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## Does Mandating Offenders to Treatment Improve Completion Rates?

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### Abstract

While it is known that community-based outpatient treatment for substance abusing offenders is effective, treatment completion rates are low and much of the prior research has been conducted with offenders in residential treatment or therapeutic communities. The aim of the present study was to assess whether offenders who are mandated to community-based outpatient treatment have better completion rates compared to those who enter treatment voluntarily. The 160 research participants were a heterogeneous group of substance abusers who were under various levels of criminal justice supervision (CJS) in the community. The participants were enrolled in an intensive outpatient program and were recruited into the study between July 2007 and October 2010. All offenders received weekly therapy sessions using a cognitive problem solving framework and 45% completed the six month treatment program. Interestingly, those who were mandated demonstrated less motivation at treatment entry, yet were more likely to complete treatment compared to those who were not court-ordered to treatment. While controlling for covariates known to be related to treatment completion, the logistic regression analyses demonstrated that court-ordered offenders were over ten times more likely to complete treatment compared to those who entered treatment voluntarily (OR = 10.9, CI = 2.0–59.1,  $p = .006$ ). These findings demonstrate that stipulated treatment for offenders may be an effective way to increase treatment compliance.

### Keywords

Treatment completion; criminal justice; offenders; substance abusers

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## 1. Introduction

### 1.1 The Problem

Despite the well-established link between crime and substance abuse, many offenders do not receive treatment (Mumola & Karberg, 2006), or once enrolled, do not complete treatment (Longshore et al., 2004; Zanis et al., 2009). Over 50% of offenders in US prisons and jails have a substance use disorder (James & Glaze, 2006) and nearly two-thirds will be re-arrested within 36 months of release (Mumola & Karberg, 2006). A study conducted by the Urban Institute found that eight to ten months after release, about one-third of former prisoners reported recent substance use, and those with a history of substance abuse prior to incarceration were more likely to engage in substance use after release (RWJF, 2009).

### 1.2 Completing Treatment Improves Outcomes

Community-based outpatient treatment for substance abusers who are under criminal justice supervision has been shown to be effective (Belenko, 2001; MacKenzie, 1997; Sinha et al., 2003). Moreover, research has consistently demonstrated that substance abusers who stay in treatment longer have less subsequent drug use and commit fewer crimes (Brewer et al., 1998; De Leon, 1984; French et al., 1993; Simpson, 1981) and that treatment lasting at least 90 days is necessary to show a significant reduction in drug use and promote effective and lasting change (Hser et al., 2001; Hubbard et al., 1989; Simpson et al., 1997a). However, only about one-third of offenders complete treatment (Longshore et al., 2004; Zanis et al., 2009), with 20% of non-completers dropping out within 30 days, resulting in probation/parole violations and potential re-incarceration (Evans et al., 2009).

### 1.3. Mandated versus Voluntary Treatment

Prior research has shown that mandated clients have lower motivation for change (Hartford et al., 1976) and internally motivated individuals are more likely to experience long-term behavior change (Deci & Ryan, 1985). However, more recent studies show that treatment does not need to be voluntary to be effective. For example, research has demonstrated that substance abusers who are court ordered to treatment did as well as or better than those who entered voluntarily (Brecht et al., 1993; Farabee et al., 1998; Hiller et al., 1998; Kelly et al., 2005; Martin et al., 2003).

Kelly et al. (2005) examined a large sample of veterans in residential treatment and found that while mandated patients had lower motivation for change, they showed similar levels of therapeutic change during treatment as voluntary patients. In addition, mandated patients had better treatment outcomes after one year and similar outcomes after five years compared to voluntary patients. In analyzing data from the Drug Abuse Treatment Outcome Study (DATOS), Hiller et al. (1998) found that patients who entered residential treatment with moderate to high legal pressure were significantly more likely to stay in treatment 90 days or more compared to those with low legal pressure. In another study conducted with a small sample ( $N = 41$ ) of alcoholics, treatment attendance rates for participants who were legally mandated to disulfiram therapy were double the rates of those who were not mandated (Marten et al., 2003).

It should be noted that even offenders who enter treatment voluntarily may face pressure from family, friends or employers to comply with treatment. Court-mandated offenders may also feel coercion from these other sources. However, the purpose of this paper is to evaluate whether legal pressure can influence completion rates.

#### 1.4. Other Variables Related to Treatment Completion

A number of variables have been associated with drug treatment completion among offenders. Offenders who possess a higher degree of self-efficacy to avoid drug use (Bahr et al., 2010; Hiller et al., 1999), more internal motivation to remain drug-free (De Leon et al., 2000; De Leon & Jainchill, 1986; Evans et al., 2009; Lang & Belenko, 2000; Simpson et al., 1997b), and a greater degree of social support (Bahr et al. 2010; Lang & Belenko, 2000; Sung et al., 2004) tend to have better outcomes. Younger offenders (Hiller et al., 1998; Huebner & Cobbina, 2007; Sung et al, 2004; Zanis et al., 2009) and those with more severe employment problems (Brown, 2010; Brown et al., 2011; Evans et al., 2009), lower educational attainment (Brown, 2010; Brown et al., 2011; Huebner & Cobbina, 2007), more extensive criminal histories (Evans et al., 2009; Huebner & Cobbina, 2007), and co-occurring psychological disorders (Evans et al., 2009; Lang & Belenko, 2000; Brocato & Wagner, 2008), particularly antisocial personality disorder (ASPD) (Alterman et al., 1998a), are less likely to complete drug treatment and return to drug use and criminal behavior. Race/ethnicity was related to treatment completion in some studies (Hiller et al., 1998; Huebner & Cobbina, 2007; Knight et al., 2001), but was not significant in other studies (Pelissier, 2004). While some studies have found that heroin abusers were less likely to complete treatment (Evans et al., 2009; Zanis et al., 2009), other researchers have found that offenders with cocaine use disorders (Brown, 2010; Joe et al., 1999) or whose primary drug was marijuana (Brocato & Wagner, 2008) were more likely drop out of treatment. These other variables will be used as covariates in the analyses in order to assess the independent influence of treatment mandate on offender completion rates.

#### 1.5. Gaps in Prior Research

Much of the prior larger clinical trials examining whether mandating drug treatment is effective have focused on offenders attending treatment in residential programs or therapeutic communities (Brocato & Wagner, 2008; Daughters et al., 2008; Sung et al, 2004). However, the majority of offenders with substance abuse disorders attend outpatient treatment (Evans et al., 2009) and can be under various levels of supervision in the community (BJS, 2010). In addition, with the exception of a few studies (e.g., Kelly et al., 2005), prior research has not compared those who are under legal supervision such as parole, but not mandated to treatment, to those who are court-ordered. Typically, studies have compared court-ordered substance abusing offenders to non-offenders who enter treatment voluntarily. Thus, the findings from prior studies may not be generalizable to typical offenders enrolled in outpatient treatment programs.

