justice: a review of research. Treat Drug Abuse 13:393–460, 1990
13. Carroll KM, Nich C, Ball SA, *et al*: Treatment of cocaine and alcohol dependence with psychotherapy and disulfiram. Addiction 93:713–27, 1998
14. Carroll KM, Fenton LR, Ball SA, *et al*: Efficacy of disulfiram and cognitive behavior therapy in cocaine-dependent outpatients: a randomized placebo-controlled trial. Arch Gen Psychiatry 61: 264–72, 2004
15. Carroll KM, Rounsaville BJ, Nich C: Blind man's bluff: effectiveness and significance of psychotherapy and pharmacotherapy blinding procedures in a clinical trial. J Consult Clin Psychol 62:276–80, 1994
16. Carroll KM, Nich C, Rounsaville BJ: Use of observer and therapist ratings to monitor delivery of coping skills treatment for cocaine abusers: utility of therapist session checklists. Psychitry Res 8:307–20, 1998
17. Carroll KM, Nich C, Sifrey R, *et al*: A general system for evaluating therapist adherence and competence in psychotherapy research in the addictions. Drug Alcohol Depend 57:225–38, 2000
18. Carroll KM, Nich C, Ball SA, *et al*: One year follow-up of disulfiram and psychotherapy for cocaine-alcohol abusers: sustained effects of treatment. Addiction 95:1335–49, 2000
19. Carroll KM, Rounsaville BJ, Nich C, *et al*: One-year follow-up of psychotherapy and pharmacotherapy for cocaine dependence: delayed emergence of psychotherapy effects. Arch Gen Psychiatry 51:989–97, 1994
20. McLellan AT, Kushner H, Metzger D, *et al*: The fifth edition of the Addiction Severity Index. J Subst Abuse Treat 9:199–213, 1992
21. First MB, Spitzer RL, Gibbon M, *et al*: Structured Clinical Interview for DSM-IV, Patient Edition. Washington, DC: American Psychiatric Press, 1995
22. Kessler RC, McGonagle KA, Zhao S, *et al*: Lifetime and 12-month prevalence of DSM–III–R psychiatric disorders in the United States: results from the National Comorbidity Survey. Arch Gen Psychiatry 51:8–19, 1992
23. DiClemente CC, Hughes SO: Stages of change profiles in alcoholism treatment. J Subst Abuse 2:217–35, 1990
24. Kemp K, Savitz B, Thompson WH: Employment services for criminal justice clients. Subst Use Misuse 39:2637–8, 2004
25. Stevens A, Berto D, Heckmann W, *et al*: Quasi-compulsory treatment of drug dependent offenders: an international literature review. Subst Use Misuse 40:269–83, 2005
26. Kline A: Profiles of criminal-justice clients in drug treatment: implications for intervention. Addict Behav 22:263–8, 1997
27. Ouimette PC, Finney JW, Moos R: Twelve-step and cognitive-behavioral treatment for substance abuse: a comparison of treatment effectiveness. J Consult Clin Psychol 65:230–40, 1997
28. Kelly JF, Finney JW, Moos R: Substance use disorder patients who are mandated to treatment: characteristics, treatment process, and 1- and 5-year outcomes. J Subst Abuse Treat 28:213–23, 2005
29. Robins LN, Reiger DA: Antisocial Personality Disorder. Edited by Rutherford MJ, Alterman AI, Cacciola JS, *et al*. New York: Free Press, 1990, pp 258–90
30. Moran P: Antisocial Personality Disorder: An Epidemiological Perspective. London: Gaskell, 1999
31. Hernandez-Avila CA, Burleson JA, Poling J, *et al*: Personality and substance use disorders as predictors of criminality. Compr Psychiatry 41:276–83, 2000
32. Harris GT, Rice ME, Cormier CA: Psychopathy and recidivism. Law Hum Behav 15:625–37, 1991
33. Marlowe DB, Festinger DS, Lee PA: The judge is a key component of drug court. Natl Drug Court Inst Rev 4:1–34, 2004