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Individual-Level Predictors of Community Aftercare Completion

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Abstract

The importance of prison treatment for substance-using offenders in reducing recidivism and relapse has garnered much attention and acceptance over the past 30 years. The role of community aftercare as a continuum of the treatment process has been broadly acknowledged as essential in enhancing posttreatment success. However, our understanding of individual-level factors influencing a client's willingness to participate and engage in aftercare remains limited. This article presents findings of individual-level factors found to be associated with successful completion of aftercare among a sample of 259 ex-offenders admitted to aftercare following 12 months of in-prison drug treatment.

Keywords

aftercare, drug treatment, risk, need, retention, predictors

Approximately 1.6 million adults are under the jurisdiction of state or federal prisons (mid-year 2008 figures; West & Sabol, 2009). State prisons account for 1.4 million of these offenders. The unprecedented number of inmates in the United States is attributed in large part to the nation's War on Drugs

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(Auerhahn, 2004; Belenko, 2000; Belenko & Peugh, 2005; Harrison, 2001). Drug offenders accounted for 12% of the overall increase in the state prison population between 2000 and 2006 (Sabol, West, & Cooper, 2009). More than half of state inmates (53.4%) meet the criteria for drug dependence or abuse (Mumola & Karberg, 2006). Belenko and Peugh estimated that 52.3% of female and 31.5% of male state prison inmates are in need of intensive residential treatment for drug abuse disorders.

There is a pervasive problem of drug abuse within the nation's correctional population, with an estimated 60% to 80% of the inmate population reporting drug use at some point in their lives. The Office of National Drug Control Policy (ONDCP, 2001) suggests that the criminal justice system provides an ideal venue for drug treatment. Accordingly, a National Institute on Drug Abuse (NIDA, 1992) report found the criminal justice system to be the largest provider of mandated drug treatment in the United States. Reviews of research on mandated in-custody treatment have demonstrated the effectiveness of intensive prison-based drug treatment in reducing postincarceration recidivism and drug relapse in serious substance-using offenders (Andrews et al., 1990; Bale et al., 1980; Inciardi, Martin, Butzin, Hooper, & Harrison, 1997; Knight, Simpson, Chatham, & Camacho, 1997; Pearson & Lipton, 1999; Welsh, 2002; Wexler, DeLeon, Thomas, Kressel, & Peters, 1999). Although these findings are encouraging, many newly released inmates will relapse to drug use and resumption of a criminal lifestyle regardless of the drug treatment approach (Harrison, 2001; Hiller, Knight, & Simpson., 1999). High rates of relapse among substance abusers, both entering and completing treatment, are the norm (McKay, 2001; Tims & Leukefeld, 1986), particularly those who have engaged in repeated use of addictive drugs (NIDA, 1992). Many substance abusers will relapse at least once following treatment, with the most vulnerable period for risk of relapse being the first 3 months posttreatment (DeLeon, 1984). Therefore, the role of aftercare in reducing relapse is critical (Hawkins & Catalano, 1985).

Due to the frequency and clinical implications of relapse among substance abusers and across substances, individuals completing more intensive drug treatment are generally urged to participate in lower-intensity community programs upon release as a continuation of their primary treatment (Brownell, Marlatt, Lichtenstein, & Wilson, 1986; Soyez & Broekaert, 2003). The substantial benefit of community aftercare programs following prison-based TC treatment to postrelease success is widely accepted as an important factor in the treatment continuum (Hiller et al., 1999; Knight, Simpson, & Hiller, 1999; Martin, Butzin, Saum, & Inciardi, 1999; Simpson, Wexler, & Inciardi, 1999; Wexler, Melnick, Lowe, & Peters, 1999). The principal aim

of community aftercare in the continuum-of-care model is to serve as a maintenance phase following treatment. Aftercare should reduce the likelihood of relapse during the most vulnerable and critical periods while providing support during the reintegration process (McKay, 2001; Soye & Broekaert, 2003). Burdon et al. (2004), however, suggest that despite the efficacy of prison-based TC with community aftercare, we know little about the factors associated with an individual's decision to participate and remain in an aftercare program. Because of the significant positive association between aftercare participation and posttreatment outcome, it is essential to understand the factors that influence retention in postincarceration aftercare treatment (De Leon, Melnick, Thomas, Kressel, & Wexler, 2000). In a study of 433 state inmates mandated to community aftercare programs, Welsh (2002) reported 23% failed to complete the program.

Retention, defined as length of time spent in treatment, is recognized as one of the strongest and most reliable predictors of posttreatment outcomes in noncorrectional community settings (DeLeon, Wexler, & Jainchill, 1982; Simpson, 1979; Simpson, Brown, & Joe, 1997; Simpson, Joe et al., 1997). Evaluation studies examining the time needed to affect posttreatment outcome argue that until a minimum temporal threshold has been met, clients will not begin to show favorable outcomes (Bale et al., 1980; De Leon et al., 1982). For example, findings from the Drug Abuse Treatment Outcome Study (DATOS), a longitudinal prospective study of adults entering drug treatment programs, reported in a 1-year follow-up of clients in multiple treatment modalities that reductions in daily and weekly cocaine use were greater for clients who remained in treatment for 3 months or more (Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997). Similar results were found in the Drug Abuse Reporting Program (DARP), a large-scale national evaluation of community-based drug abuse treatment programs (Sells & Simpson, 1980). Individuals participating in treatment programs who remained in treatment for greater than 3 months did well, and those clients who remained in treatment for less than 3 months and those receiving no treatment had the worst overall outcomes regardless of modality (Sells & Simpson, 1980).