#### 1.6. Study Aim

The aim of the present study is to assess whether court-ordered treatment results in better completion rates compared to voluntary treatment among a broader treatment population that includes a heterogeneous sample of offenders who attend a community-based drug-free outpatient program. The study is a secondary analysis of data from a trial evaluating an employment intervention for offenders. While most of the offenders were mandated (82%), 18% entered treatment voluntarily. The offenders were under various levels of criminal justice supervision including county probation/parole, state parole, a drug court, and other diversion programs that offered alternatives to incarceration or early parole. Typically, the level of supervision determines whether an offender was mandated to treatment. For example, a drug court client is always mandated to treatment, whereas, an offender on probation or parole may or may not be mandated. In addition, those who are enrolled in drug court have more frequent urine drug screens and are monitored much more closely by the criminal justice system compared to someone on probation or parole. Thus, while the study is examining the effect of treatment mandate on completion rates, it should be noted that mandate is highly correlated with level of community supervision.

The research question proposed by this study is whether offenders court mandated to outpatient treatment have better completion rates compared to those who enter voluntarily when other variables related to treatment completion are controlled. While characteristics such as age and race are obviously not changeable, and even social supports and self-efficacy are not easily amenable to external intervention, mandating offenders to drug treatment is something that the criminal justice system can implement in cooperation with drug treatment programs. Understanding whether treatment mandate improves completion rates among a heterogeneous sample of substance abusing offenders is important since treatment completion is strongly associated with substantial reductions in criminal recidivism (Mitchel et al, 2006; Welsh, 2007).

## 2. Materials and Methods

### 2.1 Research Participants

The study is a secondary analysis of data that was collected during a trial that assessed the efficacy of an employment intervention for offenders. The participants in this trial were 160 offenders who were newly enrolled in a drug-free community-based outpatient program and participating in this employment study. All participants met American Society of Addiction Medicine (ASAM) criteria for intensive outpatient treatment (IOP) and were required to be under legal supervision in the community for at least one year following study enrollment. For this study, legal supervision was defined by participants being on either county probation/parole (34%), state parole (23%) or involved in diversion programs such as a drug court (14%) or other disposition programs that offered alternatives to incarceration or early parole (29%). Specifically, the other disposition programs included an intermediate punishment program (IPP) that offered offenders the opportunity to participate in treatment in lieu of incarceration, and another program offered offenders early parole if they agreed to attend treatment. Participants were recruited between July 2007 and October 2010 from a single drug treatment program located in an urban area and were followed-up for one year.

All participants that were eligible for the employment study were included in the data set for the current study. Participants were eligible for the study if they: 1) were between 18 and 55 years of age, 2) had at least one year following enrollment into the study remaining under criminal justice supervision, 3) were not working and expressed a desire to work within the next six months, and 4) did not have any untreated psychiatric or medical diagnosis that would have prevented them from securing employment.

A total of 221 potential candidates were screened for this trial and 160 were randomized resulting in a 72% response rate. The 61 offenders failed screening for the following reasons: unstable psychiatric problems (51%), dropped out of drug treatment before completing screening (18%); medical problems (8%); refused (7%); not under criminal justice supervision (3%); scheduled to leave drug treatment program in less than 30 days (3%); already working (3%); and 7% were not eligible for various other reasons. There were no significant differences in age, race, level of supervision and treatment mandate between those who failed screening and those randomized. However, women were more likely than men to fail screening.

The 160 research participants reported an average age of 33 years and about 12 years of education (Table 1). The majority of participants were male (92%), African-American (65%), and not married (94%). Slightly over one-half of the participants were employed at least part-time in the three years prior to entering treatment (54%).

## 2.2 Treatment

The participants were enrolled in a study that assessed whether an integrated drug counseling and employment intervention was more effective than a drug counseling only control condition in terms of the primary outcomes of drug use, employment and criminal behavior. The treatment consisted of six months of interpersonal cognitive problems solving (ICPS) (Coviello et al, 2009). The three guiding principles that were reinforced in the delivery of ICPS therapy stated that all activities and interactions were: 1) reality-based, 2) goal oriented, and 3) action oriented. There were therapeutic steps on which counselors' focused their efforts. For example, counselors helped clients to set realistic goals, examine barriers, identify internal and external resources to achieve goals, develop action plans, and evaluate actions taken on a goal. These steps were fully operationalized within a discrete number of therapy sessions.

Both the integrated and control groups received the same ICPS theoretical framework. However, participants in the integrated condition received an employment intervention that was implemented if the individual was not currently experiencing any drug problems and was not in crisis. In order to integrate the vocational intervention with drug counseling for the experimental clients, a protocol developed in a prior study was utilized (Zanis& Coviello 2001). Participants were asked to rank order the problems (e.g., drug, employment, medical), indicating which problem they considered most significant. If a participant in the integrated condition was having drug problems, ICPS drug counseling was provided. However, if the participant's drug problem was stabilized, the employment intervention could be delivered. The counselor implemented the same decision-making process with control participants and if they were not experiencing a non drug crisis, then ICPS drug counseling was initiated. The sample was evenly split between those who were assigned to the integrated employment/drug counseling (n = 80) versus the drug counseling only (n = 80) control condition (Table 1).

All subjects met with a counselor for weekly ICPS sessions. The participants also attended group therapy (not part of the ICPS intervention) three times a week during IOP which typically lasted three or four months and then were stepped down to once weekly group therapy during outpatient treatment. The purpose of the current analyses was to examine whether treatment mandate affected the six month ICPS intervention completion rates among offenders in both conditions.

## 2.3 Procedures

The project was approved by the Institutional Review Boards of the University of Pennsylvania and the City of Philadelphia. In order to protect the privacy of participants and enhance their willingness to share information, particularly regarding drug use and criminal behavior, the study also obtained a Certificate of Confidentiality. All subjects were screened for eligibility during intake at a community-based drug treatment program. Participants completed a screening questionnaire at intake to assess eligibility. Those who looked like they were potential candidates for the study based on their answers to screening questions (e.g., Are you under criminal justice supervision?, Are you interested in working?) were further screened by research staff and given a full description of the study. Special efforts were made to assure offenders that participation in the study was voluntary. Individuals were instructed that the research study was an additional service they could receive and that choosing to participate or not participate would have no effect on their criminal justice status or treatment. Subjects who agreed to participate in the study signed an informed consent document at the point of entry into the trial.

Enrolled subjects completed a two day screening process to further determine eligibility into the study. All participants were compensated for their time in completing study assessments and were provided with reimbursements for travel to study visits. The Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998) for the DSM-IV was administered to rule out any severe untreated psychiatric disorders or symptoms (e.g, bipolar disorder, hallucinations) which would make them ineligible to participate in an employment study. During the screening process participants also completed a series of baseline research assessments.

Treatment completion was determined by whether the participant successfully completed the six month treatment program. Participants who missed 30 days or more of treatment, or were incarcerated, or were discharged from the program prematurely for other reasons (e.g., transfer, threatening staff) and hence were unable to complete six months of treatment were considered dropouts. When participants began missing a couple of days of treatment the research or clinic staff attempted to make to contact with them during the 30 day window to try and re-engage them back into the treatment program.

