THE INFLUENCE OF CLIENT RISKS AND TREATMENT ENGAGEMENT ON RECIDIVISM

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Introduction

Recidivism is the return to criminal activity and is measured usually by a prisoner's reoffending behaviors (McKean & Ransford, 2004). The rates of reincarceration within 3 years among those released from prison in the U.S. in 1999 and 2004 were 45% and 43% respectively (Pew Center on the States, 2011). High rates of recidivism have escalated the financial burden to both federal and state governments regarding costs of public safety and for putting convicted offenders in prison (Belenko, Patapis, & French, 2005). Recidivism also has increased the social cost to communities (e.g., costs of insurance administration, productivity losses, and erosion of neighborhood) and personal cost to victims, offenders, and their families (French, Salomé, Sindelar, & McLellan, 2002). Clearly, efforts aimed at reducing recidivism have both financial and social implications in the U.S.

Substance abuse is a widespread problem among the prison population and more than two thirds of inmates are substance-dependent (The Bureau of Justice Statistics, 2002). Offenders who are addicted to drugs often relapse upon release, which is a significant predictor of recidivism and a barrier to reintegration into the community. Understanding the effectiveness of substance treatment and its impact on recidivism are priorities in criminal justice research (Andrews & Bonta, 2003). However, designing effective treatment and delivering service depend on the knowledge of the predictors of treatment outcome and recidivism (Gendreau, Cullen, & Bonta, 1994). Fortunately, correction-based treatments that are able to engage clients in their recovery (such as

therapeutic communities) have been shown to reduce illicit drug use and crime (Jensen & Kane, 2010; Knight, Simpson, & Hiller, 1999).

This study is designed to extend what is known about these predictors in correction-based treatment settings. Specifically, this study examines static and dynamic risks that have been found to be significant predictors of recidivism (Evans, Huang, & Hser, 2011; U.S. Sentencing Commission, 2004; Hiller, Knight, Saum, & Simpson, 2006) with a focus on measuring the interactive effect that risk factors and treatment engagement have on recidivism.

Static Risk: Criminal History

Static risk factors are defined as factors that are immutable to change, which have been found to be associated with treatment failure and recidivism (Gendreau, Little, & Goggin, 1996). An understanding of the importance of these static risk factors is critical because correctional agencies often use these items in actuarial devices as an aid in assessing treatment prognosis (Gendreau, Goggin, & Law, 1997; Hoffman, 1983; Walters, 1991).

Among all the static attributes of drug abuse and crime, the influence of criminal history in correctional-based substance treatment warrants special attention. A rich history of literature in social and clinical psychology has demonstrated that past behavior is the best indicator of future behavior (Gibbons, Gerrard, Ouellette, & Burzette, 1998; Ouellette & Wood, 1998; Webb & Sheeran, 2006; Wood, Quinn, & Kashy, 2002). Thus, the present study uses criminal history to represent static risk.

Dynamic Risks: Criminal Thinking and Substance Abuse Severity

These static and fixed risk factors do not account for dynamic changes in the risk level; dynamic risk factors reflect the offenders' current and changing conditions or attributes that subjects bring with them to treatment. Measures and interventions for dynamic factors, such as criminal thinking and current substance use, have become increasingly important over time because these factors are amenable to change (Welsh & McGrain, 2008) and, if addressed, are likely to result in a reduction in recidivism.

Criminal Thinking.

The most widely accepted component of dynamic risk is criminal thinking, which is strongly predictive of criminal behavior (Walters, 2006). Criminal thinking is the distorted attitudes, beliefs, and thought patterns that underlie criminal behaviors through denial, rationalization and justification of an individual's acts (Murphy, 1990; Blumenthal, Carssow, & Burns, 1999; Knight, Garner, Simpson, Morey, & Flynn, 2006). For instance, offenders may use "I didn't mean to hurt him/her" and "He/She deserved it" to neutralize their criminal behaviors. Based on extensive clinical experiences, Samenow (2004) argues that all criminals share a particular way of thinking, which is often evident in their childhood, and different from any responsible and law-abiding citizen. Furthermore, Walters (2006) provides empirical evidence to support criminal thinking as a predictor of criminal behaviors as well.

Criminals, especially recidivistic criminals, have developed habitual methods to resolve the life tasks that occur in diverse situations including interpersonal situations, problem solving, and coping conditions. Samenow (1984) proposes that rehabilitative programs would not work well unless the treatments impact changes in thinking patterns.

Criminal thinking has been found to be a consistently good predictor of criminal behavior. In a study by Andrews and Wormith (1984), the relationship of changes in dynamic risk scores between two time points and future recidivism was measured by the "Identification with Criminal Others" instrument. They found that the probationers whose identification scores increased after they left prison had a higher level of recidivism (57%). The probationers with decreased identification scores had a lower level of recidivism (10%), and the probationers who maintained their identification scores had the medium recidivism rate (38%). Likewise, a meta-analysis reviewing all studies examining the correlates of crime published in English since 1970 has identified six categories of risk factors to predict criminal behaviors (Gendreau, Andrews, Goggin, & Chanteloupe, 1992). These six groups of factors included low-class origins, personal distress/psychopathology, personal education/vocational achievement, parental/family factors, temperament, and antisocial attitudes, in which antisocial attitudes yielded the largest effect size in terms of predicting criminal behaviors.

A review of 20 studies of offender-based treatment programs in North America, Western Europe, and Australia found that Cognitive-Behavioral Therapy (CBT) programs were more effective at reducing recidivism than were other types of treatment or no treatment because CBT programs helped the offender restructure cognitive thinking and develop new pro-social skills (Wilson, Bouffard, & MacKenzie, 2005). All the evidence collectively demonstrates that criminal thinking is a reliable and important dynamic factor that predicts recidivism.

Substance Abuse Severity.

Similar to the construct of criminal thinking, substance abuse severity, defined as the severity of problems relevant to substance abuse, is also an important a dynamic predictor, but the relationship between drug use and recidivism is unclear (Bucklen, 2005; Henkel, 2007; Moos, Finney, & Cronkite, 1990). Research has shown that substance use severity is a significant predictor of elevated post-treatment substance use (Moos, Finney, & Cronkite, 1990); however, one study found that there was no relationship between substance use severity and treatment retention and completion (Henkel, 2007). Another study conducted in a Pennsylvania prison indicated that 3 years after release, there was no difference in substance use severity between offenders who had been returned to prison and those who succeeded in community reentry (Bucklen, 2005).

One concern is that drug type may influence the predictability of substance abuse severity on treatment duration. An early study investigating retention of different treatment modalities showed that alcohol dependence predicted an extended length of retention whereas marijuana dependence predicted a shortened retention in long term residential treatment (Joe, Simpson, & Broome, 1999). Similarly, a study focusing on the retention of correction-based treatment found that compared to alcohol and marijuana users, cocaine users had higher probability of leaving treatment (Hiller, Knight, & Simpson, 1999).

The authors of the studies mentioned above have suggested that substance use severity alone is not a reliable predictor of an offender's post-treatment performance. Instead, it may produce consistent results in terms of its relationship with post-treatment

behavioral changes when taking drug type into consideration as well as being combined with other predictor variables such as treatment engagement.

Treatment Process: Treatment Engagement

Among treatment process variables, treatment engagement is one of the best dynamic indicators of treatment outcome (e.g., Broome, Knight, Hiller, & Simpson, 1996; Drieschner & Verschuur, 2010). Treatment engagement has been described as "cognitive appraisals of commitment to the treatment episode and recovery" and "the extent to which new admissions actively engage in their role as a patient" (Hiller, Knight, Leukefeld, & Simpson, 2002, p.64; Simpson, 2004, p. 106).