The importance of duration to posttreatment outcome suggests that retention rates may be a proxy measuring client attributes, including background factors, motivation, therapeutic engagement, compliance with the program, as well as treatment settings (Fletcher, Tims, & Brown, 1997; Simpson & Joe, 2004). For example, client motivation has consistently been found to influence an individual's decision to enter treatment and his or her subsequent engagement in the program (DeLeon, Melnick, Thomas, Kressel, & Wexler, 2000; Hiller, Knight, Leukefeld, & Simpson, 2002; Katz et al., 2004; Simpson

& Joe, 1993, 2004; Simpson, Joe, Rowan-Szal, & Greener, 1995). Simpson (2001), however, suggests that factors such as client motivation are only one of several interrelated individual-level factors interacting with program elements influencing client engagement in the treatment process.

The Texas Christian University (TCU) Treatment model offers a conceptual framework of treatment process and outcome (Simpson, 2001). This model describes several core elements of the treatment process, including patient attributes and program characteristics, and suggests that these elements work in a sequential fashion to enhance treatment retention thereby improving long-term outcomes (Simpson, 2001; Simpson & Joe, 2004). Patient attributes at intake, along with program and counselor characteristics, will influence two core mediators of treatment outcome: therapeutic relationship and program participation (Simpson, 2001; Simpson & Joe, 2004). Simpson (2001, p. 208) argues that in order to improve the treatment process it is necessary to understand these “core components” of the treatment process. However, it is also essential to understand how the client becomes engaged within that treatment process (Simpson, 2001).

Despite growing recognition of the impact of individual characteristics on treatment retention, research on how to improve retention rates in drug abuse aftercare programs is limited (Lash, 1998). Little attention has been given to understanding the interaction between individual characteristics and treatment processes and outcomes (Palmer, 1995; Welsh & Zajac, 2004). Palmer (p. 104) suggests that nonprogrammatic factors not only play a significant role in treatment outcomes but also that their influence in the treatment process complicates the “identification of effective programmatic combinations.”

The influence of offender differences on the treatment process and their role in program planning has been essentially overlooked (Palmer, 1995; Welsh, 2006; Welsh & Zajac, 2004). Program assessments are based largely on offender risk categories (Palmer, 1995). The problem with assessing offenders on risk level alone is that many offenders will have the same risk classification but very different personalities, and therefore, responses to treatment may differ (Palmer, 1995). A meta-analysis of 20 correctional treatment approaches found offenders assessed with similar risk classifications differed greatly in their response to treatment supporting the concept of offender-program interaction (Palmer, 1995).

The principles of risk-need-responsivity (RNR; Andrews & Bonta, 1994, 2007) as a treatment model suggests that risk classification (risk principle) should serve to determine treatment intensity (i.e., higher-risk/higher-intensity treatment), whereas the need principle argues that only the intermediate targets (i.e., criminogenic needs) should be focused upon in treatment (Andrews,

Bonta, & Wormith, 2006; Ward, Melser, & Yates, 2007). The responsivity principle of the model argues that because risk and need interact with offender-based factors, it is important to match the treatment program to offender characteristics (e.g., personality, motivation, learning style, and demographic attributes; Andrews et al., 2006; Ward et al., 2007).

Identifying offender characteristics associated with early treatment engagement should allow correctional practitioners and policy makers to better utilize scarce resources by matching offender needs and risk with treatment programs. There are some individual-level factors that are accepted in the criminological literature as significant predictors of recidivism, including age, gender, and prior criminal history (Andrews & Bonta, 1994). Several of these factors have also been identified as predictors of treatment engagement and retention such as age (Chan et al., 2004; Collins & Allison, 1983; Young, 2002), gender (Chan et al., 2004), and prior criminal history (Young, 2002). However, these predictors are fixed variables, and therefore, by their nature are inalterable (Gendreau & Goggin, 1996). Dynamic risk factors, on the other hand, offer practitioners the opportunity to address factors susceptible to change (Hiller et al., 1999). Gendreau and Goggin suggest that effective assessment is best served by evaluating both static and dynamic factors with emphasis on dynamic risk factors.

Classification instruments used by correctional institutions to identify the risks and needs of offenders for purposes of assigning treatment services (Hiller et al., 1999) are becoming more integrated in both the use of assessment methods (e.g., actuarial and clinical assessment methods) and the identification of dynamic and static offender variables (Byrne & Pattavina, 2006). The Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995), a 54-item actuarial classification instrument designed to assess criminogenic risk and need (Flores, Lowenkamp, Smith, & Latessa, 2006), is an example of a popular classification instrument that combines objective (e.g., employment, education, criminal history) and subjective (e.g., alcohol/drug problems, emotional issues, attitudes) assessments (Byrne & Pattavina, 2006). The robustness of the LSI-R as a valid predictor of outcome in the correctional setting has been widely supported (Flores et al., 2006; Kelly & Welsh, 2008).