## 2.4 Research Assessments

The dependent variable was a binary measure of whether or not the participant completed the six month treatment intervention (i.e., completers (45%) vs. dropouts (55%)). The independent variable of treatment mandate was also a binary measure of whether or not an offender was mandated to treatment (i.e., mandated (82%) vs. voluntary (18%)). Both of these variables were obtained from treatment records. The covariates used in the analyses were obtained from the following measures assessed at baseline.

The Addiction Severity Index (ASI) assessed lifetime and recent (past 30 days) functioning in seven potential problem areas: medical, employment/economic, drug use, alcohol use, legal, family/social and psychiatric (McLellan et al., 1980; 1985). It yields seven indices called Composite Scores (CS) which are arithmetically weighted summary scores, ranging from zero to one, computed for each of the seven problem areas with higher values reflecting greater problem severity. Variables from the ASI used in the analyses as covariates included demographics (e.g., age, gender, race, etc.), the ASI composite scores, social support, emotional abuse, and motivation for treatment. The social support measures assessed whether the participant spent time with family/friends versus alone, number of close friends, and whether the participant experienced conflict with family members in the last 30 days (yes/no). The emotional abuse item measured whether the participant felt that they experienced emotional abuse in the last 30 days (yes/no). The motivation variable was based on how important the participant believed that treatment for drug and alcohol problems was for them based on a five point scale ranging from not at all (0) to extremely (4).

The Mini-International Neuropsychiatric Interview (MINI) was administered during screening to exclude subjects with severe psychiatric disorders as well as to assess for a substance dependence diagnosis and an Axis I co-occurring psychiatric diagnosis (Sheehan et al., 1998). Both substance dependence and Axis I psychiatric diagnosis were used as covariates.

The California Psychological Inventory-Socialization Scale (CPI-So) is a self-report measure of socialization, social judgment, and normative behaviors during childhood and adolescence that yields one summary measure of a disposition to antisociality (Gough, 1987; Gough & Bradley, 1992). This scale is a measure of antisocial behavior and not ASPD. Each of the 46 items is rated true or false (range 0–46) with lower scores reflecting poorer social judgment, less empathy, and less conformance with social norms. The psychometric

properties and validity of the CPI-So have been shown to be excellent in a number of populations (Gough, 1987; Gough & Bradley, 1992) and it has predictive validity in substance abuse patients (Alterman et al., 1998b; Kadden et al., 1989). A score of 22 and below was considered diagnostic of severe problems in rule-following and norm-accepting behavior (Kalman et al., 2000).

The Drug-Taking Confidence Questionnaire (DTCO) is a 50-item self-report measure that was used to assess self-efficacy (Annis & Martin, 1985) over eight categories of potential relapse situations that include unpleasant emotions, physical discomfort, pleasant emotions, testing personal control, urges and temptations to use, conflict with others, social pressure to use, and pleasant times with others (Cummings et al., 1980; Marlatt & Gordon, 1980; 1985). Participants reported how confident they were in resisting the urge to drink heavily or use drugs in each of the 50 situations using a six point scale: 1 = 0% confident, 2 = 20% confident, 3 = 40% confident, 4 = 60% confident, 5 = 80% confident, and 6 = 100% confident. Higher scores indicate a greater degree of self-efficacy in drug or alcohol avoidance. Participants responded in terms of their primary drug of abuse. The instrument has demonstrated good psychometric properties as evidenced by good reliability (alphas range from .79 to .95; Sklar et al., 1997) and good convergent and discriminate validity with instruments such as the Drug Abuse Screening Test (DAST-20; Skinner, 1982), Hopkins Symptom Checklist-Revised (SCL-90R; Derogatis, 1979), Beck Depression Inventory (BDI; Beck 1978), and Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller, 1991).

The Self-Help Beliefs and Behaviors Questionnaire is a self-report measure that assesses a subject's belief in self-help principles such as being powerless over drugs and alcohol and a belief in a higher power (5 items). The items are measured on a five point scale: 0 = not at all; 1 slightly; 2 = moderately; 3 = considerably; 4 = completely, with higher scores indicating a greater degree of self-help beliefs. The questionnaire also measures an individual's recent participation in self-help activities such as attendance at AA/NA/CA meetings and calling one's sponsor (8 items) by asking how many times they participated in each of these activities in the last 30 days. The 8-item behavior subscale has good reliability and higher scores on the behavioral subscale among alcoholics predicted better outcomes (McKay et al., 1994). The instrument was used as a measure of degree of social support through participants' involvement in self-help activities.

## 2.5 Data Analysis

Baseline comparisons between the treatment completers and dropouts used t-tests for continuous measures and chi-square tests for binary measures. Two-tailed tests with significance levels of  $p < .05$  were used to determine statistical significance. There were very little missing data in the sample. For example, data was available for 100% of the sample on both the dependent (treatment completion) and independent (treatment mandate) variables. There were very little missing data in the covariates ranging from 0% to 7% with the majority of covariates having no missing data. Therefore, we felt it was appropriate to ignore the missing data in all analyses. The Statistical Package for the Social Sciences (SPSS) and Statistical Analysis System (SAS) were used to analyze the data.

A logistic regression was used to determine the adjusted odds ratio for predicting treatment completion. We followed Hosmer and Lemeshow's (2000) suggestions for model building. In our first step we examined the individual associations between the covariates and the outcome, and included any covariate from Table 1 that had an association significant at the  $p = 0.2$  level or lower in a multivariate model. Also included were other variables with a significance level of  $p > .2$  that had theoretical support for inclusion in the model (i.e., age, ASI alcohol, legal and psychiatric CS) as described in the introduction. In addition, we

included gender and group assignment (employment vs. control) as covariates. We did not include type of legal supervision as a covariate since this variable would have been highly correlated with treatment mandate and likely caused problems with multicollinearity. We used a backwards stepwise approach to reduce this model to our final model.

Of our original set of covariates, all variables except age; gender; group; and alcohol, legal, and psychiatric ASI CS made it through the first step, and nine variables were selected into the final model. These nine variables included ASI medical, drug, and employment CS; race; opioid dependence; antisocial behavior as measured by the CPI-So score; how participants spent their free time; emotional abuse; and whether offenders were mandated to treatment. To assess the independent influence of mandate on treatment completion while controlling for covariates, odds ratios were calculated along with confidence intervals to determine with a level of 95% confidence that the “true” odds ratios lies between the lower and upper limit of the interval.

In addition, we developed another model using propensity scores to adjust for possible confounding variables (Rosenbaum, 2002). We first regressed mandate on all covariates and obtained propensity scores. We then regressed treatment completion on the propensity scores and treatment mandate.

### 3. Results

#### 3.1 Characteristics of the sample at treatment entry

Nearly 60% of the offenders met criteria for cannabis dependence, 47% were dependent on alcohol, 46% were cocaine dependent and 28% received a diagnosis of opioid dependence (Table 1). Four percent of participants reported intravenous (IV) drug use within the past six months. Two-thirds of the offenders (66%) had a disposition towards anti sociality based on their CPI-So score, and 42% received a co-occurring Axis I diagnosis. Eleven percent reported that they had been emotionally abused.

The majority of offenders were court mandated to attend drug treatment (82%) and reported a prior drug charge (82%). Participants reported an average of 11 prior charges and were incarcerated for nearly 3.5 years prior to study entry.