Higher levels of treatment engagement are associated with increased treatment participation and positive treatment experience (such as higher treatment satisfaction and higher counseling rapport) which lead to increased treatment retention and facilitate further service utilization (Simpson, Joe, Dansereau, & Chatham, 1997). Moreover, extended retention in treatment programs produces positive behavioral changes (e.g., longer drug abstinence and reduction in future criminal behaviors; Rowan-Szal, Joe, Hiller, & Simpson, 1997; Simpson et al., 1997). Evidence showed that higher drug treatment engagement also predicted favorable treatment outcomes including fewer illegal activities and less drug use (Fiorentine, Anglin, Gil-Rivas, & Taylor, 1997; Simpson, Joe, Rowan-Szal, & Greener, 1995). Another study investigating the predictors of recidivism among probationers who were assigned to substance abuse treatment also highlighted the role of treatment engagement in the recovery process in terms of reducing re-offending behaviors (Broome et al., 1996).

The Interaction of Risks and Treatment Engagement

Offenders often develop certain patterns of criminal thinking that impact their perception and receptivity of treatment. Moreover, criminal thinking may alter the way they acknowledge their problems and perceive their interactions with others, thus affecting the extent to which they engage in treatment. They may not believe that treatment services are helpful or worthwhile; instead, they are less engaged in treatment and more likely to drop out (Fiorentine, Nakashima, & Anglin, 1999). Early termination from a program may produce feelings of exclusion, lower confidence in treatment success, and highlight problems without introducing coping skills (McMurran & Theodosi, 2007) which may exacerbate the dysfunctional cycle between incarceration and reoffending.

Not surprisingly, higher criminal thinking has been reported to be related to poor treatment engagement and client functioning (Best, Day, Campbell, Flynn, & Simpson, 2009; Garner, Knight, Flynn, Morey, & Simpson, 2007). A study by Joe, Rowan-Szal, Greener, Simpson, & Vance (2010) assessing the efficacy of in-prison treatment for male methamphetamine abusers demonstrated that criminal thinking predicts treatment engagement better than other variables including psychosocial functioning. Likewise, Taxman, Rhodes, & Dumenci (2011) studied the criminal thinking patterns of drug-using probationers and found that those with higher criminal thinking levels were less likely to engage in treatment. Evidence indicated that individuals with a high level of pre-treatment risk and strong treatment needs who should benefit the most from treatment were least likely to complete their programs (Olver, Stockdale, & Wormith, 2011). For the treatment dropouts, their high criminal attitudes and low treatment responsivity (e.g.,

treatment attitude, engagement, and motivation) predicted their increased attrition which was in turn highly correlated with recidivism.

While there is research on interactions among risk factors, the focus has been on static risk factors, and little attention has been paid to the impact of dynamic characteristics on post-treatment behaviors. Research is needed to examine pre-treatment and during-treatment characteristics which may make individuals more resistant to enter, less likely to engage, and thus more likely to fail in treatment. Unlike most literature on recidivism, the present study focuses on the impact of pretreatment criminal history, dynamic risk factors, and treatment engagement rather than solely on the predictive characteristics of pretreatment variables. This study explores different relationships between risk factors and treatment engagement and their effects on recidivism.

Because risk factors may directly impact recidivism and indirectly affect reoffending behaviors through the level of treatment engagement, clients with higher treatment engagement tend to make more progress during treatment and have more promising treatment outcomes. This implies that treatment engagement may mediate the effect of risk factors on recidivism.

The Covariate: Gender Differences

Another concern in recidivism is gender differences which have been associated with criminal thinking and treatment engagement among incarcerated samples. Previous studies have consistently illustrated gender differences in criminality, criminal cognition, and treatment needs and concerns. These include men tend to have more arrests and a longer incarceration history, and commit more violent crimes, whereas women are more likely to be involved in drug offenses; male offenders tend to have different criminal

thinking patterns compared to female offenders, whilst women experience more psychological problems than men (Benda, 2005; Collins, 2010; Knight et al., 2006; Taxman, et al., 2011). However, limited attention has been paid to gender-related differences in the impact of pre-treatment and treatment characteristics on recidivism.

Current Study

The primary goal of this study is to assess the relationships among risks, treatment engagement, and recidivism. The hypotheses are:

(1) Offenders with higher levels of risk factors are more likely to be re-arrested compared to their low-risk counterparts.

(2) Offenders with higher levels of risk factors have lower levels of treatment engagement compared to those with lower levels of risk factors.

(3) Offenders with lower levels of treatment engagement are more likely to be re-arrested compared to those with higher levels of treatment engagement.

A secondary goal of this study is to examine treatment engagement as a mediator of the relationship between risk factors and recidivism. The hypotheses for this goal are:

(4) Treatment engagement mediates the effects of criminal history, criminal thinking, and substance abuse severity on recidivism.

(5) The mediation by treatment engagement on the relationship between each risk factor and recidivism differs by gender and type of drug use.

Method

Participants

This study used secondary data from the Disease Risk Reduction (DRR) project[1]. Participants are criminal justice clients from four residential prison-based treatment facilities in a Southwestern U.S. State. The sample included 363 males (73%) and 148 females (27%). Within each gender group, participants were scattered across diverse race groups (see Table 1). All treatment programs were classified as minimum security and operated as stand-alone treatment facilities. The participants completed a research intervention and the measures used in this study and were released from prison. Two facilities were all-male units and two were all-female units. The duration of the programs ranged from 6 to 10 months.

The measures of criminal history, substance abuse severity, and criminal thinking were administrated at treatment intake. The measure of treatment engagement used in the study was administered at the end of orientation (approximately 30 days after admission).

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Table 1

Demographic Description

Characteristic	Male (*n*=363)	Female (*n*=148)
Race [a]		
Caucasian	113	90
African American	112	36
Hispanic	138	20
Other	0	2
Drug Dependence [b]		
No Drug Dependence	24	15
Soft Drug Dependence	177	35
Hard Drug Dependence	162	98
Age (mean; range) [c]	34 (18-67)	35 (18-61)

Note. Soft drugs include alcohol, marijuana, hallucinogens, and inhalant; hard drugs include crack, cocaine, heroin, speedball, street methadone, methamphetamine, amphetamine, other opiates, and sedatives.

[a] Results of the Chi-squared test indicated that the distribution of participants in race groups was different across genders, χ^2 (3) = 52.46, $p < .001$.

[b] Results of the Chi-squared test showed that the distribution of participants with diverse kinds of drug abuse was different across genders, χ^2 (2) = 27.32, $p < .001$.

[c] The independent t-test indicated that there was no difference in age between males and females, t = 1.88, $p = .06$.

Measures

Criminal History. Based upon the Client Problem Profile (CPP) which has good predictive validity (Joe, Simpson, Greener, & Rowan-Szal, 2004), the Lifetime Criminal Involvement (LCI) subscale from the TCU Criminal History Scale (TCU CRHS) was adopted for the measurement of static risk including lifetime arrests, convictions, and incarcerations. The LCI subscale includes five items, and each item has five choices. The response categories for these five items are varied. For three items, the responses are from 1=none to 5=over 10 times (e.g., How many times were you arrested before age 18?). For one item, the responses are from 1=none to 5=over 50 times (In total, how many times have you been arrested in your lifetime?). For the other item, the responses are from 1=none to 5=over 365 days (In total, how many days have you ever spent in jail or prison?). The scoring for these five items is: 1=option 1, 3=option 2 or 3, and 5=option 4 or 5.