The growing evidence that offender characteristics offer predictive insight for practitioners and policy makers alike suggest the need to identify individual-level factors associated with treatment engagement. Dynamic risk factors in particular are essential to effective offender risk assessment (Gendreau & Goggin, 1996). The purpose of this study is to identify individual-level predictors associated with successful completion of aftercare following

release from prison. This current study is unique because prior research in drug treatment has generally accepted continuum of care into the community as the hallmark of successful treatment, yet little research has explicitly examined individual predictors of aftercare participation. Furthermore, this study has the added benefit of utilizing a strongly validated risk assessment instrument (LSI-R) that allows us to examine individual-level predictors through objective measures.

Methods

Participants

Data were collected from a larger study involving 731 inmates admitted to the State Correctional Institution (SCI) in Chester, Pennsylvania. The original study used an experimental design to randomly assign inmates to either a 12-month in-prison therapeutic community (ITC) or a less intensive outpatient program. SCI Chester is a medium-security prison for men with a documented history of substance abuse. Assessment of eligibility criteria for transfer to SCI Chester for members of the research sample were made by the Pennsylvania Department of Corrections.

Eligibility criteria included inmates having 18 to 34 months remaining until their earliest (minimum) release date and a documented history of alcohol or drug abuse as measured using the TCU Drug Screen II (Knight, Simpson, & Hiller, 2002). Additional eligibility requirements for admission to SCI Chester included a custody level of 2 or 3 (security levels range from 0 = *community* to 5 = *disciplinary custody*), no detainees, and no serious mental health problems.

Starting on January 13, 2003, information regarding admission, discharge, and self-report data were collected for all inmates admitted to the substance abuse programs at SCI Chester. The substance abuse programs are subcontracted to Gaudenzia, Inc., whereas the Department of Corrections operates and administers the security functions of the prison.

Most inmates released from SCI Chester (90%-95%), including pre-releases, are mandated to the custody of either a community correctional center (CCC; a residential facility operated by the Department of Corrections in the community) or a community contract facility (CCF; a publicly or privately owned residential facility approved by the Bureau of Community Corrections for use by inmates) for a period of 6 months. Community contract facilities at the time of this study were primarily operated by Gaudenzia. Inmates who lived in areas where Gaudenzia CCFs were not available were mandated to

the custody of local treatment providers experienced with criminal justice clients and contracted to provide aftercare. All facilities were required to follow a standardized aftercare treatment regimen prescribed by Gaudenzia.

Because the current study was evaluating predictors of aftercare completion, our sample was limited to a subset ($n = 259$) of the total population ($N = 731$) of the larger study from which the data were drawn to include only offenders who had entered an aftercare program at the time this study was undertaken. Thus, the eligibility criteria for admission to the current study included inmates who had been released from SCI Chester, had entered a mandatory community-based aftercare program, and had been administered a TCU Drug Screen II and an LSI-R. Completion of aftercare was determined by the assigned CCC or CCF. Participants were males in the age range of 18 to 60 years, with a mean age of 32 years.

Dependent Variable

A dichotomous outcome variable reflecting aftercare completion was coded (0 = *failure to complete*, 1 = *successful completion*). At the time of the record search conducted for this study, 174 (67%) participants successfully completed aftercare and 85 (33%) failed to complete.

Independent Variables

Several measures were used to gauge participants' treatment needs and progress in prison. The instruments included the Texas Christian University (TCU) Drug Screen II, the TCU Resident Evaluation of Self and Treatment (REST), and the Level of Service Inventory—Revised (LSI-R).

The TCU Drug Screen II has been used extensively with inmate populations and has demonstrated strong reliability (Broome, Knight, Joe, & Simpson, 1996; Shearer & Carter, 1999). Analysis of the uniformity and precision of the TCU Drug Screen in assessing drug use severity reported a coefficient alpha of .89, with item-total correlations ranging from .37 to .58 (Knight, Simpson, & Morey, 2002). The TCU Drug Screen II provides information about the daily functioning and frequency of drug use before imprisonment, including information dealing with specific drug type used, including all major categories of drugs and alcohol. Additional questions included in the instrument address problems individuals experienced with drug use, including psychological issues, physical illness, and other effects of drug use (e.g., negative impact on employment, friends, and family).

The Resident Evaluation of Self and Treatment (REST) includes inmate ratings of problems related to drugs, treatment program features, psychological functioning, participation in therapeutic groups, counselor attitudes and behavior, resident attitudes and behavior, and counseling sessions (both group and individuals; Broome et al., 1996; Shearer & Cater, 1999). The REST allows questions to be posed to inmates regarding treatment over time (i.e., changes in “dynamic” risk factors). The REST was administered at three intervals (1 month after admission, 6 months after admission, and 12 months after admission). The REST instrument contains 111 questions organized into 18 subscales in which response categories are on a Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Four sets of subscales were utilized for this study. The first addresses psychological functioning (as measured by self-esteem, depression, anxiety, and self-efficacy). The second set focuses on social functioning and includes measures of hostility, risk taking, and social conformity. The third set was treatment motivation consisting of treatment readiness and perception of external pressure. The final group of subscales assesses the treatment process, including therapeutic engagement. All scales have shown good reliability (see Welsh & McGrain, 2008, for detailed summary of alpha reliability coefficients for each subscale of the REST) and have been validated upon inmate treatment populations (Hiller, Knight, Rao, & Simpson, 2000; Hiller et al., 2002; Simpson, 1991; Simpson & Joe, 1993).