Slightly more than one half of the participants (52%) said they were considerably or highly motivated to participant in treatment. The majority of participants said they spent most of their free time with family or friends (70%), 56% said they had two or more close friends, and one-third had a conflict with family member or friend in the 30 days prior to the baseline interview. Offenders reported that they participated in an average of 30.0 self-help activities in the last 30 days and the average score on the self-help belief scale was 14.0 demonstrating a moderately high level of belief in self-help ideas. The average total score on the DTCQ was 78.7 indicating a fairly high level of confidence in avoiding drug and alcohol use.

#### 3.2 Treatment Completion

A total of 45% of the participants ( $n = 72$ ) successfully completed the six month treatment intervention. Participants attended the program for an average of 120 days ( $\pm 67.7$  days). Only 13% dropped out after the first 30 days of treatment, and 62% were enrolled for at least 90 days. The major reason why 88 participants (55%) did not complete treatment was that they stopped attending for 30 days or more and hence were discharged for non attendance (72%). Ten percent were incarcerated, 8% dropped out of the research study and were transferred to another counselor at the program, 6% were transferred to another IOP, 2% violated program rules, and 2% were referred to inpatient treatment. It should be noted



that participants who transferred to another counselor or to another IOP ended up dropping out of treatment; therefore, we considered these participants as non-completers. There were no participants who died during the treatment intervention.

### 3.3 Univariate Analyses

African-Americans (75% vs. 57%) were more likely to complete treatment compared to Caucasians (10% vs. 25%) ( $\chi^2 = 7.1$ ,  $df = 1$ ,  $p = .008$ ). Compared to treatment dropouts, treatment completers were more likely to be mandated to treatment (92% vs. 74%) ( $\chi^2 = 8.5$ ,  $df = 1$ ,  $p = .004$ ) and scored 22 or below on the CPI-So scale (76% vs. 58%) ( $\chi^2 = 5.1$ ,  $df = 1$ ,  $p = .024$ ) demonstrating significant child/adolescent problems with norm compliance behaviors. Treatment dropouts were more likely to be opioid-dependent (40% vs. 14%) ( $\chi^2 = 13.1$ ,  $df = 1$ ,  $p < .0001$ ) than were treatment completers.

Treatment completers tended to be less motivated at treatment entry (40% vs. 62%) ( $\chi^2 = 7.8$ ,  $df = 1$ ,  $p = .005$ ) and they were less likely to endorse self-help beliefs (12.7 vs. 15.0) compared to non-completers ( $t = 2.7$ ,  $df = 158$ ,  $p = .007$ ). Offenders who completed treatment were also more likely to spend their free time with family and friends rather than alone (81% vs. 61%) ( $\chi^2 = 7.0$ ,  $df = 1$ ,  $p = .008$ ).

Further analysis of the mandated participants showed that they were less motivated at treatment entry than the voluntary participants (48% vs. 72%) ( $\chi^2 = 5.6$ ,  $df = 1$ ,  $p = .018$ ). However, there were no differences between mandated and non-mandated participants in terms of level of antisocial behavior based on CPI-So scores ( $\chi^2 = 0.3$ ,  $df = 1$ ,  $p = .560$ ).

### 3.4 Logistic Regression

The final logistic regression model yielded seven factors predictive of treatment completion: ASI drug and employment CS; race; opioid dependence; antisocial behavior based on the CPI-So score; whether a participant was court-ordered to treatment; and how participants spent their free time (Table 2). The model showed significant variation explained (LR chi-square = 137.8,  $df = 8$ ,  $p < .0001$ ) with a Nagelkerke R square statistic of 0.47. The Hosmer and Lemeshow (2000) goodness-of-fit test statistic was not significant ( $\chi^2 = 3.8$ ,  $df = 8$ ,  $p = .878$ ) indicating that the model was a good fit. In addition, we used the methods of Belsley, Kuh, and Welsch (1980) to assess multicollinearity and found no collinearity problems. Participants who were mandated to treatment were over ten times more likely to complete treatment compared to those who entered voluntarily (OR = 10.9, CI = 2.0–59.1,  $p = .006$ ). Surprisingly, offenders who had a disposition toward antisocial behavior were four times as likely to complete treatment (OR = 4.0, CI = 1.5–10.5,  $p = .005$ ) compared to those who did not have this disposition. Participants who spent time with family or friends were three times as likely to have completed treatment compared to those who spent their free time alone (OR = 3.3, CI = 1.2–8.8,  $p = .017$ ). In contrast, offenders with an opioid-dependence diagnosis (OR = .149, CI = 0.1 – 0.5,  $p = .001$ ), and Hispanics compared to African-Americans (OR = .274, CI = 0.1 – 0.9,  $p = .028$ ) were less likely to complete the six month intervention. As expected, offenders with fewer drug (OR = .003, CI = 0.0–1.0,  $p = .050$ ) and employment (OR = .008, CI = 0.0–0.2,  $p = .006$ ) problems at baseline had better treatment completion rates. The second model that included the calculation of propensity scores demonstrated that treatment mandate was still significant (OR = 5.6, CI = 1.13–27.54,  $p = .030$ ).

## 4. Discussion

The findings from this study support other research demonstrating that offenders who are court-ordered to treatment have better completion rates than those who enter treatment

voluntary. While many of the prior studies were conducted with offenders in residential programs or therapeutic communities (Hiller et al., 1998), the present study demonstrated that offenders enrolled in outpatient treatment also experience better completion rates if they are mandated. Generally, previous studies have not examined treatment mandate within a criminal justice population, but have compared substance abusing offenders stipulated to treatment with non-offenders who entered treatment voluntarily.

Although other researchers have shown that internal motivation is necessary for positive outcomes (De Leon, 1996; Lang & Belenko, 2000) and that mandated individuals have higher readiness to change (Gregoire & Burke, 2004), the findings from this study show that even those who had low internal motivation at treatment entry were able to successfully complete treatment. It could be reasoned that mandated offenders may begin treatment with low motivation, but are retained longer due to the threat of incarceration which allows them to engage in treatment and provides them with the time needed to experience behavior change.

It has been firmly established that treatment completion is one of the best predictors of treatment outcomes (Simpson, 1981). This is particularly relevant for criminal justice involved individuals who often drop out of treatment, violate parole, and are re-incarcerated because of drug problems (Young & Belenko, 2002; Zanis et al., 2009). While 62% of the participants completed the 90 days of IOP, 17% of those individuals then dropped out of treatment and failed to attend the less intensive outpatient treatment, even though many were mandated. At 90 days many of the participants also left recovery houses that provided stable housing and were told by their alternative sentencing programs that they needed to find work (programs typically restrict offenders from working during IOP). All these factors, including anecdotal reports from the participants that treatment after stepping down to OP, in which they are required to attend group therapy once a week, was redundant and not helpful, may help explain why only 45% completed the six month intervention. However, the treatment program offered evening hours for participants who worked, and when contacting participants who dropped out, many were nonresponsive. Therefore, it is unclear whether employment, unstable living arrangements or participants feeling that they did not need additional treatment were reasons for treatment noncompliance.

