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Clinical Indicators of Successful Substance Use Treatment among Adults in the Criminal Justice System

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Abstract A significant proportion of offenders in the criminal justice system require substance use treatment to foster desistance from criminal activities. Optimization of treatment outcomes is vital to reducing criminal justice involvement, especially post-treatment arrest. The current study examined clinical risk factors and their relationship with post-treatment recovery and arrest within the Comprehensive Assessment and Treatment Outcome (CATOR) system, the largest independent evaluation service of substance use treatment programs across the United States.

Multivariate logistic regression analyses determined that patients who were younger, male, and received a drug dependence diagnosis as opposed to alcohol dependence were more likely to be arrested within one-year of discharge from treatment. Additionally, patients who relapsed were more than two and a half times as likely to be arrested within one year of treatment discharge compared to those who did not relapse (*OR* = 2.70, *95 % C.I.* = 2.05–3.54, Wald's χ^2 = 51.16).

The findings from this research have far-reaching implications for treatment programs designed specifically for patients involved in the criminal justice system.

Keywords Recovery · Recidivism · Treatment outcomes · Risk factors

The vast majority of people who come into contact with the criminal justice system have a history of substance use. According to the Arrestee Drug Abuse Monitoring (ADAM) program, which collected drug test results from adult male arrestees across the United

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States, the proportion of arrestees who tested positive for any drug ranged from a low of 63 % in one city to a high of 83 % in another (Abt Associates, Inc 2011). Comparable data collected from other countries, including Australia, Chile, the Netherlands, Scotland, and South Africa show the proportion of arrestees who tested positive for any drug ranged from 55 % - 78 % (National Institute of Justice 2002). It is clear that the majority of the adult population supervised by the criminal justice system has experience with substance use.

There is also compelling evidence to show that many criminal justice – involved substance users are not low – level, experimental users, but instead suffer from substance use disorders. This is evidenced by estimates showing that approximately 45 % of those arrested met criteria for abuse or dependence (Kubiak et al. 2006). Given this prevalence rate of problematic patterns of use, it should come as no surprise that the criminal justice system was responsible for 37 % of all admissions to treatment in 2010 (Substance Abuse and Mental Health Services Administration, 2012). Unfortunately, more than one in five arrestees reported prior involvement in substance use treatment (Abt Associates, Inc 2011), which indicates that there is still a significant amount of work to do to help criminal justice – involved adults move toward a pathway to recovery.

Although there is a demonstrated need to develop a more effective approach to recovery for adults in the criminal – justice system, there is no single method that will work for everyone. In his comprehensive historical overview of addiction treatment in the United States, William White (1998) proposed that there are at least three ways in which many people get started. One involves a natural turn toward recovery based on an individual's life circumstances. This usually happens through spontaneous remission, maturing out of substance use, or the experience of a personal crisis that leads to immediate cessation of substance use. Another trajectory toward recovery is the most social, involving engagement with various sober community – based resources and groups that support a recovery lifestyle. The third is the one we are most likely utilizing when conceptualizing the recovery of adults involved in the criminal justice system. This pathway is the most formal in its delivery through professional treatment service providers, and many adults are required by the court to enter treatment when judicial personnel learn of their history of substance use.

Recovery is critical to the enhancement of someone's quality of life, not only by reducing or abstaining from drug use, but also to help avoid continual criminal justice involvement. Governmental agencies in several countries have recently increased their public acknowledgement of the need to strengthen efforts to help adults recover from substance use disorders. In the United States, the Acting Director of the Office of National Drug Control Policy, Michael Botticelli, has openly acknowledged that he, himself is in long – term recovery from a substance use disorder and has committed to more evidence – based approaches to drug policy. The United Kingdom has experienced a similar rededication of its national drug policy, with the adoption of a strategy focused on recovery rather than harm reduction (HM Government 2010). These evolving views of ameliorative approaches to drug – related crime are encouraging, but more work needs to be done to maximize the impact of treatment for adults involved in the criminal justice system so that more can experience success in long – term recovery.

The current study was designed to examine correlates of recovery with respect to how these influence post – treatment criminal justice involvement. Identification of these key factors will help to refine services for adults who enter treatment resulting from a court mandate. Improvement of treatment services will go a long way in the promotion of recovery from substance use and, as a result, less criminal justice contact.