The LSI-R is a 54-item risk/need actuarial instrument that is theoretically driven, consisting of 10 subscales that measure criminal history, education and employment, family and marital situation, financial circumstances, housing or accommodations, leisure and recreation, companions, drug and alcohol abuse, attitudes or orientations, and emotional and personal characteristics (Kelly & Welsh, 2008, p. 820). The total score of all 10 domains of the LSI-R is used to assess the offender’s risk level and areas of criminogenic need. The LSI-R is generally considered to have good predictive validity among a wide variety of correctional populations (Girard & Wormith, 2004). Age and criminal history (measured by current and prior offense gravity scores) have consistently been shown to influence success in treatment programs (Andrews & Bonta, 2007) and are typically controlled for in studies evaluating treatment programs (Hiller et al., 1999). The age of participants was calculated by subtracting the inmate’s birth date from the date of admission into the program. Current offense gravity scores were provided by the Pennsylvania DOC using predetermined guidelines set by the Pennsylvania Sentencing Guidelines ranging from 0 to 10, with higher score indicating a more serious offense. We also controlled for the in-prison treatment modality (0 = *outpatient*

and 1 = *therapeutic community*). Among those inmates who completed aftercare and were included in our sample, 130 (49.8%) participated in the prison-based outpatient substance abuse program and 129 (50.2%) in the more intensive residential therapeutic community program.

Analysis

First, we conducted bivariate analysis of the relationship between successful completion of aftercare and TCU Drug Screen II scores. For the bivariate analysis, TCU scores were categorized as low or high (scores less than 3 were considered low and scores of 3 or more were categorized as high). Score classifications were based on the TCU criteria, which consider scores of 3 or greater to indicate relatively severe drug-related problems and correspond approximately to *DSM (Diagnostic and Statistical Manual of Mental Disorders)* drug dependence diagnosis (Institute of Behavioral Research, 2006; Knight et al., 2002; Welsh, 2002). Next, we examined the relationship of LSI-R scores with successful completion of community aftercare. Similar to the TCU scores, we categorized LSI-R scores as either medium-high or low (scores of 20 or less were considered low; scores of 21 or above were classified as medium-high). Classification of LSI-R scores were based on the Pennsylvania Department of Corrections (2006) Assessment Guidelines—assessment cut scores (available at <http://www.portal.state.pa.us/portal/server.pt>)

Following the bivariate analyses, we conducted a series of logistic regression models to examine the predictive power of the independent variables on retention. We used the SPSS default “enter” method to enter our independent variables. Inspections for multicollinearity revealed no problems. The variance inflation factor (VIF) and tolerance values were in acceptable ranges; VIF values were not above 3, tolerance values were not lower than .10 (Pallant, 2007). The first model tested for differences in the likelihood of successfully remaining in and completing community aftercare (succeeded/failed), while controlling for all of the independent variables. Because the LSI-R is an actuarial instrument measuring risk and need among 10 domains, of which only one is related to alcohol and other drugs, we wanted to examine whether the addition of a substance use—screening instrument such as the TCU Drug Screen II to the LSI-R would enhance the predictive power of these instruments on our dependent variable, *aftercare completion*. Therefore, we ran a second model with the addition of an interaction term (LSI-R Score x TCU Drug Screen II Score).

Table 1. Successful Completion of Aftercare by TCU Drug Screen and LSI-R Scores

Dependent variables	TCU scores*		LSI-R scores**	
	Low (%)	High (%)	Low (%)	High (%)
Successfully completed aftercare	46.5	53.5	66.1	33.9
Failed to complete aftercare	35.8	64.2	37.6	62.4

*p < .05. **p < .001.

Results

Bivariate Findings

Greater than half (53.3%) of offenders who successfully completed aftercare scored high on the TCU Drug Screen II, compared with 46.5% of completers having low TCU scores (Table 1). Among offenders who failed to complete their aftercare programs, 64.2% had high TCU scores indicative of severe substance abuse, with 35.8% of failing offenders with low TCU scores. Findings of the LSI-R scores revealed that 62.1% of offenders who successfully completed their aftercare programs had low LSI-R scores compared with 37.9% meeting the criteria for high scores. Similarly, we found that of the offenders who failed to complete aftercare, 69.4% had high LSI-R scores and less than half (30.6%) had low scores.

Multivariate Results

Lower LSI-R scores were significantly predictive of successful completion in an aftercare program. Our finding revealed that as an offender’s LSI-R score increased, their odds of successfully completing aftercare decreased by a factor of .953. The TCU Drug Screen II score, however, was not found to be significantly associated with aftercare completion. We also found that offenders who reported lower levels of hostility at the end of their incarceration were more likely to complete community aftercare programs (OR = .948; Table 2).