It was interesting to note that antisocial behavior was an independent predictor of treatment completion and was not correlated at all with treatment mandate. The presence of antisocial behavior has typically been found to be associated with negative treatment outcomes (Alterman et al., 1998b). In general, research has shown that cognitive behavioral therapy (CBT) is effective with offenders who often lack problem solving skills and have antisocial values (Wilson et al., 2005). Additionally, CBT has been shown to reduce recidivism (Andrews et al, 1990; Antonowicz & Ross, 1994; Landenberger, & Lipsey, 2005; Lipsey, 1992). While the CPI-So scale is not a measure of ASPD, it may be that those offenders who display a greater degree of antisocial behavior, as measured by the CPI-So, may benefit from the structured nature of the CBT-based intervention provided in this study.

Also, not surprisingly, opioid-dependent offenders were unable to complete treatment in a drug-free program. As alternative treatments such as antagonist maintenance with monthly injections of extended-release naltrexone demonstrate positive results (Coviello et al., 2012; Krupitsky et al., 2011), the criminal justice system may be more willing to support such treatment since it has no abuse potential unlike agonist treatments such as methadone.

Offenders who spent free time with family or friends rather than alone were more likely to complete treatment, supporting other research demonstrating the importance of social support in the recovery process (Bahr et al., 2010; Sung et al., 2004). Substance abusers in

recovery experience difficulties in making new sober friends and often loneliness and boredom leads them to return to relationships with old substance abusing friends (Bahr et al., 2010). These findings point to the need for offenders to have available sober activities that fill free time, especially when family, friends or partners can have a negative impact on their recovery (Capaldi et al., 2008; Laub & Sampson, 2003), or when they have been out of contact with any positive social supports.

Although the results from this study show that retention among Hispanics was poor, the relationship between Hispanics and treatment outcomes has generally shown mixed results. Some studies have shown that Hispanics have more severe drug (Kosten et al, 1985), employment (Kosten et al., 1985, Niv & Hser, 2006) and legal problems (Anglin et al.,1988) compared to other ethnic groups, whereas other studies have found no differences in treatment outcomes (Grella et al., 1995; Niv & Hser, 2006; Morgenstern & Bux, 2003). However, much of the prior research was restricted to Hispanics dependent on opioids (Anglin et al., 1988) or methamphetamine (Niv and Hser, 2006). More research is clearly needed to gain a better understanding of factors influencing Hispanics retention in drug treatment.

#### 4.1 Limitations

The generalizability of these findings is limited for several reasons. First, the trial recruited eligible offenders to participant in an employment intervention. Therefore, the participants may have included offenders who had fewer medical and psychiatric issues that would have precluded them from participation in an employment intervention. Thus, the participants may have been a “higher functioning” group than would normally be present in outpatient treatment. Another limitation is that some of the measures such as motivation and social support were based on items from the ASI rather than more stronger measures of such constructs such as the University of Rhode Island Change Assessment (URICA) (DiClemente, & Hughes, 1990; DiClemente, & Prochaska,1998), the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) (Miller & Tonigan, 1996) and the Perceived Social Support from Friends and Family (Procidano & Heller, 1983). Thirdly, while the study included a heterogeneous group of offenders, the majority of offenders were mandated, and the sample was recruited from a single site and may not be representative of other treatment programs. Fourth, since we did not measure coercion from employers or from family and friends to attend treatment it is unclear whether participants experienced pressure from these other sources. Finally, these results cannot be generalized to female offenders since they comprised only 8% of the sample and they were more likely to fail screening. Despite these limitations, the strengths of the present study are the heterogeneity of the sample that included a diverse group of offenders under various levels of community supervisions enrolled in outpatient treatment.

#### 4.2 Implications

These findings support other research showing that stipulated treatment may be a valid social policy that could improve treatment compliance. Twenty percent of prisoners return to State prisons within a year of release and those with health problems, particularly substance abuse, are more likely to be re-incarcerated (RWJF, 2009). The cost of incarceration for state budgets is second only to the rising cost of Medicaid, and this increase in expenditures is not having any impact on recidivism rates (Pew Center on the States, 2011). A shift in strategy from incarcerating nonviolent substance abusing offenders to providing them with court-ordered treatment in the community may help improve outcomes and reduce costs.

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## References

- Alterman AI, Rutherford MJ, Cacciola JS, McKay JR, Boardman CR. Prediction of seven months methadone maintenance treatment response by four measures of antisociality. *Drug and Alcohol Dependence*. 1998a; 49:217–223. [PubMed: 9571386]
- Alterman AI, McDermott PA, Cacciola JS, Rutherford MJ, Boardman CR, McKay JR, Cook TG. A typology of antisociality in methadone patients. *Journal of Abnormal Psychology*. 1998b; 107(3): 412–422. [PubMed: 9715576]
- Anglin MD, Booth WM, Ryan TM, Hser YI. Ethnic differences in narcotics addiction. II. Chicano and Anglo addiction career patterns. *International Journal of the Addictions*. 1988; 23:1011–1027. [PubMed: 3235220]
- Annis, HM.; Martin, G. *The Drug-Taking Confidence Questionnaire*. Toronto: Addiction Research Foundation of Ontario; 1985.
- Andrews DA, Zinger I, Bonta J, Hoge RD, Gendreau P, Cullen FT. Does correctional treatment work? A clinically relevant and psychologically informed meta-analysis. *Criminology*. 1990; 28:369–404.
- Antonowicz DH, Ross RR. Essential components of successful rehabilitation programs for offenders. *International Journal of Offender and Comparative Criminology*. 1994; 38(2):97–104.
- Bahr SJ, Harris L, Fisher JK, Armstrong AH. Successful reentry: What differentiates successful and unsuccessful parolees? *International Journal of Offender Therapy and Comparative Criminology*. 2010; 54(5):667–692. [PubMed: 19638473]
- Beck, AT. *Beck Depression Inventory*. New York: The Psychological Corporation; Harcourt, Brace, Jovanovich: 1978.
- Belenko, S. *Research on drug courts: A critical review 2001 update*. New York: National Center on Addiction and Substance Abuse, Columbia University, New York; 2001. Retrieved from <http://www.drugpolicy.org/docUploads/2001drugcourts.pdf>.
- Belsley, DA.; Kuh, E.; Welsch, RE. *Regression Diagnostics*. New York: John Wiley & Sons; 1980.
- Brecht M, Anglin DM, Wang J. Treatment effectiveness for legally coerced versus voluntary methadone maintenance clients. *American Journal of Drug and Alcohol Abuse*. 1993; 19(1):89–106. [PubMed: 8438834]
- Brewer DD, Catalano RF, Haggerty K, Gainey RR, Fleming CB. A meta-analysis of predictors of continued drug use during and after treatment for opiate addiction. *Addiction*. 1998; 93(1):73–92. [PubMed: 9624713]
- Brocato J, Wagner EF. Predictors of retention in an alternative-to-prison substance abuse treatment program. *Criminal Justice and Behavior*. 2008; 35(1):99–119.
- Brown RT. Associations with substance abuse treatment completion in drug court. *Substance Use Misuse*. 2010; 45(12):1874–1891. [PubMed: 20380560]
- Brown RT, Allison PA, Nieto FJ. Impact of jail sanctions during drug court participation upon substance abuse treatment completion. *Addiction*. 2011; 106(1):135–142. [PubMed: 21143687]
- Bureau of Justice Statistics. Office of Justice Programs, U.S. Department of Justice; 2010. *Community Corrections (Probation and Parole)*.
- Capaldi DM, Kim HK, Owen LD. Romantic partners' influence on men's likelihood of arrest in early adulthood. *Criminology*. 2008; 46:267–299. [PubMed: 19079751]
- Coviello DM, Cornish JW, Lynch KG, Boney TY, Clark CA, Lee JD, Friedmann PD, Nunes EV, Kinlock TW, Gordon MS, Schwartz RP, Nuwayser E, O'Brien CP. A multi-site pilot study of extended-release injectable naltrexone treatment for previously opioid-dependent parolees and probationers. *Substance Abuse*. 2012; 33(1):48–59. [PubMed: 22263713]