Criminal Thinking. The TCU Criminal Thinking Scales (CTS) which have good psychometric properties (the goodness-of-fit indices are larger than .96, and the root mean square error of approximation (RMSEA) estimates are .09 or below) were used to measure criminal thinking patterns (Knight et al., 2006). The TCU CTS have six subscales: Entitlement (EN), Justification (JU), Power Orientation (PO), Cold-heartedness (CH), Rationalization (CN), and Personal Irresponsibility (PI). The current study did not use the PO subscale because this subscale is a measure of need for power and control. Individuals who score high on the PO subscale typically show an aggression toward external environment or manipulate others to gain control and power (Knight et

al., 2006).The concept which underlies the PO subscale is closely tied to the narcissism trait, which is characterized by pursuing power and dominance (Morf, Torchetti, & Schu..rch, 2011; Raskin & Terry, 1988), rather than a temporal state of thinking pattern that can be easily reduced by treatment. The study also did not include the CH subscale because cold-heartedness was another trait not likely to change because of the intervention (Rowan-Szal, Joe, Simpson, Greener, & Vance, 2010). Moreover, preliminary exploratory factor analyses using the Scree plot identified two factors underlying six subscales. Preliminary correlation analyses indicated that EN, JU, and PI were highly correlated with each other, and CN was another component that the study was interested in. Therefore, EN, JU, CN and PI in the TCU CTS were selected in the current study to assess criminal thinking patterns that are amenable to treatment.

Substance Abuse Severity. The TCU Drug Screen (TCUDS II), demonstrating good accuracy (82%; Peters, Greenbaum, Steinberg, Carter, Ortiz, Fry, & Valle, 2000), predictive value (92%), specificity (92%), and reliability (.95 for test-retest reliability and .89 for coefficient alpha; Knight, Simpson, & Hiller, 2002; Knight, Simpson, & Morey, 2002), was used to measure the current severity of drug-related problems (e.g., problems in employment due to addiction) prior to incarceration.

Item 10 in TCUDS II form ("Which drug caused the most serious problem") was used to classify participants into two groups of drug type: soft drugs (including alcohol, marijuana, hallucinogens, and inhalants) and hard drugs (including crack, speedball, cocaine, heroin, methamphetamine, amphetamine, street methadone, other opiates, and sedatives).

Treatment Engagement. TCU Treatment Engagement (TCU ENGForm) which consists of Treatment Participation, Treatment Satisfaction, and Counselor Rapport, was used to measure treatment engagement. The TCU ENGForm has good reliabilities (the Cronbach's alpha coefficients are .80 or above) and validities (the goodness of fit indices for all four subscales are .94 or above, and the RMSEA estimates are equal or less than .08) (Joe, Broome, Rowan-Szal, & Simpson, 2002). The current study did not include another subscale (i.e., Peer Support) in the TCU ENGForm. The Peer Support subscale measures the perceived supports from the peers in a treatment which is not a direct measure of treatment engagement. Moreover, the preliminary exploratory factor analyses using the Scree plot identified two factors underlying four subscales (Treatment Participation, Treatment Satisfaction, and Counselor Rapport on one factor, and Peer Support on the other factor). Therefore, the current study did not include Peer Support for measuring treatment engagement.

Re-arrest. In this study, recidivism was defined as whether participants were re-arrested for a felony offense 6 months after release. Department of Public Safety records were searched in February 2012 for the criminal histories of the released prisoner participants in the study. The duration that participants have been released into the community was between 6 months and 745 days. Participants were classified into two groups representing no felony arrest (coded as 0) or 1 or more felony arrests (coded as 1).

Data Analysis Method

Confirmatory factor analysis was used in the measurement model representing criminal thinking and treatment engagement, respectively. The sums of items in LCI and TCUDS II were used to represent lifetime criminal history and the current substance

abuse severity separately. The correlation between age and other variables was calculated to explore if age correlated with these variables.

Structural equation modeling (SEM) was used to test the hypothesized models using R software (R Development Core Team, 2008). The procedure simultaneously examined the significance of all associations specified in the SEM model and provided an overall assessment of the fit of the model to the observed data as well as the coefficients of paths in the model. The sample was split into four subgroups based on gender and drug type (male soft drug abusers, N=177, male hard drug abusers, N=162, female soft drug abusers, N=35, and female hard drug abusers, N=98).

Fit Statistics

Goodness of fit for the models was evaluated using a variety of fit statistics. Measures of fit included the goodness-of-fit chi-square, the goodness-of-fit index (GFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). The GFI ranges from 0 to 1 with values greater than .90 generally representing reasonable fit. The RMSEA and SRMR represent lack of fit per degree of freedom and reflect model parsimony. The smaller values of chi-square, the RMSEA and the SRMR indicate better fit. Ideally, the chi-square should be nonsignificant, and the RMSEA and the SRMR should be less than .08 for reasonable fit (Hu & Bentler, 1999).

Results

The statistical analyses consisted of two phases: descriptive analyses and structural equation modeling.

Phase 1: Descriptive Analysis

Predictor and Dependent Variables.

There were nine predictor variables and one dependent variable in the current study. The four variables addressing criminal thinking were Entitlement (EN), Justification (JU), Rationalization (CN), and Personal Irresponsibility (PI). The three variables for treatment engagement were Treatment Participation (TP), Treatment Satisfaction (TS), and Counselor Rapport (CR). The remaining predictor variables were substance abuse severity (SAS) assessed by the TCU Drug Screen II (TCUDSII), and lifetime criminal involvement (LCI) assessed by the Lifetime Criminal Involvement measure, a subscale from the TCU Criminal History Scale (TCU CRHS). The dependent variable was whether participants would be re-arrested 6-month post-release (RA).

The Internal Reliability of Scales.

As Table 2 indicates, Cronbach's alphas for scales suggest adequate reliability for the total sample, female hard drug abusers, male soft drug abusers, and male hard drug abusers. The Cronbach's alpha was not computed for the female soft drug abuser group because the sample size (n = 35) was too small for assessing the internal reliability.

Table 2

Internal Reliability of Scales

	Cronbach's Alpha			
Scales	Total Sample	Female Hard Drug Abusers	Male Soft Drug Abusers	Male Hard Drug Abusers
Criminal Thinking				
Entitlement (EN)	.81	.78	.82	.82
Justification (JU)	.80	.81	.81	.79
Rationalization (CN)	.88	.87	.90	.91
Personal Irresponsibility (PI)	.78	.74	.79	.79
Treatment Engagement				
Treatment Participation (TP)	.81	.81	.83	.85
Treatment Satisfaction (TS)	.83	.77	.86	.88
Counselor Rapport (CR)	.72	.59	.77	.82

Descriptive Analyses of Predictor and Dependent Variables.

Table 3 shows the descriptive analysis of predictive and dependent variables for the total sample.

One-way analyses of variance (ANOVA) were used to determine whether predictors and the outcome differed across diverse subgroups (see Table 4). The results indicated that, among four subscales of criminal thinking, participants only differed in Justification (JU; F (3, 471) = 5.29, p = .001). Female hard drug abusers (M = 21.02, SD = 6.71) had a higher level of justification than male drug abusers (male soft drug abusers:

M = 18.34, *SD* = 6.23, male hard drug abusers: *M* = 18.33, *SD* = 5.74). Female soft drug abusers (*M* = 20.76, *SD* = 8.56) did not differ from the other three groups in Justification. There was no difference between the four subgroups in Entitlement (EN; F (3, 471) < 1), Rationalization (CN; F (3, 471) < 1), and Personal Irresponsibility (PI; F (3, 471) < 1).

Table 3

Means (Standard Deviations) of Predictive and Dependent Variables for the Total Sample

	Total Sample (N=511)
Entitlement (EN)	16.71 (5.54)
Justification (JU)	18.96 (6.40)
Rationalization (CN)	26.53 (7.80)
Personal Irresponsibility (PI)	19.39 (6.29)
Treatment Participation (TP)	41.83 (4.77)
Treatment Satisfaction (TS)	37.42 (6.54)
Counselor Rapport (CR)	40.48 (5.58)
Substance Abuse Severity (SAS)	4.57 (2.93)
Lifetime Criminal Involvement (LCI)	3.55 (0.60)
Felony Re-arrest (RA)	.12

For the three subscales of Treatment Engagement, the findings demonstrated that female soft drug abusers (*M* = 34.24, *SD* = 6.56) had a lower level of treatment satisfaction (TS) than male drug abusers (male soft drug abusers: *M* = 38.13, *SD* = 5.96, male hard drug abusers: *M* = 37.94, *SD* = 6.55), whereas female hard drug abusers (*M* = 36.69, *SD* = 7.30) did not differ from other three groups in treatment satisfaction. The

four subgroups did not have differences in the assessment of Treatment Participation (TP; F (3, 471) < 1) and Counselor Rapport (CR; F (3, 471) < 1).