In our second model, we included all the variables that were entered in the first model with the addition of an interaction term (TCU Drug Screen II x LSI-R score) to examine the relationship between need for treatment, as measured by the TCU Drug Screen II, and risk and need, as measured by the LSI-R. Hostility remained a significant predictor of aftercare completion. However, the interaction between LSI-R and TCU scores was not found to be

Table 2. Logistic Regression of Aftercare Completion on Predictor and Control Variables

Variable	B	SE	Exp(B)
Final program type	0.177	0.353	1.194
Offense gravity score—current	-0.125	0.165	0.883
Offense gravity score—prior	0.086	0.093	1.090
Age	-0.023	0.021	0.977
Self-esteem	0.007	0.032	1.007
Depression	0.030	0.028	1.031
Anxiety	0.025	0.023	1.026
Self-efficacy	0.013	0.033	1.013
Hostility	-0.053**	0.022	0.948
Risk taking	0.001	0.024	1.001
Social conformity	-0.009	0.030	0.991
Treatment readiness	-0.001	0.021	0.999
Perceptions of external pressures	-0.020	0.018	0.980
Therapeutic engagement	0.004	0.017	1.004
Level of service inventory—revised	-0.049*	0.023	0.953
TCU drug screen II	-0.077	0.067	0.926
Constant	2.764	2.582	15.860

Note: The coefficients for the independent variables that exerted a statistically significant effect on the dependent variable are given in boldface ($\chi^2 = 20.231$, $df = 16$, Nagelkerke $R^2 = .139$).

* $p < .05$. ** $p \leq .01$.

significant with the LSI-R dropping out of significance as an independent predictor.

Discussion

It has been argued if an individual is to gain the full benefit of prison drug treatment, he or she must also successfully complete a structured community aftercare program (Hiller et al., 1999; Knight et al., 1999; Martin et al., 1999; Simpson et al., 1999; Wexler, DeLeon, et al., 1999). Retention in aftercare has been shown to be a consistent and reliable predictor of posttreatment effectiveness (Simpson & Joe, 2004). The present study found the LSI-R to be a strong predictor of successful aftercare completion. This finding supports those of Andrew and Bonta's (1995) that the LSI-R is a reliable and valid assessment instrument for predicting risk and need among various correctional populations for correctional adjustment and outcome, including in

the community setting. Because the LSI-R is designed to assess both static and dynamic risk factors among 10 different domains of an offender's risks and needs, this finding would support that of the TCU Treatment model (Simpson, 2001), which suggests that there are several core elements that work sequentially to enhance treatment retention (Simpson, 2001; Simpson & Joe, 2004) beyond treatment need alone. The TCU Drug Screen II, however, was not a significant predictor for aftercare completion. The bivariate results for the TCU Drug Screen did yield some unexpected results, with a greater percentage of aftercare completers having high TCU scores suggesting that offenders with more severe drug-related problems were more likely to remain in their aftercare program. This finding suggests support for Andrew and Bonta's (2003) risk principle, which suggests that high-intensity treatment should be reserved for high-risk clients. If low-risk clients are placed in high-intensity treatment, it may actually have deleterious effects (Welsh, 2002). Thus, offenders with relatively minor or low drug problems may consider additional drug treatment following prison release as unnecessary and fail to remain in the program,

In our second model (results not shown), we included an interaction variable, LSI-R x TCU Drug Screen II to assess whether the combined sensitivity of both instruments would improve the predictive ability for successful completion of aftercare beyond that of either independent instrument. The interactive effect of the LSI-R and TCU Drug Screen II was not significant, and our model was a poorer fit ($p = .141$), with the LSI-R falling out of significance as an independent instrument. Although the LSI-R was no longer significant and the TCU Drug Screen II remained nonsignificant in our second model, the coefficient for the TCU Drug screen increased while the LSI-R's coefficient decreased, suggesting that perhaps the LSI-R is partially moderated by the TCU score or perhaps the LSI-R by itself does not adequately account for an offender's substance dependence and, therefore, an indicator of AOD dependence like the TCU Drug Screen is important to include in offender assessments. Further research would be needed to examine these findings. Hostility was found to be a significant predictor of aftercare completion in both models, with lower levels of hostility associated with an increased likelihood of completion. Increased levels of hostility are often found to coexist in individuals with substance use disorders (Rao, Broome, & Simpson, 2004), and high levels of hostility are frequently associated with lower levels of treatment engagement and early drop-out rates (Chien, 1980; Joe, Simpson, & Broome, 1999). Findings from the Drug Abuse Treatment Outcomes Study (DATOS) suggested pretreatment hostility has a negative influence on the treatment process, including early drop-out rates and failure

to bond with counselors (findings were based on the data of clients who did *and* did not receive additional long-term treatment). Thus, if hostility impedes an offender's engagement and subsequent retention in community aftercare treatment, this suggests the need for treatment providers to be aware and responsive to this symptom at the time of intake.

Limitations

In the current study, major variables predictive of successful aftercare completion were examined, providing a detailed analysis of what factors influence aftercare completion. However, because our sample consisted solely of males, gender comparisons were not possible. In addition, we were not able to control for race due to missing data. Both gender and race have been found to influence program completion in previous studies (Hiller et al, 1999). Furthermore, the sample in this study was limited to one state and one correctional facility, thus limiting the generalizability of the findings.