- Coviello DM, Zanis DA, Wesnoski SA, Domis SW. An integrated drug counseling and employment intervention for methadone clients. *Journal of Psychoactive Drugs*. 2009; 41(2):189–197. [PubMed: 19705681]
- Cummings, C.; Gordon, JR.; Marlatt, GA. Relapse: Prevention and Prediction. In: Miller, WR., editor. *The Addictive Behaviors*. New York: Pergamon; 1980. p. 291–322.
- Daughters SB, Stipelman BA, Sargeant MN, Schuster R, Bornovalova MA, Lejuez CW. The interactive effects of antisocial personality disorder and court-mandated status on substance abuse treatment dropout. *Journal of Substance Abuse Treatment*. 2008; 34:157–164. [PubMed: 17869050]
- Deci, E.; Ryan, R. *Intrinsic motivation and self-determination in human behavior*. New York: Plenum; 1985.
- De Leon, G. *The therapeutic community: Study of effectiveness, social and psychological adjustment of 400 dropouts and 100 graduates from the Phoenix House therapeutic community*. Rockville, MD: National Institute on Drug Abuse; 1984.
- De Leon G. Integrative recovery: A stage paradigm. *Substance Abuse*. 1996; 17:15–63.
- De Leon G, Jainchill N. Circumstance, motivation, readiness and suitability as correlates of treatment tenure. *Journal of Psychoactive Drugs*. 1986; 18(3):203–208. [PubMed: 3772644]
- De Leon G, Melnick G, Thomas G, Kressel D, Wexler HK. Motivation for treatment in a prison-based therapeutic community. *American Journal of Drug and Alcohol Abuse*. 2000; 26:33–46. [PubMed: 10718162]
- Derogatis, LR. *The SCL-90-R Symptom Checklist Revised*. Baltimore: Johns Hopkins University of Medicine; 1979.
- DiClemente CC, Hughes SO. Stages of change profiles in alcoholism treatment. *Journal of Substance Abuse*. 1990; 2:217–235. [PubMed: 2136111]
- DiClemente, CC.; Prochaska, JO. Toward a comprehensive, trans theoretical model of change: Stages of change and addictive behaviors. In: Miller, WR.; Heather, N., editors. *Treating Addictive Behaviors*. 2nd Edition. New York: Plenum; 1998.
- Evans E, Li L, Hser Y. Client and program factors associated with dropout from court mandated drug treatment. *Evaluation and Program Planning*. 2009; 32:204–212. [PubMed: 19150133]
- Farabee D, Prendergast M, Anglin DA. The effectiveness of coerced treatment for drug-abusing offenders. *Federal Probation*. 1998; 62(1):3–10.
- French MT, Zarkin GA, Hubbard RL, Rachal JV. The effects of time in drug abuse treatment and employment on post treatment drug abuse and criminal activity. *American Journal of Drug and Alcohol Abuse*. 1993; 19(1):19–33. [PubMed: 8382448]
- Gough, HG. *The California Psychological Inventory Administrator's Guide*. Palo Alto: Consulting Psychologists Press; 1987.
- Gough HG, Bradley P. Delinquent and criminal behavior as assessed by the revised California Psychological Inventory. *Journal of Clinical Psychology*. 1992; 48:298–308. [PubMed: 1602018]
- Gregoire TK, Burke AC. The relationship of legal coercion to readiness to change among adults with alcohol and other drug problems. *Journal of Substance Abuse Treatment*. 2004; 26:35–41.
- Grella CE, Anglin MD, Wugalter SE. Cocaine and crack use and HIV risk behaviors among high-risk methadone maintenance clients. *Drug and Alcohol Dependence*. 1995; 37:15–21. [PubMed: 7882869]
- Hartford RJ, Ungerer JC, Kinsella JK. Effects of legal pressure on prognosis for treatment of drug dependence. *American Journal of Psychiatry*. 1976; 133:1399–1404. [PubMed: 984240]
- Hiller ML, Knight K, Broome KM, Simpson DD. Legal pressure and treatment retention in a national sample of long-term residential programs. *Criminal Justice and Behavior*. 1998; 25(4):463–481.
- Hiller ML, Knight K, Simpson DD. Risk factors that predict dropout from corrections-based treatment for drug abuse. *The Prison Journal*. 1999; 79:411–430.
- Hosmer, DW.; Lemeshow, S. *Applied logistic regression*. 2nd ed. New York: John Wiley and Sons; 2000.