Table 4

One-way ANOVA Analysis of Predictor and Dependent Variables among Subgroups

	Subgroups					
	Female Soft Drug Abusers	Female Hard Drug Abusers	Male Soft Drug Abusers	Male Hard Drug Abusers	F (3,471)	p
EN	17.23 (6.23)	17.00 (5.88)	16.74 (5.70)	16.53 (5.04)	0.25	.86
JU	20.76 (8.65)[ab]	21.02 (6.71)[a]	18.34 (6.23)[b]	18.33 (5.74)[b]	5.29	.001
CN	27.03 (8.11)	26.55 (7.71)	26.56 (8.13)	26.07 (7.28)	0.30	.83
PI	20.10 (6.69)	19.69 (6.34)	19.51 (6.49)	18.90 (5.92)	0.45	.72
TP	41.26 (3.71)	42.60 (4.88)	41.84 (4.56)	41.54 (5.12)	0.65	.58
TS	34.24 (6.56)[a]	36.69 (7.30)[ab]	38.13 (5.96)[b]	37.94 (6.55)[b]	4.35	.005
CR	40.57 (6.31)	40.67 (6.92)	40.59 (4.89)	40.30 (5.41)	0.005	1.00
SAS	4.40 (2.71)	6.73 (2.23)	3.28 (2.62)	5.15 (2.62)	39.73	< .001
LCI	3.22 (0.69)[a]	3.38 (0.61)[a]	3.68 (0.56)[b]	3.63 (0.57)[b]	10.14	< .001
RA	.14[ad]	.11[b]	.12 [c]	.13 [d]	.11	.95

Note: Means sharing the same superscript are not significantly different from each other by Tukey's HSD, $p < .05$.

As for criminal history (LCI), female drug abusers (female soft drug abusers: M = 3.22, SD = 0.69; female hard drug abusers: M = 3.38, SD = 0.61) had fewer lifetime criminal involvements than male drug abusers (male soft drug abusers: M = 3.68, SD = 0.56; male hard drug abusers: M = 3.63, SD = 0.57). With regard to the post-release re-arrest (RA), the female soft drug abuser group had the highest percentage of felony re-

arrest (M = 0.14), followed by the male hard drug abuser group (M = 0.13), and male soft drug abuser group (M = 0.12); and the female hard drug abuser group (M = 0.11) had the lowest percentage of re-arrest.

Intercorrelations of Predictor and Dependent Variables.

Correlations were calculated to determine the relationships between predictors and the dependent variable in the total sample for female hard drug abusers, male soft drug abusers, and male hard drug abusers. The results are presented in Tables 5 to 9. Correlations between components of criminal thinking and between components of treatment engagement were statistically significant as would be expected with subscales purporting to measure related constructs. However, there was no relationship between substance abuse severity (SAS), lifetime criminal involvement (LCI), and indicators of treatment engagement ($p > .05$; See Table 5). The interrelations between predictors and felony re-arrest in the total sample indicated that the level of counselor rapport was significantly associated with re-arrest ($r(509) = -.09$, $p = .05$). Individuals with a higher level of counselor rapport (CR) were less likely to be re-arrested compared to their counterparts with low-level counselor rapport. However, none of the risk factors were correlated with re-arrest ($p > .10$). Therefore, the hypothesis that offenders with a higher level of risk are more likely to be re-arrested was not supported.

With regard to the relationship between predictor and dependent variables within subgroups, substance abuse severity (SAS) and criminal history (LCI) correlated with re-arrest ($r(33)= .40$, $p = .02$; $r(33) = .35$, $p = .04$) in the female soft drug abuser group. The remaining predictors did not correlate with re-arrest ($p > .10$; See Table 6). Moreover, the scores of Treatment Satisfaction (TS) correlated with re-arrest ($r(175) = -.17$, $p = .02$) in

the male soft drug abuser group (Table 8), while the remaining variables did not correlate with re-arrest ($p > .10$). Substance abuse severity (SAS) and lifetime criminal involvement (LCI) did not correlate with any indicator of treatment engagement in two soft drug abuser groups ($p > .05$). For female hard drug abusers (See Table 7), the scores on Personal Irresponsibility (PI) correlated with re-arrest ($r(96) = .23$, $p = .03$). The remaining predictors did not correlate with re-arrest ($p > .10$). None of the predictors were associated with the dependent variable in male hard drug abusers ($p > .10$; See Table9). Lifetime criminal involvements (LCI) correlated with Treatment Participation (TP) scores in the female hard drug group ($r(96) = -.27$, $p = .004$; See Table 7), and with Treatment Satisfaction (TS) scores in the male hard drug group ($r(160) = -.16$, $p = .02$; See Table9). Since age was not associated with felony re-arrest in either the total sample or any subgroup ($p > .05$), it was excluded as the covariate in the following structural equation modeling analysis.

Table 5

Correlations among Variables for the Total Sample (n=511)

	SAS	LCI	EN	JU	CN	PI	TP	TS	CR	Age
SAS										
LCI	.02									
EN	.02	.06								
JU	.10*	.02	.75***							
CN	-.05	.15***	.45***	.50***						
PI	-.04	.09	.73***	.70***	.61****					
TP	.01	-.06	-.40***	-.19***	-.19***	-.32***				
TS	-.01	-.003	-.22***	-.18***	-.30***	-.25***	.59***			
CR	.02	-.01	-.22***	-.17***	-.18***	-.22***	.71***	.68***		
Age	.07	-.03	-.03	-.02	-.03	-.003	-.05	.02	-.04	
RA	.04	.07	.06	.02	.06	.07	-.06	-.09	-.09*	.02

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6

Correlations among Variables for Female Soft Drug Abusers (n=35)

	SAS	LCI	EN	JU	CN	PI	TP	TS	CR	Age
SAS										
LCI	.24									
EN	.31	.19								
JU	.20	.34*	.83***							
CN	.20	.53**	.67***	.75***						
PI	.16	.28	.83***	.80***	.69***					
TP	-.28	-.10	-.50**	-.26	-.24	-.45**				
TS	.08	-.19	-.02	.07	-.12	-.14	.46**			
CR	-.13	-.16	-.03	.11	.18	.04	.52**	.50**		
Age	.09	-.39*	-.29	-.33	-.50**	-.24	.05	.36*	-.01	
RA	.40*	.35*	.12	.08	.03	.16	-.12	-.09	-.29	.12

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 7

Correlations among Variables for Female Hard Drug Abusers (n=98)

	SAS	LCI	EN	JU	CN	PI	TP	TS	CR	Age
SAS										
LCI	.07									
EN	.11	.27**								
JU	.12	.11	.69***							
CN	-.06	.29**	.44***	.40***						
PI	-.06	.21*	.74***	.66***	.62***					
TP	-.31	-.27**	-.46***	-.34***	-.22*	-.37***				
TS	-.03	-.10	-.09	-.01	-.31**	-.18	.46***			
CR	-.18	-.03	-.17	-.12	-.06	-.18	.67***	.68***		
Age	.17	-.21*	-.14	-.10	-.22*	-.20	-.06	-.13	-.94	
RA	-.001	.14	.16	.11	.08	.23*	-.17	-.13	-.12	-.13

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 8

Correlations among Variables for Male Soft Drug Abusers (n=177)