Conclusion

Aftercare following prison-based drug treatment has generally been considered the hallmark to successful treatment, yet our knowledge of individual-level predictors of treatment engagement and completion remains limited. Findings from the current study suggest that an offender's level of hostility entering treatment and their risks and criminogenic needs assessed by the LSI-R influence the likelihood of an individual's remaining in and completing community aftercare following prison-based drug treatment. These findings lend support for Simpson's (2001) argument that to enhance treatment success, it is important to understand not only the core components of the treatment process but also the individual-level attributes associated with treatment engagement.

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References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC.
- Andrews, D. A., & Bonta, J. (1994). *The psychology of criminal conduct*. Cincinnati, OH: Anderson.
- Andrews, D. A., & Bonta, J. (1995). *LSI-R: The Level of Service Inventory-Revised*. Toronto, ONT: Multi-Health Systems, Inc.
- Andrews, D. A., & Bonta, J. (2003). *The psychology of criminal conduct*. Cincinnati, OH: Anderson.
- Andrews, D. A., & Bonta, J. (2007). *The psychology of criminal conduct* (4th ed.). Cincinnati, OH: Anderson.
- Andrews, D. A., Bonta, J., & Wormith, J. S. (2006). The recent past and near future of risk and/or need assessment. *Crime and Delinquency*, 52(1), 7-27.
- Andrews, D. A., Zinger, I., Hoge, R. D., Bonta, J., Gendreau, P., & Cullen, F. T. (1990). Does correctional treatment work? A clinically relevant and psychologically informed meta-analysis. *Criminology*, 28, 369-404.
- Auerhahn, K. (2004). California's incarcerated drug offender population, yesterday, today, and tomorrow: Evaluating the War on Drugs and Proposition 36. *The Journal of Drug Issues*, 22, 95-120.
- Bale, R. N., Van Stone, W. W., Kuldau, J. M., Engelsing, T. M. J., Elashoff, R. M., & Zarcone, V. P. (1980). Therapeutic communities vs. methadone maintenance. A prospective study of narcotic addiction treatment: Design and one year follow-up results. *Archive of General Psychiatry*, 37, 179-193.

- Belenko, S. (2000). The challenges of integrating drug treatment into the criminal justice process. *Albany Law Review*, 63, 833-876.
- Belenko, S., & Peugh, J. (2005). Estimating drug treatment needs among state prison inmates. *Drug & Alcohol Dependence*, 77, 269-281.
- Broome, K. M., Knight, K., Joe, G. W., & Simpson, D. D. (1996). Evaluating the drug-abusing probationer: Clinical interview versus self-administered assessment. *Criminal Justice & Behavior*, 23, 593-606.
- Brownell, K. D., Marlatt, G. A., Lichtenstein, E., & Wilson, G. T. (1986). Understanding and preventing relapse. *American Psychologist*, 41, 765-782.
- Burdon, W. M., Messina, N. P., & Prendergast, M. L. (2004). The California treatment expansion initiative: Aftercare participation, recidivism, and predictors of outcomes. *The Prison Journal*, 84, 61-80.
- Byrne, J. M., & Pattavina, A. (2006). Assessing the role of clinical and actuarial risk assessment in an evidence-based community corrections system: Issues to consider. *Federal Probation*, 70, 64-67.
- Chan, K. S., Wenzel, S., Orlando, M., Montagnet, C., Mandell, W., Becker, K., & Ebener, P. (2004). How important are client characteristics to understanding treatment process in the therapeutic community? *The American Journal of Drug and Alcohol Abuse*, 30, 871-891.
- Chien, I. (1980). Psychological, social, and epidemiological factors in juvenile drug use. In D. J. Lettieri, M. Sayers, & H. W. Pearson (Eds.), *Theories on drug abuse: Selected contemporary perspectives* (NIDA Research Monograph 30, DHHS Publication No. ADM80-967). Washington, DC: U.S. Government Printing Office.
- Collins, J. J., & Allison, M. (1983). Legal coercion and retention in drug abuse treatment. *Hospital and Community Psychiatry*, 34, 1145-1149.
- DeLeon, G. (1984). *The therapeutic community: Study of effectiveness* (National Institute on Drug Abuse [NIDA], Treatment Research Monograph Series No. 85). Rockville, MD: National Institute on Drug Abuse.
- DeLeon, G., Melnick, G., Thomas, G., Kressel, D., & Wexler, H. (2000). Motivation for treatment in a prison-based therapeutic community. *American Journal of Drug and Alcohol Abuse*, 26, 33-46.
- DeLeon, G., Wexler, H., & Jainchill, N. (1982). The therapeutic community: Success and improvement rates 5 years after treatment. *International Journal of Addictions*, 17, 703-747.
- Fletcher, B. W., Tims, F. M., & Brown, B. S. (1997). Drug Abuse Treatment Outcome Study (DATOS): Treatment evaluation research in the United States. *Psychology of Addictive Behaviors*, 11, 216-229.