Factors Associated with Successful Recovery and Lower Rearrest Rates

A significant amount of research has been conducted on correlates of recovery. One important area has investigated developmental phases of the recovery process and there are several theoretical frameworks that have been used to explain the connection between age and recovery. One of the most popular approaches to understanding how some people quit substance use is known as the maturing out hypothesis (Winick 1962). From this perspective, addiction follows a general trajectory such that many people cease drug use as a natural part of the life cycle or due to the functional reality of the length of their addiction. This latter group may have experienced drug use for a significant length of time and reaches the point where they are ready to recover as they move toward a sober lifestyle. Several studies of the maturing out hypothesis have found that a substantial portion of drug users initiated recovery in their mid – thirties (Winick 1962; Prins 1995).

More recent research on the maturing out hypothesis has revealed that this process may be more complicated than simply reaching a point in the life cycle that is no longer compatible with substance use. Evidence shows that personality traits evolve through emerging adulthood, such that normative changes in these characteristics occur during the time when substance use is generally on the decline (Littlefield et al. 2009). This may have significant implications for the recovery of criminal – justice involved adults.

Adults who come into contact with the criminal justice system as a direct result of their substance use at the time that they may be maturing out of their addiction may also be more committed to long – term recovery. If this is truly the case, older adults in treatment should also be more successful in recovery – related criminal justice outcomes, such as reconviction or rearrest, and several studies support this premise. In their study of prisoners (with a mean age of 31 years) who were paroled into substance use treatment facilities, for instance, Zanis and his colleagues (2003) found that younger parolees were more likely to receive a new conviction. Similarly, a study of adult offenders (with a mean age of 36) who completed a residential treatment program found that each additional year in age was associated with a 5 % decrease in the odds of being rearrested within 12 months of treatment completion (Sung and Richter 2006). This trend was also observed among younger adults (with a mean age of 31 years) who successfully completed the Drug Treatment Alternative to Prison (DTAP) program in New York (Sung and Belenko 2005). Adults who were rearrested after completion of the DTAP program were younger than those who were not rearrested. Finally, a study of female jail inmates who were recently released into the community after completion of substance use treatment showed older inmates were significantly less likely to be rearrested after treatment (Scott et al. 2014). These results emphasize the importance of age as a major contributing factor in achieving positive criminal justice outcomes following mandated substance use treatment experiences.

In addition to age, research has shown that there may be gendered differences in pathways to recovery, and this may influence the likelihood of post – treatment arrest. Women tend to initiate drug use for different reasons compared to men, primarily through introduction by romantic partners (Mayock et al. 2013; Stewart et al. 2003). Women have also been found to be more likely to be dependent on certain drugs (e.g. heroin and crack), especially among adult criminal justice – involved samples (Holloway and Bennett 2007), which may translate into greater risk for poor treatment outcomes. However, this risk does not necessarily result in slower progress toward recovery. In fact, research has shown the opposite with evidence that women tend to be less likely to use during recovery compared to men (Grella et al. 2008), and

women in a prison – based substance use treatment program went longer than men in their time between release and rearrest (Yang et al. 2015). Although not entirely focused on criminal justice – involved adults, this body of research suggests that women who have undergone substance use treatment may be more successful in their recovery compared to men. If this is the case, women court – mandated to enter substance use treatment should be less likely to relapse in substance use and less likely to be arrested compared to men.

Another critical factor associated with success in recovery and criminal justice – related outcomes is stable employment. Consistent gainful employment has been identified as a crucial element connected to many aspects of positive treatment outcomes, including treatment completion (Roll et al. 2005; Wickizer et al. 1994), lower likelihood of substance use, and less involvement in criminal activity (Henderson, 2001; Tripodi et al. 2010). The importance of obtaining a steady job cannot be overemphasized for adults entering recovery under criminal justice supervision because in addition to overcoming substance use to maintain employment, there is also a great deal of stigma connected to having a formal criminal record which can easily disqualify many applicants (Solomon 2012). Counteracting the additive effects of limited employment prior to treatment entry, potential relapse into substance use, and being labeled a "criminal" is vital to the recovery process. Without the financial stability provided by steady employment, recovering substance users may be more likely to turn to criminal activity as alternate means of financial support (van der Zanden et al. 2007). Thus, the lack of employment is likely to be a significant factor in the recovery process, especially as it relates to continual contact with the criminal justice system.