	SAS	LCI	EN	JU	CN	PI	TP	TS	CR	Age
SAS										
LCI	.02									
EN	-.07	-.12								
JU	-.06	-.06	.80***							
CN	-.03	.15	.47***	.52***						
PI	-.10	-.01	.74***	.72***	.64***					
TP	.09	.09	-.38***	-.33***	-.15*	-.26***				
TS	.11	.12	-.26***	-.21**	-.28***	-.23**	.65***			
CR	.16	.12	-.25***	-.27***	-.24**	-.22**	.75***	.72***		
Age	-.004	.11	-.03	-.05	.05	-.003	-.001	.05	.06	
RA	.001	-.02	.04	.004	.09	.03	-.004	-.17*	-.04	.02

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 9

Correlations among Variables for Male Hard Drug Abusers (n=162)

	SAS	LCI	EN	JU	CN	PI	TP	TS	CR	Age
SAS										
LCI	.16									
EN	-.02	.09								
JU	.06	.02	.79***							
CN	.01	-.01	.46***	.54***						
PI	.07	.07	.76***	.76***	.57***					
TP	.03	-.09	-.40***	-.35***	-.25**	-.32***				
TS	-.05	-.16*	-.35***	-.28***	-.36***	-.32***	.72***			
CR	.02	-.11	-.32***	-.26***	-.35***	-.29***	.79***	.76***		
Age	.07	.06	.09	.13	.19*	.16*	-.08	-.09	-.13	
RA	.03	.04	.01	-.08	.01	.03	-.02	-.02	-.07	.10

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Phase 2: Structural Equation Modeling Analyses

A series of structural equation models were conducted to test the model that risk factors predict re-arrest and treatment engagement mediates the impact of risk factors on re-arrest. The measurement model of criminal thinking was represented by the Entitlement, Justification, Rationalization, and Personal Irresponsibility subscales. Treatment engagement was represented by Treatment Satisfaction and Counselor Rapport. Treatment Participation was not included in the measurement model of treatment engagement because it was not associated with felony re-arrest in the total sample and with any subgroups.

Table 10

Standardized Factor Loadings from the Measurement Model (Total sample, N=511)

Latent Variable and Exogenous Variables	Loadings
Criminal Thinking	
Entitlement	0.86
Justification	0.84
Rationalization	0.59
Personal Irresponsibility	0.84

The measurement model results suggested that the observed measures constituted cohesive latent measures of criminal thinking, χ^2 (2) = 39.87, $p < .001$, GFI = .96, AGFI = .81, RMSEA = .19, CFI = .96, SRMR = .05. Subscales and standardized loadings for criminal thinking appear in Table 10. Given that the factor loading of Rationalization on the latent structure of criminal thinking was comparably low ($\gamma = .59$), the inclusion of

Rationalization to the measurement model of criminal thinking may be contributing to the relatively high RMSEA. The significant correlations between Treatment Satisfaction and Counselor Rapport in the total sample and across diverse subgroups ($r > .50$) indicated that they measured the same latent construct.

SEM was used to test the model of simultaneous impact of criminal thinking, substance abuse severity, criminal history, and treatment engagement on felony re-arrest. The model yielded adequate fit indices, χ^2 (23) = 106.59, $p < .001$, GFI = .95, RMSEA = .09, SRMR = .05. Standardized coefficients are reported which allow for comparing the relative strength of each pathway. The level of criminal thinking at intake predicted the level of treatment engagement in the subsequent treatment process ($\gamma = -.30$, $p < .001$). But neither criminal thinking nor treatment engagement had significant prediction on post-release re-arrests ($\gamma = .03$, $p = .49$; $\gamma = -.08$, $p = .12$). Neither substance abuse severity nor criminal history had significant prediction on treatment engagement (substance abuse severity: $\gamma = -.002$, $p = .97$; criminal history: $\gamma = -.04$, $p = .40$) and felony re-arrests (substance abuse severity: $\gamma = .04$, $p = .38$; criminal history: $\gamma = .03$, $p = .52$).

SEM tested the second model in which criminal thinking predicted treatment engagement and re-arrest, and treatment engagement predicted re-arrest. The model generated adequate fit indices (χ^2 (12) = 69.37, $p < .001$, GFI = .96, RMSEA = .10, SRMR = .04). Similar to the first SEM model, the level of criminal thinking at intake predicted the level of treatment engagement in the subsequent treatment process ($\gamma = -.31$, $p < .001$). But neither criminal thinking nor treatment engagement significantly predicted post-release re-arrest ($\gamma = .04$, $p = .46$; $\gamma = -.09$, $p = .11$).

SEM tested the third model in which criminal thinking predicted treatment engagement, which in turn influenced re-arrest. The path between criminal thinking and re-arrest was removed in the third model since it may suppress the effect of treatment engagement on re-arrest. The results of SEM indicated that the model had acceptable fit indices (χ^2 (13) = 69.92, $p < .001$, GFI = .96, RMSEA = .10, SRMR = .04). The level of criminal thinking (CTS) at intake predicted the level of treatment engagement (ENG; γ = -.31, $p < .001$). Treatment engagement significantly predicted post-release re-arrest (γ = -.10, p = .02). Thus, criminal thinking had a significant indirect effect on re-arrest, but only through treatment engagement (assessed at the end of orientation).

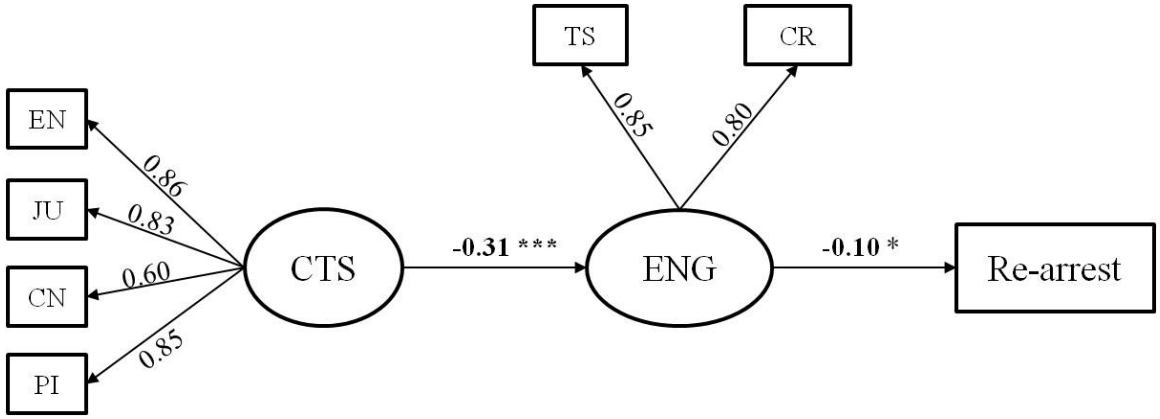

Figure 1. The Final Model for the Total Sample. The figure illustrates the structural equation model of the effect of criminal thinking on treatment engagement and felony re-arrest for the total sample.

The final model was repeated with three subgroups to compare the effects of criminal thinking and treatment engagement on re-arrest across diverse subgroups. As Figures 2 to 4 show, criminal thinking (CTS) has a consistent negative effect on treatment engagement (ENG) across all three subgroups (female hard drug abusers: γ = -.25, p = .05; male soft drug abusers: γ = -.30, $p < .001$; and male hard drug abusers: γ =

-.40, $p < .001$), whereas treatment engagement (ENG) did not predict re-arrest in any subgroups ($p > .05$).