- Hser Y, Grella CE, Hubbard RL, Hsieh SC, Fletcher BW, Brown BS, Anglin MD. An evaluation of drug treatments for adolescents in four U.S. cities. *Archives of General Psychiatry*. 2001; 58:689–695. [PubMed: 11448377]
- Hubbard, RL.; Marsden, ME.; Rachal, JV.; Harwood, HJ.; Cavanaugh, ER.; Ginsburg, HM. Drug abuse treatment: a national study of effectiveness. Chapel Hill, NC: University of Northern Carolina Press; 1989.
- Huebner BM, Cobbina J. The effect of drug use, drug treatment participation, and treatment completion on probationer recidivism. *Journal of Drug Issues*. 2007; 37(3):619–642.
- James, DJ.; Glaze, LE. Mental health problems of prison and jail inmates. Washington DC: U.S. Department of Justice, Office of Justice Programs. Bureau of Justice Statistics; 2006. (NCJ 213600). Retrieved from <http://bjsdata.ojp.usdoj.gov/content/pub/pdf/mhppji.pdf>.
- Joe G, Simpson D, Broome K. Retention and patient engagement models for different treatment modalities in DATOS. *Drug and Alcohol Dependence*. 1999; 57:113–125. [PubMed: 10617096]
- Kadden RM, Cooney NL, Getter H, Litt MD. Matching alcoholics to coping skills or interactional therapies: Post treatment results. *Journal of Consulting and Clinical Psychology*. 1989; 57(6):698–704. [PubMed: 2557364]
- Kalman D, Longabaugh R, Clifford PR, Beattie M, Maisto SA. Matching alcoholics to treatment: Failure to replicate finding of an earlier study. *Journal of Substance Abuse Treatment*. 2000; 19(2): 183–187. [PubMed: 10963930]
- Kelly JF, Finney JW, Moos R. Substance use disorder patients who are mandated to treatment: Characteristics, treatment process, and 1- and 5-year outcomes. *Journal of Substance Abuse Treatment*. 2005; 28:213–223. [PubMed: 15857721]
- Knight D, Logan S, Simpson D. Predictors of program completion for women in residential substance abuse treatment. *Journal of Drug and Alcohol Abuse*. 2001; 27:1–12.
- Kosten TR, Rounsaville BJ, Kleber HD. Ethnic and gender differences among opiate addicts. *International Journal of Addictions*. 1985; 20:1143–1162.
- Krupitsky EM, Nunes EV, Ling W, Illeperuma A, Gastfriend DR, Silverman BL. Injectable extended-release naltrexone for opioid dependence: A double-blind, placebo-controlled, multicenter and omitted trial. *Lancet*. 2011; 377(9776):1506–1513. [PubMed: 21529928]
- Landenberger NA, Lipsey MW. The positive effects of cognitive-behavioral programs for offenders: A meta-analysis of factors associated with effective treatment. *Journal of Experimental Criminology*. 2005; 1:451–476.
- Lang M, Belenko S. Predicting retention in a residential drug treatment alternative-to-prison program. *Journal of Substance Abuse Treatment*. 2000; 19:145–160. [PubMed: 10963926]
- Laub, JH.; Sampson, RJ. Shared beginnings, divergent lives: Delinquent boys to age 70. Cambridge, MA: Harvard University Press; 2003.
- Lipsey, M. Juvenile delinquency treatment: A meta-analytic inquiry into variability of effects. In: Cook, TD.; Cooper, H.; Cordray, DS.; Hartmann, H.; Hedges, LV.; Light, RJ.; Louis, TA.; Mosteller, F., editors. *Meta-Analysis for Explanation: A casebook*. New York: Russell Sage Foundation; 1992. p. 83-127.
- Longshore, D.; Urada, D.; Evans, EA.; Hser, YI.; Prendergast, ML.; Hawken, A.; Bunch, T.; Ettner, S. Evaluation of the substance abuse and crime prevention act: 2003 report. Los Angeles, CA: UCLA Integrated Substance Abuse Programs; 2004. (Prepared for the California Department of Alcohol and Drug Programs).
- Martin B, Clapp L, Bialkowski D, Bridgeford D, Amponsah A, Lyons L, Beresford TP. Compliance to supervised disulfiram therapy: A comparison of voluntary and court-ordered patients. *The American Journal on Addictions*. 2003; 12:137–143. [PubMed: 12746088]
- MacKenzie, D. Criminal justice and crime prevention. In: Sherman, LW.; Gottfredson, DC.; MacKenzie, D.; Eck, J.; Reuter, P.; Bushway, editors. *Preventing crime: What works, what doesn't, what's promising?*. Washington, D.C.: Office of Justice Programs, National Institute of Justice; 1997. p. 9-76.
- Marlatt, GA.; Gordon, JR. Relapse Prevention: Maintenance Strategies in the Treatment of Addictive Behaviors. New York: Guilford Press; 1985.

- Marlatt, GA.; Gordon, JR. Determinants of relapse: Implications for the maintenance of behavior change. In: Davidson, P.; Davidson, S., editors. *Behavioral Medicine: Changing Health Lifestyles*. New York: Brunner/Mazel; 1980. p. 410-452.
- McLellan AT, Luborsky L, Cacciola J, Griffith JE, Evans F, Barr HL, O'Brien CP. New data from the Addiction Severity Index: Reliability and validity in three centers. *The Journal of Nervous and Mental Disease*. 1985; 173:412–423. [PubMed: 4009158]
- McLellan AT, Luborsky L, O'Brien CP, Woody GE. An improved diagnostic evaluation instrument for substance abuse patients. *The Journal of Nervous and Mental Disease*. 1980; 168:26–33. [PubMed: 7351540]
- McKay JR, Alterman AI, McLellan AT, Snider E. Treatment goals, continuity of care, and outcome in a day hospital substance abuse rehabilitation program. *American Journal of Psychiatry*. 1994; 151(2):254–259. [PubMed: 8296899]
- Miller, WR. *The Stages of Change Readiness and Treatment Eagerness Scale*. Albuquerque: University of New Mexico Press; 1991.
- Miller WR, Tonigan JS. Assessing drinkers' motivation for change: The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES). *Psychology of Addictive Behaviors*. 1996; 10(2): 81–89.
- Mitchell, O.; Wilson, DB.; MacKenzie, DL. *The effectiveness of incarceration-based drug treatment on criminal behavior*. Oslo, Norway: Campbell Collaboration; 2006.
- Morgenstern J, Bux DA. Examining the effects of sex and ethnicity on substance abuse treatment and meditational pathways. *Alcoholism: Clinical and Experimental Research*. 2003; 27:1330–1332.
- Mumola, CJ.; Karberg, JC. *Drug use and dependence, state and federal prisoners, 2004*. Washington, DC: U.S. Department of Justice, Office of Justice Programs. Bureau of Justice Statistics; 2006. (NCJ 213530). Retrieved from <http://bjs.ojp.usdoj.gov/index.cfm?ty=pbdetail&iid=778>.
- Niv N, Hser Y. Drug treatment service utilization and outcomes for Hispanic and white methamphetamine abusers. *Health Research and Educational Trust*. 2006; 41(4):1242–1257.
- Pelissier B. Gender differences in substance use treatment entry and retention among prisoners with substance use histories. *American Journal of Public Health*. 2004; 94:1418–1424. [PubMed: 15284053]
- Pew Center on the States. *State of recidivism: The revolving door of American's prisons*. Washington, DC: The Pew Charitable Trusts; 2011 Apr.
- Procidano ME, Heller K. Measures of perceived social support from friends and from family: Three validation studies. *American Journal Community Psychology*. 1983; 11(1):1–24.
- Robert Wood Johnson Foundation. *Returning home: Understanding the challenges for prisoners*. 2009. <http://www.rwjf.org/reports/grr/051041.htm>
- Rosenbaum, PR. *Observational Studies: Springer Series in Statistics*. 2nd edition. New York: Springer-Verlag; 2002.
- Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC. The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*. 1998; 59(Suppl 20):22–33. quiz 34–57. [PubMed: 9881538]
- Skinner, HA. *Drug Abuse Screening Test*. Toronto: Addiction Research Foundation of Ontario; 1982.
- Sklar SM, Annis HM, Turner NE. Development and validation of the drug-taking confidence questionnaire: A measure of coping self-efficacy. *Addictive Behaviors*. 1997; 22(5):655–670. [PubMed: 9347068]
- Simpson DD. Treatment for drug abuse: follow up outcomes and length of time spent. *Archives of General Psychiatry*. 1981; 38:875–880. [PubMed: 7259424]
- Simpson DD, Joe GW, Broome KM, Hiller ML, Knight K, Rowan-Szal GA. Program diversity and treatment retention rates in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors*. 1997a; 11(4):279–293.
- Simpson DD, Joe GW, Rowan-Szal GA. Drug abuse treatment retention and process effects on follow-up outcomes. *Drug and Alcohol Dependence*. 1997b; 47:227–235. [PubMed: 9306048]