It is also well – known that recovery from all types of substance abuse and dependence is not equal, and this may influence contact with the criminal justice system. Evidence shows that dependence on certain drugs, such as cocaine or heroin for example, is significantly associated with the likelihood of repeat offending. Zanis et al. (2003) found that parolees who experienced cocaine dependence compared to those who were not dependent on the drug were more likely to receive a new conviction within 2 years of release from prison. This result was complemented by a study of The Rehabilitation for Addicted Prisoner's Trust (RAPt) Programme, which found that prisoners who experienced cocaine or heroin dependence were more likely to be convicted for re-offense within one year of release from prison (Kopak et al. 2015). In contrast, drug – involved offenders who were primarily marijuana dependent responded better to treatment and significantly reduced post – treatment involvement in criminal activity (Friedmann et al. 2012).

Based on this cumulative body of work, several factors contribute to an individual's pathway toward recovery, including age, gender, employment, and the nature of substance dependence. Considering that these factors significantly influence a person's recovery experience, including criminal justice contact as it relates to substance use, the current study was designed to examine which of these factors influences post – treatment arrest in a large sample adults in recovery in the United States who entered treatment according to a court – mandate. Identification of these key correlates of recovery will help to refine treatment delivery services, promote the recovery process, and ultimately limit criminal justice system involvement.

Methods

Data for the current study were collected as part of the larger Comprehensive Assessment and Treatment Outcome Research (CATOR) system. This program was the largest independent

(i.e., non-government funded and not owned by any individual treatment provider) and comprehensive evaluation of substance use treatment programs across the United States (Proctor and Herschman 2014). The CATOR system was designed and implemented as an evaluation of substance use treatment providers' abilities to achieve and maintain patients' abstinence from alcohol and drugs. The program was also dedicated to the collection of information to examine the most influential correlates of recovery among successful patients.

The data collected in the CATOR system were obtained by trained substance use treatment clinicians. Patients completed intake assessments as they entered treatment and clinicians gathered information pertaining to pre-treatment patterns of substance use, diagnostic indications, mental health factors, behavioral risk indicators, criminal justice involvement, engagement in peer support groups, and vocational proficiency. Given its concentration on substance use treatment patients, all participants in the CATOR system received a DSM – IV (APA, 1994) substance dependence diagnosis. The term dependence is consistently used throughout the current study as a reference to formal diagnoses. Although dependence is consistent with certain levels of DSM – 5 substance use disorders, data collection within the CATOR system was completed prior to the adoption of the most current diagnostic classification system. Thus, the term dependence is applied in this context.

The CATOR system collected data in a longitudinal prospective evaluation design, which was initiated at treatment admission and continued through discharge with several post-treatment follow-up assessments (Miller et al. 1997). The same measures that were collected at the baseline intake assessment were also the focus of follow-up structured telephone interviews that were conducted by trained technicians. These data were entered into a master raw data file and was subsequently released to the authors for analysis.

Although the CATOR system was not specifically designed to target criminal justice – involved adults who entered substance use treatment programs, it provides a tremendous amount of information about the recovery status of this vulnerable population. Additionally, there are few prospective longitudinal studies of criminal – justice involved substance use treatment patients that contain detailed prognostic indicators, such as those contained in the CATOR system. In short, data collected within the CATOR system allow for a comprehensive examination of clinical and demographic risk factors associated with the recovery of criminal justice – involved adults who entered substance use treatment programs.

Several eligibility criteria were established for inclusion in the current study. First, in order to appropriately focus on criminal – justice involved patients, only those who entered treatment according to a court mandate were included. Court – referred treatment came as a direct result of arrests for driving while intoxicated (DWI)/driving under the influence (DUI) and treatment entry as an alternative to incarceration. Among the 13,948 total CATOR participants with complete follow-up data, 14 % (n = 1980) entered treatment according to a court mandate. After the exclusion of cases with missing data (7 % or n = 146), patients who were ineligible because they entered treatment under the age of 18 years of age (2 % or n = 29), or were considered outliers because they entered treatment over 65 years of age (1 % or n = 22), the final study sample consisted of n = 1,783 adult male and female substance use patients who were involved in the criminal justice system.