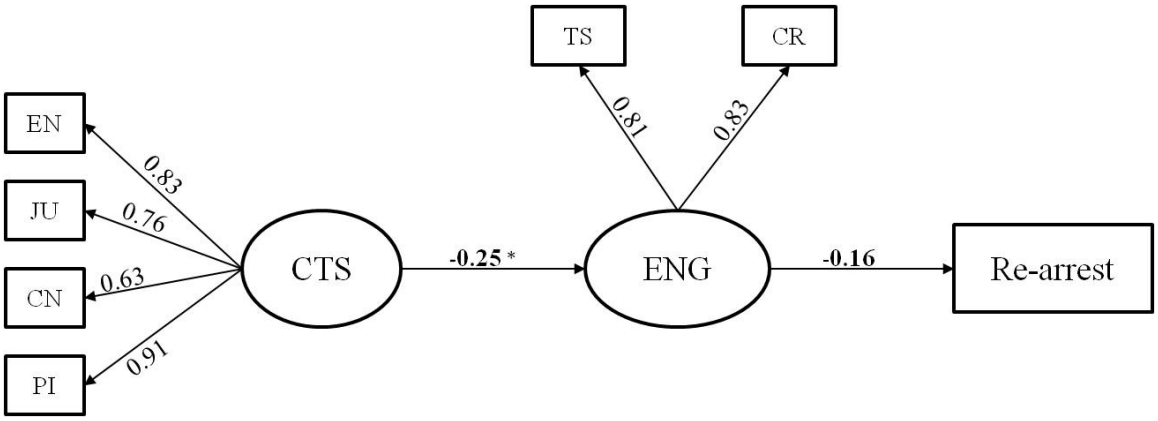

Figure 2. The Final Model for Female Hard Drug Abusers. The figure illustrates the structural equation model of the effect of criminal thinking on treatment engagement and felony re-arrest for female hard drug abusers.

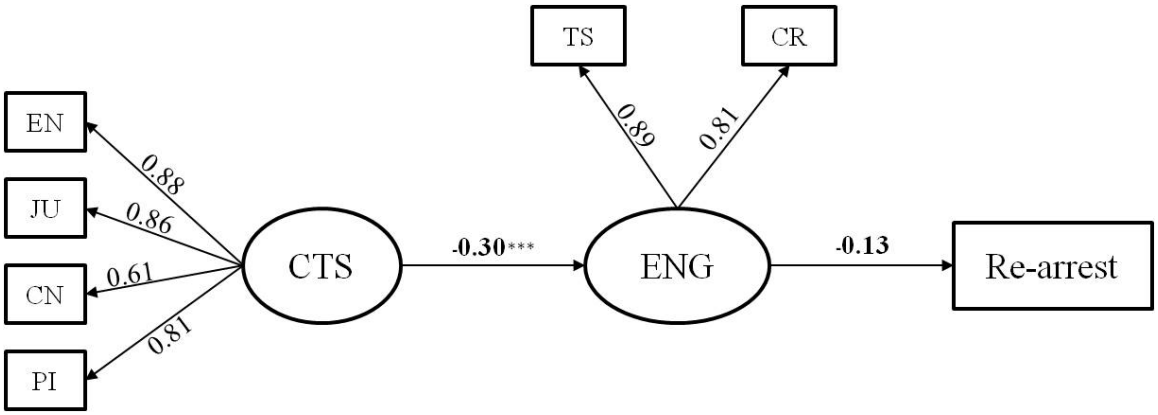

Figure 3. The Final Model for Male Soft Drug Abusers. The figure illustrates the structural equation model of the effect of criminal thinking on treatment engagement and felony re-arrest for male soft drug abusers.

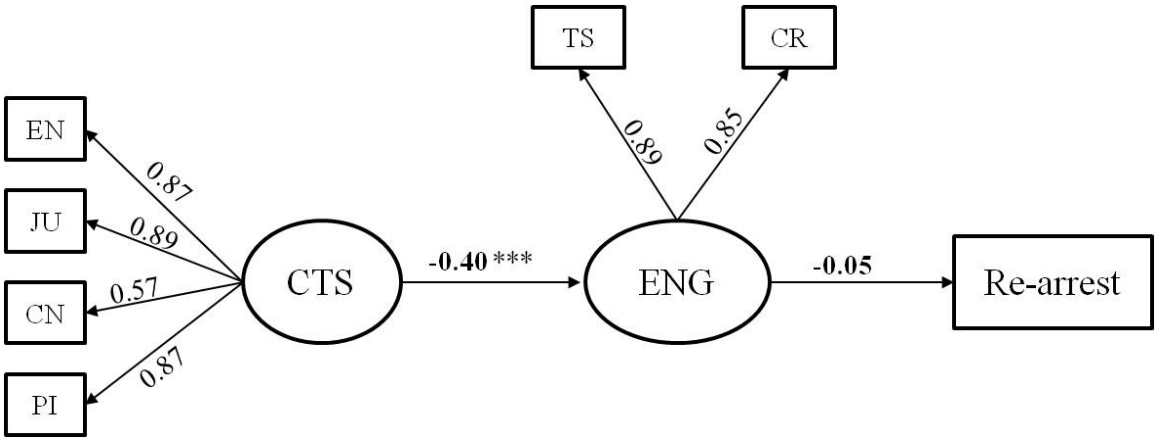

Figure 4. The final model for male hard drug abusers. The figure illustrates the structural equation model of the effect of criminal thinking on treatment engagement and felony re-arrest for male hard drug abusers.

In summary, the hypothesis that criminal thinking indirectly affected re-arrest through treatment engagement was supported in the total sample. However, criminal thinking did not directly predict re-arrest. Moreover, the hypotheses that the direct and indirect effects of criminal history and substance abuse severity on re-arrest were not supported. The hypotheses that the levels of criminal history and substance abuse severity correlated with the level of treatment engagement were not supported.

Discussion

The present study examined client risks and treatment process associated with recidivism in a sample of offenders attending prison-based substance treatments. The following includes a discussion of the findings of each proposed research hypothesis, some limitations of the study, future research directions, and the practical implications of this research.

Research Hypothesis 1: Risk Factors as Predictors of Recidivism

Neither static nor dynamic risk factors were significantly related to recidivism in the total sample and three subgroups. Previous studies have indicated inconsistent results about the effect of criminal history on recidivism (Broome et al., 1996; Hiller et al., 2006). The discrepant findings in the literature may be because some covariates, such as types of crimes and types of re-arrest, interfere with the relationship between criminal history and recidivism. Unexpectedly, criminal thinking was not correlated with re-arrest. The nonsignificant relationship between substance abuse severity and the rate of recidivism suggests that substance abuse severity is not a reliable indicator of recidivism.

The one exception was with the female soft drug abuser subgroup in which a higher level of substance abuse severity and a higher level of lifetime criminal involvement predicted a higher likelihood of re-arrest. However, due to the small sample size of female soft drug abusers in the current study, the findings need to be replicated in the future with a larger sample size.

Research Hypothesis 2: Risk Factors and Their Relationship with Treatment Engagement

A higher level of criminal thinking predicted a lower level of treatment engagement which was consistent with previous research on drug-involved offenders (e.g., Best et al., 2009; Garner et al., 2007). Furthermore, there were differences in the relationships between criminal thinking and treatment engagement across subgroups. The relationship between criminal thinking and treatment engagement was stronger in male groups than in female groups, which was consistent with findings in the existing literature (Staton-Tindall, Garner, Morey, Leukefeld, Krietemeyer, Saum, & Oser, 2007). This could be explained by differences in pretreatment problems and treatment needs between women and men. Compared to males, females have greater co-occurring problems such as psychiatric disorders, and specific treatment needs, such as maternity services (Brady & Randall, 1999; Fornari, Kent, Kabo, & Goodman, 1994; Grella, 1996). The analyses of treatment engagement across subgroups indicated that females were less satisfied with treatment than their male counterparts suggesting that female offenders may have insufficient access to services they need.