- Sinha R, Easton C, Kemp K. Substance abuse treatment characteristics of probation-referred young adults in a community-based outpatient program. *The American Journal of Drug and Alcohol Abuse*. 2003; 29(3):585–597. [PubMed: 14510042]
- Sung H, Belenko S, Feng L, Tabachnick C. Predicting treatment noncompliance among criminal justice-mandated clients: A theoretical and empirical exploration. *Journal of Substance Abuse Treatment*. 2004; 26(1):315–328. [PubMed: 14698795]
- Welsh WN. A multisite evaluation of prison-based therapeutic community drug treatment. *Criminal Justice and Behavior*. 2007; 34:1481–1498.
- Wilson DB, Bouffard IA, Mackenzie DL. Quantitative review of structured, group-oriented, cognitive-behavioral programs for offenders. *Criminal Justice and Behaviors*. 2005; 32:172–204.
- Young D, Belenko S. Program retention and perceived coercion in three models of mandatory drug treatment. *Journal of Drug Issues*. 2002; 32:297–328.
- Zanis DA, Coviello D. A case study of employment case management with chronically unemployed methadone maintained clients. *Journal of Psychoactive Drugs*. 2001; 33(1):67–73. [PubMed: 11333003]
- Zanis DA, Coviello DM, Lloyd JJ, Nazar BL. Predictors of Drug Treatment Completion Among Parole Violators. *Journal of Psychoactive Drugs*. 2009; 41(2):173–180. [PubMed: 19705679]



**Table 1**

## Characteristics of the Sample at Treatment Entry

	<b>Completers (n = 72)</b>	<b>Drop-outs (n = 88)</b>	<b>p</b>
	<b>Mean (SD)</b>	<b>Mean (SD)</b>	
Age	32.3 (10.6)	33.7 (10.2)	.409
Education	11.4 (1.0)	11.5 (1.8)	.631
	<b>%</b>	<b>%</b>	
<b>Race/Ethnicity</b>			.026
African American	75	57	
Caucasian	10	25	
Hispanic	15	18	
Male	90	94	.334
Married	4	7	.469
Employed past 3 years	53	54	.823
<b>Intervention Condition</b>			.525
Employment/Drug Counseling	48	52	
Drug Counseling only	42	58	
<b>Dependence</b>			
Cannabis	58	60	.808
Alcohol	51	43	.301
Cocaine	43	49	.464
Opioids	14	40	.000
Sedatives	25	24	.868
IV Drug Use	1	7	.095
<b>Psychiatric</b>			
Co-occurring Axis I diagnosis	42	42	.961
Antisocial behavior (CPI-So 22)	76	58	.024
Emotional abuse last 30 days	7	14	.201
<b>Crime</b>			
Currently Mandated to Treatment	92	74	.004
Previous Charges			
Drug	88	77	.095
Parole violations	56	61	.458
Assault	33	33	.960
Burglary	28	33	.480
Robbery	22	33	.133
Shoplifting	25	22	.611
Weapons offences	15	28	.048
	<b>Mean (SD)</b>	<b>Mean (SD)</b>	
Total Charges	10.0 (12.8)	12.0 (16.0)	.394
Incarcerations (months)	38.9 (38.9)	42.5 (38.4)	.558
<b>ASI Composite Scores (CS)</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	

	Completers (n = 72)	Drop-outs (n = 88)	<i>p</i>
Medical CS	.28 (.36)	.21 (.30)	.183
Employment	.90 (.16)	.94 (.14)	.104
Alcohol	.08 (.16)	.09 (.15)	.869
Drug	.06 (.07)	.10 (.08)	.004
Legal	.26 (.18)	.28 (.19)	.549
Family/Social	.14 (.19)	.14 (.19)	.893
Psychiatric	.16 (.19)	.15 (.17)	.800
	<b>%</b>	<b>%</b>	
<b>High Treatment Motivation</b>	40	62	.005
<b>Self-Efficacy (DTCQ)<sup>a</sup></b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	
Unpleasant emotions	76.8 (25.1)	71.1 (29.9)	.203
Physical discomfort	84.9 (22.8)	81.4 (29.0)	.409
Pleasant emotions	86.5 (20.7)	83.9 (27.7)	.505
Testing personal control	80.0 (26.1)	75.6 (31.5)	.352
Urges and temptation to use	79.3 (24.9)	74.0 (30.5)	.242
Conflict with others	84.3 (25.6)	80.0 (28.3)	.331
Social pressure to use	80.6 (25.4)	72.8 (30.6)	.085
Pleasant time with others	84.7 (19.1)	74.0 (30.4)	.011
DTCQ Total Score	81.6 (22.2)	76.4 (27.6)	.198
	<b>%</b>	<b>%</b>	
<b>Social Support</b>			
Spends free time with family/friends	81	61	.008
2 or more close friends	64	49	.067
Conflict with family/friend last 30 days	31	35	.532
	<b>Mean (SD)</b>	<b>Mean (SD)</b>	
Self-help beliefs <sup>b</sup>	12.7 (5.1)	15.0 (5.6)	.007
Self-help participation	24.0 (31.7)	35.2 (43.5)	.070

<sup>a</sup>Cronbach's Alpha and ranges for each of the DTCQ scales are respectively: unpleasant emotions (.96, 62.4–80.3); physical discomfort (.89, 81.9–84.5); pleasant emotions (.91, 84.3–85.5); testing personal control (.93, 74.1–79.9); urges and temptations to use (.91, 70.1–83.5); conflict with others (.96, 76.7–85.6); social pressure to use (.92, 74.3–78.6); pleasant time with others (.89; 74.2–81.5); DTCQ Total Score (.99, 62.0 – 86.9).

<sup>b</sup>Cronbach's Alpha and range for the Self-Help Belief and Participation scales are respectively: (.81, 2.3–3.4); (.76, .2–9.3).

**Table 2**

## Logistic Regression Predicting Treatment Completion

Variable	Odds Ratio	95% CI	p value
ASI Medical CS	3.2	0.8–12.1	.092
ASI Drug CS	.003	0.0–1.0	.050
ASI Employment CS	.008	0.0–0.2	.006
Race <sup>a</sup>			
Hispanic	.274	0.1– 0.9	.028
Caucasian	.715	0.2– 2.7	.616
African-American	1.0		
Opioid Dependence			
Yes	.149	0.1 – 0.5	.001
No	1.0		
Antisocial Behavior (CPI-So Score)			
22	4.0	1.5–10.5	.005
> 23	1.0		
Spending free time with:			
Family/friends	3.3	1.2–8.8	.017
Alone	1.0		
Emotional Abuse			
Yes	.240	0.0–1.3	.097
No	1.0		
Mandated to treatment			
Yes	10.9	2.0–59.1	.006
No	1.0		

<sup>a</sup>Hispanic vs. Caucasian- OR = .384, CI = 0.1–1.9, p = .238.