Measures

Independent Variables Several independent variables were included in this study and the first was an indicator of a diagnosis for drug dependence according to the *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (DSM-IV; APA, 1994). Patients who met criteria for dependence on marijuana, cocaine, opiates, prescription drugs, or stimulants were coded "1" and all other patients (i.e., those who received an alcohol dependence diagnosis) were coded "0."

Another independent variable was a clinical index designed to summarize the severity of patients' substance use. This measure was an additive scale of 8 items, which addressed (1) recent substance use, (2) substance use frequency in the past year, (3) indication of injection drug use, (4) the number of substance dependence diagnoses the patient received, (5) a measure of alcohol use quantity, (6) alcohol withdrawal symptoms, (7) drug withdrawal symptoms, and (8) patients' substance use during treatment. Patients were coded according to their positive endorsement of each of these activities. Patients were coded "1," for example, if they reported use of a needle to inject drugs, and "0″ if they had not engaged in this potentially risky behavior. Patients were also coded "1″ if they received multiple substance dependence diagnoses and "0″ if they received a single dependence diagnosis. This pattern continued with positive endorsements of these indicators of more severe substance use coded "1″ and the responses to the eight items were summed to create a scale ranging from 0 to 8. Higher scores on this clinical severity of substance use index represented more severe cases of use.

A measure of adolescent risk behaviors associated with criminal justice involvement was also included as an independent variable. This 8-item additive scale was used to assess how many risk behaviors patients had experienced during adolescence by asking, "Before you were 15 years old, did you …": (1) skip school more than 10 times?, (2) get suspended or expelled from school?, (3) get arrested?, (4) run away from home overnight more than once?, (5) vandalize or destroy property?, (6) shoplift or steal?, (7) have sexual intercourse with more than one person?, or (8) start physical fights? Each of these items was coded "0" if patients indicated they had not been involved in the behavior and "1" if they were involved in the behavior. The measure ranged from 0 to 8 with higher values indicative of involvement in a greater number of risk behaviors.

Control Variables Patients' racial/ethnic background was taken into account with a measure coded "0″ for patients who self-identified as White and "1″ for patients who self-identified as Asian, Black, Hispanic, Native American, or another unspecified race or ethnicity. Patients who were treated in outpatient programs were coded "1″ and patients treated in residential programs were coded "0." Post-treatment substance use was assessed with a binary measure indicative of whether or not the patient had remained abstinent within the 1 – year period following treatment. Patients were coded "0″ if they reported they had not used any alcohol or drugs after being discharged from treatment and "1″ if they reported they had used alcohol or drugs after treatment.

Prior work focused on substance use recovery in criminal justice samples (e.g. Evans et al. 2011; Tripodi et al. 2010) several measures of demographic risk that may potentially be related to arrest outcomes were included for each patient. These indicators included a continuous measure of age and a binary indicator of marital status (patients were coded "1" for those who had never been married in the past and "0" for those who reported another type of marital

status). Participants' education level was also taken into account with patients who completed high school or had some formal education beyond high school coded "1″ and those who had not completed high school or had not obtained an equivalent degree coded "0." Finally, pre-treatment employment status was taken into consideration with patients coded "1″ if they had reported being employed immediately preceding treatment entry and "0″ for those who reported being unemployed at this time.

Dependent Variable The key outcome measure for the current study was an indicator of arrest within one year of discharge from treatment. During the follow – up assessment, patients were asked to report whether or not they had been arrested in the past year for several criminal offenses, including DWI/DUI, disorderly conduct, assault or battery, theft, robbery, burglary, prostitution, vandalism, drug possession, or selling drugs. Patients who reported that they had, in fact, been arrested within this time period were coded "1" and patients who had not been arrested within one year of treatment discharge were coded "0."