Compared with criminal thinking, substance abuse severity did not account for treatment engagement in the total sample. This finding may be explained by the possibility of two kinds of dynamic risk factors. Latessa (2012) proposed two distinctive dynamic risk factors based on their mutability: acute dynamic risk (e.g., criminal thinking) which changes quickly; and stable dynamic risk (e.g., substance abuse severity) which takes a long time and more efforts to change. There are singular interventions (e.g., CBT) for treating criminal thinking which can lead to a quick reduction of problematic thoughts and favorable changes in treatment engagement. However, substance abuse severity involves many aspects of the "whole" person including family support, employment, and

medical and mental health conditions. Thus, a range of interventions targeting all relevant problems may be needed. Additionally, lifetime criminal involvement did not impact treatment engagement supporting the conclusions of earlier studies that measures of this dynamic process were better predictors than background and demographic characteristics (Broome et al., 1996; Welsh & McGrain, 2008). However, when one looks at the impact of risk factors on treatment engagement across subgroups, a complicated picture emerges. Lifetime criminal involvement correlated negatively with one measure of treatment engagement in both hard drug abuser groups. The analyses uncovered no significant correlation between criminal history and treatment engagement in two soft drug abuser groups. These findings differed from those of a previous study (Fiorentine et al., 1999) which indicated that the number of lifetime arrests correlated positively with the client engagement in female clients but no relationship between lifetime involvement and client engagement in male clients.

There are possible explanations for the complicated findings. Hard drug abusers could have more legal involvements than soft drug abusers. The more criminal involvement they experienced, the more likely they would be resistant to make changes and they may have been less likely to be engaged in treatment. For those addicted to soft drugs, their criminal involvement may not have been serious enough to motivate or hinder their engagement in the treatment process.

Research Hypothesis 3: Treatment Engagement and Recidivism

The level of client rapport correlated negatively with re-arrest in the total sample, which indicated that the higher the level of treatment engagement, the lower the likelihood of re-arrest. Previous studies (Hoffman, Caudill, Koman, Luckey, Flynn, &

Hubbard, 1994; McLellan, Arndt, Metzger, Wood, & O'Brien, 1993; Shoptaw, Rawson, McCann, & Obert, 1994; Simpson et al., 1995) have indicated that early treatment engagement leads to more frequent and intense use of treatment services and thereby produces more post-treatment behavioral improvements (e.g., less illicit drug use). Because literature exploring treatment engagement as a predictor of recidivism does not exist, the current study provides evidence to show the effects of treatment engagement on post-release behavioral improvements.

Research Hypothesis 4: Treatment Engagement Mediates the Effect of Risk Factors on Recidivism

Criminal thinking did not predict re-arrests directly. Instead, criminal thinking predicted re-arrests indirectly through treatment engagement, which in turn influenced the likelihood of re-arrest. The findings did not support the hypotheses pertaining to direct and indirect effects of criminal history and substance abuse severity on the likelihood of re-arrest. Studies of treatment effectiveness have confirmed that treatments targeting a variety of dynamic factors are associated with enhanced reduction in recidivism (Andrews, Bonta, & Hoge, 1990; Gaes, Flangan, Motiuk, & Stewart, 1999). Therefore, the influence of criminal thinking on re-arrest operated through treatment engagement. Clients with more treatment satisfaction and greater counselor rapport are much more likely to be engaged in treatment. Collectively, these factors lead to better treatment outcomes in terms of lower likelihood of being re-arrested. In other words, not only do risk factors contribute to recidivism, but also dissatisfaction with treatment and negative counselor rapport can exacerbate the post-release illegal behaviors.

Research Hypothesis 5: Differences between Genders and Types of Drug Use in Regards to Mediation

For all three subgroups (female hard drug abusers, male soft drug abusers, and male hard drug abusers), criminal thinking predicted the extent of subsequent treatment engagement, but not re-arrest. However, unlike the results for the total sample, treatment engagement did not impact the follow-up re-arrest in any subgroup.

There are different patterns of pathways among predictors and the dependent variable. With regard to the prediction of risk factors, criminal thinking was negatively associated with treatment engagement. The relationship between criminal thinking and treatment engagement was stronger in the two male subgroups than in the female subgroup. As Figures 1 to 3 indicated, the standardized path coefficients from treatment engagement to re-arrest in the two soft drug abuser groups were even bigger (female soft abuser group: $\gamma = -.16$; male soft abuser group: $\gamma = -.13$) than in the total sample ($\gamma = -.10$). The two coefficients in soft drug subgroups were not significant possibly due to power issue stemming from the relatively small sample size in each subgroup.

There are some possible explanations for gender and drug type specific pathways. First, the finding of a stronger link between criminal thinking and treatment engagement among male offenders, compared to female counterparts indicates that factors contributing to treatment engagement might differ by gender. Similar to the findings from Koons, Burrow, Morash, & Bynum (1997), the reduction of problematic thinking is more urgent for males in order to facilitate treatment engagement; whereas the need for specific services such as childcare, pregnancy, and physical abuse victimization is comparably higher among females. Thus, for female offenders involved in therapeutic communities, the services available to them may more directly impact treatment

engagement than other characteristics (e.g., criminal thinking, and substance abuse severity).

Generally speaking, female offenders have less lifetime criminal involvement than male offenders; and soft drug abusers have less substance abuse severity than hard drug abusers. Compared to female hard drug abusers and male soft drug abusers, male hard drug abusers have a higher level of risk in terms of combining substance abuse severity and lifetime criminal involvement. Therefore, the same spectrum of interventions designed for both low-risk and high-risk cases might be less effective in individuals with a higher level of risk. An alternative explanation would be that male drug abusers have more robust patterns of criminal thinking which change little during intervention. The risk factors would collectively neutralize the improvements they have made during the course of treatment and later they would continue their crime-ridden life that existed prior to treatment.

Limitations and Future Research Directions

There are some limitations that impact the findings of the current study. The future research directions are discussed in the first two points.

First, the time frame for post-release re-arrests was only 6 months which may not be long enough to detect enough re-arrests. Moreover, it takes time to process the re-arrest records which may lead to an underestimation of the number of re-arrests. Future studies should extend this time window to 1 year or 3 years for exploring the influences of risk factors on recidivism.

Second, the sample size of subgroups (especially the two female subgroups) in the current study may not be large enough to make a precise and reliable estimation of path coefficients between predictors and the dependent variable. Future studies may use

larger sample sizes to replicate the findings. Moreover, future studies may want to consider using survival analysis to detect which risk factors and treatment process variables lead to a client's re-arrest.

Third, another limitation in the present study is the inclusion of only self-reported measures of predictors. Offenders may tend to deflate criminal thinking and inflate treatment engagement. Similar to suggestions from a previous study (Hanson & Morton-Bourgon, 2005), the lack of relationship between risk factors and recidivism may be due to the difficulty of assessing sincere remorse in criminal justice settings.

Fourth, male and female offenders are admitted to separate treatment facilities which vary somewhat in content and structure including program structure, staffing, treatment content, available services, program policies, and so fort. The programmatic differences may lead to a great discrepancy in male and female analyses of treatment performance because individuals in the same facility would be more similar to each other than those in different facilities, which would amplify gender-related differences in the measures of treatment performance.

Implications

This study identified factors that are important in reducing re-arrest in offenders released from an in-prison treatment program. The information may be utilized by clinicians, social workers, researchers, program administrators, and policy makers in diverse ways.

First, because the level of treatment engagement was a significant predictor of recidivism for the total sample, it indicates that interventions maintaining and facilitating treatment engagement would help compensate for negative impacts that pretreatment

client characteristics introduced into treatment. Moreover, treatment engagement is a predictive indicator that clinicians can use to monitor the ongoing process of treatment.

Second, the level of criminal thinking was identified as a significant indicator of treatment engagement, especially for male offenders. This finding indicates a need for interventions to target these risk factors. Moreover, these findings suggest that a collection of information regarding both pretreatment risk factors and treatment process indicators would improve the ability to predict individual recidivism and identify those most likely at risk and in need of targeted interventions.