- Flores, A. W., Lowenkamp, C. T., Smith, P., & Latessa, E. (2006). Validating the Level of Service Inventory-Revised on a sample of federal probationers. *Federal Probation, 70*, 44-48.
- Gendreau, P., & Goggin, C. (1996). Principles of effective assessment for community corrections. *Federal Probation, 60*, 64-70.
- Girard, L., & Wormith, J. S. (2004). The predictive validity of the Level of Service Inventory-Ontario Revision on general and violent recidivism among various offender groups. *Criminal Justice and Behavior, 31*, 150-181.
- Harrison, L. D. (2001). The revolving prison door for drug-involved offenders: Challenges and Opportunities. *Crime and Delinquency, 47*, 462-485.
- Hawkins, J. D. & Catalano, R. F. (1985). Aftercare in drug abuse treatment. *The International Journal of the Addictions, 20*(6&7), 917-945.
- Hiller, M. L., Knight, K., Leukefeld, C., & Simpson, D. D. (2002). Motivation as a predictor of therapeutic engagement in mandated residential substance abuse treatment. *Criminal Justice and Behavior, 29*, 56-75.
- Hiller, M. L., Knight, K., Rao, S. R., & Simpson, D. D. (2000). *Process assessment of correctional treatment (PACT, Final Report)*. Fort Worth: Texas Christian University.
- Hiller, M. L., Knight, K., & Simpson, D. D. (1999). Risk factors that predict dropout from corrections-based treatment for drug abuse. *The Prison Journal, 79*, 411-430.
- Hubbard, R. L., Craddock, G. S., Flynn, P. M., Anderson, J., & Etheridge, R. M. (1997). Overview of 1-year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors, 11*, 261-278.
- Inciardi, J. A., Martin, S. S., Butzin, C. A., Hooper, R. M., & Harrison, L. D. (1997). An effective model of prison-based treatment for drug-involved offenders. *Journal of Drug Issues, 27*, 261-268.
- Institute of Behavioral Research. (2006). *TCU Drug Screen II*. Retrieved January 10, 2009, from <http://www.ibr.tcu.edu>
- Joe, G. W., Simpson, D. D., & Broome, K. M. (1999). Retention and patient engagement models for different treatment modalities in DATOS. *Drug and Alcohol Dependence, 57*, 113-125.
- Katz, E. C., Brown, B. S., Weintraub, E., Barksdale, W., Schwartz, R. P., & Robinson, R. (2004). Role induction: A method for enhancing early retention in outpatient drug-free treatment. *Journal of Consulting and Clinical Psychology, 72*, 227-234.
- Kelly, C. K., & Welsh, W. N. (2008). The predictive validity of the Level of Service Inventory-Revised for drug-involved offenders. *Criminal Justice and Behavior, 35*, 819-831.
- Knight, K., Simpson, D. D., Chatham, L. R., & Camacho, L. M. (1997). An assessment of prison-based drug treatment: Texas' in-prison therapeutic community program. *Journal of Offender Rehabilitation, 24*, 75-100.
- Knight, K., Simpson, D. D., & Hiller, M. L. (2002). Screening and referral for substance-abuse treatment in the criminal justice system. In C. G. Leukefeld,

- F. Tims, & D. Farabee (Eds.), *Treatment of drug offenders: Policies and issues* (pp. 259-272). New York, NY: Springer.
- Knight, K., Simpson, D. D., & Hiller, M. L. (1999). Three-year reincarceration outcomes for in-prison therapeutic community treatment in Texas. *The Prison Journal, 79*, 337-351.
- Knight, K., Simpson, D. D., & Morey, J. T. (2002). Evaluation of the TCU Drug Screen (Pub. No. 196682). Washington, DC: National Institute of Justice, U. D. Department of Justice.
- Lash, S. J. (1998). Increasing participation in substance abuse aftercare treatment. *American Journal of Drug and Alcohol Abuse, 24*, 31-36.
- Martin, S. S., Butzin, C. S., Saum, C. A., & Inciardi, J. A. (1999). Three-year outcomes of therapeutic community treatment for drug-involved offenders in Delaware: From prison to work release to aftercare. *The Prison Journal, 79*, 294-320.
- McKay, J. R. (2001). Effectiveness of continuing care interventions for substance abusers: Implications for the study of long-term treatment effects. *Evaluation Review, 25*, 211-232.
- Mumola, C. J., & Karberg, J. C. (2006, October). *Drug use and dependence, state and federal prisoners, 2004* (NCJ 213530, BJS Special Report). Washington, DC: U.S. Department of Justice.
- National Institute on Drug Abuse. (1992). *Principles of drug abuse treatment for criminal justice populations. Frequently asked questions*. Washington, DC: National Institute of Health.
- Office of National Drug Control Policy. (2001). *Drug treatment in the criminal justice system*. Rockville, MD: White House Office of National Drug Control Policy.
- Pallant, J. (2007). *SPSS survival manual* (3rd ed.). New York, NY: McGraw-Hill.
- Palmer, T. (1995). Programmatic and nonprogrammatic aspects of successful intervention: New directions for research. *Crime and Delinquency, 41*, 100-131.
- Pearson, F., & Lipton, D. (1999). A meta-analytic review of the effectiveness of corrections-based treatment for drug abuse. *The Prison Journal, 79*, 384-410.
- Pennsylvania Department of Corrections. (2006). *Risk and needs assessment guidelines*. Retrieved February 10, 2008, from <http://www.portal.state.pa.us/portal/server.pt>
- Rao, S. R., Broome, K. M., & Simpson, D. D. (2004). Depression and hostility as predictors of long-term outcomes among opiate users. *Addiction, 99*(5), 579-589.
- Sabol, W. J., West, H. C., & Cooper M. (2009, December). *Prisoners in 2008* (Pub. No. NCJ228417). Washington, DC: U.S. Department of Justice.
- Sells, S. B., & Simpson, D. D. (1980). The case for drug abuse treatment effectiveness based on the DARP research program. *British Journal of Addictions, 75*, 117-131.
- Shearer, R. A., & Cater, C. R., (1999). Screening and assessing substance abusing offenders: Quantity and quality. *Federal Probation, 63*, 30-34.
- Simpson, D. D. (1979). The relation of time spent in drug abuse treatment to posttreatment outcome. *American Journal of Psychiatry, 136*, 1449-1453.