Results

Descriptive and Bivariate Statistics The study sample was split into two groups, one group which had been arrested within one year of discharge from treatment and another group which had not been arrested in this time frame. An initial examination of descriptive statistics, presented in Table 1, revealed an interesting pattern of results. For example, the group that had been arrested was younger (M = 28.60, SD = 8.96), on average, compared to the group which had not (M = 33.71, SD = 10.06) been arrested ($t(1,781) = 8.34$, $p < .001$). The group which experienced a post – treatment arrest also presented higher (M = 2.71, SD = 1.66) mean clinical substance use severity scores ($t(1,781) = 4.98$, $p < .001$) relative to the group which had not been arrested (M = 2.20, SD = 1.62). This trend was also observed with respect to adolescent risk behavior. The group which had been arrested reported higher mean adolescent risk behavior scores (M = 2.57, SD = 2.27) compared to the group (M = 1.89, SD = 2.04) that was not arrested ($t(1,781) = 5.21$, $p < .001$). Perhaps most importantly, especially for the current study of recovery among criminal justice – involved adults, a significantly larger proportion (26 %) of the group that was arrested within one year of treatment discharge reported relapse into substance use compared to the group (10 %) that was not arrested after treatment (χ^2 (1) = 81.79, $p < .001$).

These two groups also differed according to several demographic background variables. A significantly larger proportion (22 %) of arrestees reported pre – treatment unemployment compared to adults who were not arrested (16 %) after treatment (χ^2 (1) = 12.19, $p < .001$). A significantly larger proportion (24 %) of the arrested group also reported never being married in the past relative to the group (13 %) that did not experience post – treatment arrest (χ^2 (1) = 37.44, $p < .001$). Arrestees were also disproportionately more likely to have received a drug dependence diagnosis compared to patients who were not arrested (χ^2 (1) = 34.92, $p < .001$).

Although these two groups were different on a number of important clinical and demographic background factors that may be associated with post – treatment arrest, they were also

Table 1 Descriptive statistics of 1,783 court mandated substance use treatment patients by 1 year post – treatment arrest outcome

Variable	No arrest %/*M*(*SD*)	Arrest %/*M*(*SD*)
Age*	33.71(10.06)	28.60(8.96)
Clinical substance use severity*	2.20(1.62)	2.71(1.66)
Adolescent risk behavior*	1.89(2.04)	2.57(2.27)
Gender		
Female	85 %	15 %
Male	82 %	18 %
Race		
Non-White	81 %	19 %
White	83 %	17 %
Program type		
Nonresidential program	84 %	16 %
Residential program	82 %	18 %
Post-treatment substance use*		
Relapse	74 %	26 %
Abstinent	90 %	10 %
Employment status*		
Unemployed	78 %	22 %
Employed	84 %	16 %
Marital status*		
Never married	76 %	24 %
Other	87 %	13 %
Education level		
Less than high school	79 %	21 %
Completed high school or higher	83 %	17 %
Substance dependence*		
Drug dependence	76 %	24 %
Alcohol dependence	87 %	13 %
Arrest history		
Prior arrest	82 %	18 %
No prior arrest	85 %	15 %

Differences between outcome groups were tested using chi-square tests for categorical variables and *t*-tests for continuous variables
*$p < .001$

similar on a number of these variables. The proportion of post – treatment arrests were equivalent across gender groups (χ^2 (1) = 2.51, p = .113). This was evidenced by the 15 % of female patients who were arrested after treatment compared to the 18 % of male patients who were arrested post – treatment. The arrest groups also did not differ according to race (χ^2 (1) = 0.26, p = .607) with 19 % of non-white patients arrested post – treatment compared to 17 % of white patients. In addition, participants in nonresidential treatment programs were no more likely to fall into the group that was arrested within 12 months of discharge from treatment (16 %) compared to the proportion of patients who entered residential (18 %) treatment programs and were arrested after discharge from treatment (χ^2 (1) = 1.12, p = .289). The arrest groups were also similar in terms of educational level (χ^2 (1) = 2.60, p = .107) with 21 % of those with less than a high school education experiencing post – treatment arrest compared to 17 % of those who had either completed high school or had

higher levels of education. This trend was also observed with respect to arrest history. A similar proportion of adults with an arrest prior to treatment entry (18 %) had been arrested within one year of discharge from treatment compared to the proportion of adults who had not been arrested (15 %) prior to treatment entry (χ^2 (1) = 1.76, p = .185).

Multivariate Logistic Regression Analyses Considering the significant bivariate relationships observed among many of the clinical and demographic background factors associated with post-treatment substance use and arrest, a multivariate logistic regression model was used to assess these relationships while holding potentially confounding variables constant. The results from this model are presented in Table 2. Several significant relationships were observed in this model.

The first significant result was related to the association between age and the likelihood of post – treatment arrest. For every additional year in age, there was a 4 % reduction in the odds of arrest within one year of discharge from treatment (*OR* = 0.96, *95 % C.I.* = 0.94–0.98). After holding all of the clinical factors and demographic background variables constant, female patients were 35 % less likely than male patients to be arrested within one year of discharge from treatment (*OR* = 0.65, *95 % C.I.* = 0.46–0.93). In addition, patients who reported unemployment at treatment entry were 1.39 times more likely (*OR* = 1.39, *95 % C.I.* = 1.04–1.85) to be arrested after treatment compared to patients who were employed at the time treatment was initiated.

A drug dependence diagnosis was also a significant predictor of the likelihood of post – treatment arrest. Patients who received a drug dependence diagnosis, relative to an alcohol dependence diagnosis were 44 % more likely (*OR* = 1.44, *95 % C.I.* = 1.04–1.98) to have been arrested after treatment. Relapse was the most potent predictor of post – treatment arrest. Patients who reported relapse into substance use were 2.70 times more likely (*OR* = 2.70, *95 % C.I.* = 2.05–3.54) to be arrested within one year of treatment than patients who remained abstinent.

Table 2 Logistic regression results predicting re-arrest within 1 year of discharge from treatment

Variable	*β*(SE)	Wald's χ^2	*p*	OR	95 % *CI*	
					Lower	Upper
Age	−0.04(0.01)	19.49	0.000	0.96	0.94	0.98
Female	−0.43(0.18)	5.46	0.020	0.65	0.46	0.93
Non-White	0.01(0.19)	0.00	0.944	1.01	0.69	1.48
Out-patient program	0.01(0.15)	0.01	0.937	1.01	0.76	1.35
Relapse	0.99(0.14)	51.16	0.000	2.70	2.05	3.54
Unemployed	0.33(0.15)	5.08	0.024	1.39	1.04	1.85
Never married	0.14(0.16)	0.82	0.365	1.15	0.85	1.57
Less than high school education	0.05(0.19)	0.06	0.813	1.05	0.72	1.52
Drug dependence	0.36(0.16)	4.95	0.026	1.44	1.04	1.98
Prior arrest	0.06(0.18)	0.12	0.725	1.07	0.75	1.52
Clinical substance use severity	0.05(0.05)	0.96	0.327	1.05	0.95	1.15
Adolescent risk behavior	0.03(0.03)	1.04	0.308	1.03	0.97	1.10

Discussion

The primary objective of this study was to identify the correlates of recovery and post – treatment arrest in a large sample of adults who were court mandated to enter treatment in the United States. Several important findings emerged, which demonstrate the importance of substance use recovery for adults under criminal justice supervision. These results will ultimately foster the refinement of treatment services, especially for this vulnerable population of adults in the United States.

The first major finding related to the association between age and the likelihood of arrest within one year of discharge from treatment was complimentary of other research indicating that older criminal justice – involved drug users who received treatment tended to be more successful. In their study of latent profiles of drug users on probation supervision, Caudy and his colleagues (Caudy et al. 2014) found that abstainers had the highest mean age (38.4 years). Given the association between age and arrest observed in the CATOR system data, as well as the finding that relapse was such a robust predictor of post – treatment arrest in the current study, follow – up analyses showed that adults who relapsed were significantly older (3 years, on average) compared to those who remained abstinent. In addition to emphasizing the possibility that some substance users may not have matured out of substance use, this evidence demonstrates the need to fully consider age appropriate programming options for younger adults who enter substance use treatment under criminal justice supervision.