- Simpson, D. D. (1991). *Psychosocial measures: Update on TCU/DATAR self-rating scales*. Presentation at the Southwest Region of NADR Meeting, Dallas, TX.
- Simpson, D. D. (2001). Modeling treatment process and outcomes. *Addiction, 96*, 207-211.
- Simpson, D. D., Brown, B., & Joe, G. (1997). Treatment retention and follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors, 11*, 294-307.
- Simpson, D. D., & Joe, G. W. (1993). Motivation as a predictor of early dropout from drug abuse treatment. *Psychotherapy, 30*, 357-368.
- Simpson, D. D., & Joe, G. (2004). A longitudinal evaluation of treatment engagement and recovery stages. *Journal of Substance Abuse Treatment, 27*, 89-97.
- Simpson, D. D., Brown, B. S., & Joe, G. (1997). Treatment retention and follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors, 11*, 294-307.
- Simpson, D. D., Joe, G., Broome, K. M., Hiller, M. L., Knight, K., & Rowan-Szal, G. A. (1997). Program diversity and treatment retention rates in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors, 11*, 279-293.
- Simpson, D. D., Joe, G. W., Rowan-Szal, G., & Greener, J. (1995). Client engagement and change during drug abuse treatment. *Journal of Substance Abuse, 7*, 117-134.
- Simpson, D. D., Wexler, H. K., & Inciardi, J. A. (Eds.). (1999). Special issue drug treatment outcomes for correctional settings, Parts 1 and 2. *The Prison Journal, 79*, 291-445.
- Soyez, V., & Broekaert, E. (2003). How do substance abusers and their significant others experience the re-entry phase of therapeutic community treatment: A qualitative study. *International Journal of Social Welfare, 12*, 211-220.
- Tims, F. M., & Leukefeld, C. G. (1986). Relapse and recovery in drug abuse: An introduction. In F. M. Tims & C. G. Leukefeld (Eds.), *Relapse and recovery in drug abuse* (pp. 3-8). Rockville, MD: U.S. Department of Health and Human Services.
- Ward, T., Melser, J., & Yates, P. M. (2007). Reconstructing the risk-need-responsivity model: A theoretical elaboration and evaluation. *Aggression and Violent Behavior, 12*, 208-228.
- Welsh, W. N. (2002). *Building an effective research collaboration between the center for public policy at Temple University and the Pennsylvania Department of Corrections: Final report* (National Institute of Justice Report; NIJ #197067). Rockville, MD: U.S. Department of Justice.
- Welsh, W. N. (2006). *Evaluation of drug treatment programs at the State Correctional Institution (SCI) at Chester: A partnership between the Pennsylvania Department of Corrections, Gaudenzia Inc., and Temple University* (National Institute of Justice; NIJ 2002-RT-BX-1002). Rockville, MD: U.S. Department of Justice.

- Welsh, W. N., & McGrain, P. N. (2008). Predictors of therapeutic engagement in prison-based drug treatment. *Drug and Alcohol Dependence, 96*, 271-280.
- Welsh, W. N., & Zajac, G. (2004). A census of prison-based drug treatment programs: Implications for programming, policy, and evaluation. *Crime and Delinquency, 50*, 108-133.
- West, H. C., & Sabol, W. J. (2009). *Prison inmate at mid-year 2008—statistical tables* (Bureau of Justice Statistics, March 2009, NCJ 225618). Washington, DC: U.S. Department of Justice. Retrieved from <http://bjs.ojp.usdoj.gov/content/pub/pdf/pim08st.pdf>
- Wexler, H. K., DeLeon, G., Thomas, G., Kressel, D., & Peters, J. (1999). The Amity Prison TC evaluation: Reincarceration outcomes. *Criminal Justice and Behavior, 26*, 147-167
- Wexler, H. K., Melnick, G., Lowe, L., & Peters, J. (1999). Three-year reincarceration outcomes for Amity in-prison therapeutic community and aftercare in California. *The Prison Journal, 79*, 321-336.
- Young, D. (2002). Impacts of perceived legal pressure on retention in drug treatment. *Criminal Justice and Behavior, 29*, 27-55.

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