Gender was also significantly associated with the probability of post – treatment arrest, with women experiencing lower risk for arrest compared to men. In accord with prior research that shows that men have similar treatment outcomes relative to women (e.g. Greenfield et al. 2007), the results from the CATOR system demonstrated that similar proportions of women (47 %) and men (46 %) remained abstinent from substances in the 12 – months following discharge from treatment. However, the observed difference in arrest outcomes revealed that men experienced greater criminal justice contact compared to women. One explanation underlying these observed differences may be attributed to levels of treatment engagement between women and men. Evidence has demonstrated that women may appeal more to social support and help – seeking, which can promote recovery while men may remain isolated and controlling (Fiorentine et al. 1997). Although men may respond better to more intensive treatment plans compared to women (Marsh et al. 2004), little research has investigated gender responsiveness and treatment experiences as these specifically relate to post – treatment criminal justice contact. Patients' levels of treatment engagement and responsiveness were not available for the current study, making this a key area for closer examination in future research.

Continued drug use has also been observed as a significant obstacle to long – term employment after treatment (Ginexi et al. 2003), emphasizing the need to focus on obtaining work during and immediately following discharge from treatment. Empirical evidence has shown that treatment can enhance the likelihood of obtaining short – term employment (Kissin et al. 2015), but more work needs to be done to help those recently discharged from treatment achieve occupational stability. Steady employment can help to reduce environmental risks of relapse, such as unstable housing and economic strain which may favor criminal alternatives to financial advancement (Morse et al. 2015). Unfortunately, it may be all the more challenging for recently discharged drug users who complete treatment and seek jobs in an economic climate characterized by high rates of unemployment (Sung and Richter 2006). Treatment delivery providers need to consider these factors as patients prepare to integrate into the workforce as they enter recovery.

Drug dependence was also significantly associated with post – treatment arrest. Research has shown that patients seeking treatment for the use of certain drugs, especially cocaine, heroin, and methamphetamine, experience great difficulty in quitting drug use (Hser et al. 2008; Kopak et al. 2015). More intensive services may be required for individuals according to for the use of these types of drugs, especially if the ultimate goal is to reduce or, ideally, avoid further criminal justice supervision.

Post – treatment relapse of substance use was the most potent correlate of post – treatment arrest. There are many challenges associated with achieving successful long – term recovery, and relapse prevention must be positioned at the core of an effective approach (Marlatt and Witkiewitz 2005). Absent effective relapse maintenance techniques, treatment programs will fall short in achieving recovery and limiting subsequent criminal justice involvement of adults in treatment.

This study adds to the existing knowledge of correlates of post-treatment success, but there are several limitations to be considered. The majority of the treatment providers included in the CATOR system were non – profit agencies that were willing to participate in an external evaluation of treatment service delivery. Thus, the results from the current study may not necessarily generalize to adults who received treatment from publicly funded service providers. An underrepresentation of racial and ethnic minority subgroups in the current study may also limit the application of these results to more culturally diverse populations. Although the longitudinal prospective design of this study allowed for the examination of one – year post – treatment arrest, long – term follow – up information beyond this time period were not available. It is also important to note that a foundational aspect of the therapeutic process involves individuals' responsiveness to treatment, especially for patients seeking treatment under court mandate (De Leon et al. 2006; Broome et al. 1996). Unfortunately, indicators of patients' assessments of the treatment process as perspectives related to the initiation and continuation of abstinence from substance use were not available for the current study.

After careful consideration of these limitations, there are several notable conclusions. It is generally accepted that there is no one treatment option best suited to all adults in the criminal justice system, but there are some best practices that can be used to guide patients toward the road to recovery. Based on the results of the current study, adults who experience greater risk for relapse will also run a higher risk of post – treatment arrest. Following foundational procedures for best practices with criminal justice populations (Marlowe 2003), proper assessment can help match younger, unemployed, drug dependent patients with appropriate services to help mitigate this risk. Treatment service providers need to reconsider programming options for at – risk adults entering treatment under court mandate if they are to guide patients onto the road to recovery and away from the criminal justice system.

Compliance with Ethical Standards

Conflict of Interest Albert M. Kopak, Sydney Hurt, Steven L. Proctor and Norman G. Hoffmann have no conflicts of interest to report.

Informed Consent Informed consent was obtained from human subjects and protection was approved by the Institutional Review Board of the Foundation supervising the study.

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