Furthermore, the commensuration of the level of supervision and treatment with the offender's level of risk is highly recommended in planning and delivering treatment services and reducing re-offense (Andrews & Dowden, 2006). Evidence has shown that treatment plans and services need to be tailored to individuals with regard to gender differences, different risk levels, and types of substance abuse. In light of drug specific pathways for men and women in the relationship of risk factors, treatment process indicators, and recidivism, clinicians should strive to provide different intervention plans tailored to these differences. For example, interventions for female offenders may focus on these factors within the individual level as well as those in a broader context (e.g., erosive environment and abusive relationship). In contrast, for male offenders, the dynamic risk factors and treatment performance warrant more attention because they overshadow the effects of background characteristics on post-treatment prognosis. With regard to drug type specific needs for male hard drug abusers, clinicians may want to explore other factors which maintain their criminal thinking patterns and make them more reluctant to change.

Conclusions

Addiction is a public health problem rather than solely an individual-level affliction. Researchers and practitioners are collaborating in the development of evidence-based treatment and recovery plans, breaking the vicious cycle between addiction and crime, utilizing government budgets and social resources more effectively, and protecting public safety. As Andrews and Bonta (2003) advocate, interventions based on pretreatment risk factors, dynamic treatment needs, and treatment responsivity (i.e., how does the individual respond to the treatment) would be more promising. Moreover, providers may want to be aware of the importance of offering more appropriate services that meet clients' needs and consequently increase treatment responsivity.

References

Andrews, D.A., Bonta, J., Hoge, R.D. (1990). Classification for effective rehabilitation: Rediscovering psychology. *Criminal Justice and Behavior, 17*(1), 19-52.

Andrews, D.A., & Wormith, J.S. (1984). *Criminal sentiments and criminal behaviors. Programs Branch User Report*. Ottawa: Solicitor General Canada.

Andrews, D.A., & Bonta, J. (2003). *The Psychology of Criminal Conduct.* Anderson Publishing Co. Cincinnati, OH.

Andrews, D.A., & Dowden, C. (2006). Risk principle of case classification in correctional treatment: a meta-analytic investigation. *International Journal of Offender Therapy and Comparative Criminology, 50*(1), 88-100.

Belenko, S., Patapis, N., & French, M.T. (2005). Economic benefits of drug treatment: A critical review of the evidence for policy makers. Retrieved from http://www.tresearch.org/resources/specials/2005Feb_EconomicBenefits.pdf

Benda, B. (2005). Gender differences in life-course theory of recidivism: A survival analysis. *International Journal of Offender Therapy and Comparative Criminology, 49*, 325-342.

Best, D., Day, E., Campbell, A., Flynn, P.M., & Simpson, D.D. (2009). Relationship between drug treatment engagement and criminal thinking style among drug-using offenders. *European Addiction Research, 15*, 71-77.

Blumstein, P.W., Carssow, K.G., & Burns, J. (1999). Cognitive distortions and blame attribution in sex offenders against adults and children. *Child Abuse and Neglect, 23,* 129-143.

Brady, K.T. & Randall, C.L. (1999). Gender differences in substance use disorders. *Psychiatric Clinical in North America, 22*, 241-252.

Broome, K.M., Knight, K., Hiller, M.L., & Simpson, D.D. (1996). Drug treatment process indicators for probationers and predictors of recidivism. *Journal of Substance Abuse Treatment, 13*(6), 487-491.

Bucklen, K.B. (2005). The Pennsylvania department of correction's parole violator study (phase 1). *Research in Review, 8*(1), 2-11.

Collins, R.E. (2010). The effect of gender on violent and nonviolent recidivism: A meta-analysis. *Journal of Criminal Justice, 38*, 675-684.

Drieschner, K.H., & Verschuur, J. (2010). Treatment engagement as a predictor of premature treatment termination and treatment outcome in a correctional outpatient sample. *Criminal Behavior and Mental Health, 20*(2), 86-99.

Evans, E., Huang, D., Hser, Y.I. (2011). High-risk offenders participating in court-supervised substance abuse treatment: Characteristics, treatment received, and factors associated with recidivism. *Journal of Behavioral Service Research, 38*(4), 510-525.

Fiorentine, R., Anglin, M.D., Gil-Rivas, V., & Taylor, E. (1997). Drug treatment: Explaining the gender paradox. *Journal of Substance Use and Misuse, 32,* 653–678.

Fiorentine, R., Nakashima, J., & Anglin, M.D. (1999). Client engagement in drug treatment. *Journal of Substance Abuse Treatment, 17*(3), 199-206.

Fornari, V.M., Kent, J., Kabo, L., & Goodman, B. (1994). Anorexia nervosa: 'Thirty something'. *Journal of Substance Abuse Treatment, 11*(1), 45-54.

French, M.T., Salomé, H.J, Sindelar, J.L., & McLellan, A.T. (2002). Benefit-cost analysis of addiction treatment: Methodological guidelines and empirical application using DATCAP and ASI. *Health Services Research, 37*, 433-455.

Gaes, G.G., Flangan, T.J., Motiuk, L.L., & Stewart, L. (1999). Adult Correctional Treatment. *Crime and Justice, 26*, 361-426.

Garner, B.R., Knight, K., Flynn, P.M., Morey, J.T., & Simpson, D.D. (2007). Measuring offender attributes and engagement in treatment using the client evaluation of self and treatment. *Criminal Justice and Behavior, 34*(9), 1113-1130.

Gendreau, P. Cullen, F.T., & Bonta, J. (1994). Intensive rehabilitation supervision: the next generation in community corrections? *Federal Probation, 58*, 72-78.

Gendreau, P., Andrews, D.A., Goggin, C., & Chanteloup, F. (1992). *The development of clinical and policy guidelines for the prediction of criminal behavior in criminal justice settings.* (Unpublished manuscript available from the Department of Psychology). University of New Brunswick, St. John, New Brunswick.

Gendreau, P., Goggin, C., & Law, M. (1997). Predicting prison misconducts. *Criminal Justice and Behavior, 24*, 414-431.

Gendreau, P., Little, T. & Goggin, C.(1996). A meta-analysis of the predictors of adult offender recidivism: What works. *Criminology, 34*, 575-607.

Gibbons, F.X., Gerrard, M., Ouellette, J.A., & Burzette, R. (1998). Cognitive antecedents to adolescent health risk: Discriminating between behavioral intention and behavioral willingness. *Psychology and Health, 13*, 319–339.

Grella, C.E. (1996). Background and overview of mental health and substance abuse treatment systems: Meeting the needs of women who are pregnant or parenting. *Journal of Psychoactive Drugs, 28*(4), 319-343.

Hanson, R.K, & Morton-Bourgon, K.E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology, 73*(6), 1154-1163.

Henkel, L.J. (2007). *Substance abuse severity, treatment motivation, and criminal thinking factors: Predictors of treatment retention with substance abusing parolees in a correctional aftercare program*. (Psychology Dissertations. Paper 61). Retrieved from Http://digitalcomons.pcom.edu/psychology_dissertations/61

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., Saum, C. A., & Simpson, D. D. (2006). Psychosocial functioning, treatment dropout, and recidivism of probationers mandated to a modified therapeutic community. *Criminal Justice and Behavior, 33*(6), 738-759.

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*(4), 411.

Hoffman, P.B. (1983). Screening for risk: A revised salient factor score (SFS 81). *Journal of Criminal Justice, 11*, 539-547.

Hoffman, J. A., Caudill, B.D., Koman, J. J., Luckey, J.W., Flynn, P.M., and Hubbard, R. L. (1994). Comparative cocaine abuse treatment strategies: Enhancing client retention and treatment exposure. *Journal of Addictive Diseases, 13*, 115-128.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55.

Jensen, E.L. & Kane, S.L. (2010). The effect of therapeutic community on time to first re-arrest: A survival analysis. *Journal of offender Rehabilitation, 49*, 200-209.

Joe, G.W., Broome, K.M., Rowan-Szal, G.A., & Simpson, D.D. (2002). Measuring patient attributes and engagement in treatment. *Journal of Substance Abuse Treatment, 22*, 183-196.

Joe, G.W., Rowan-Szal, G.A., Greener, J.M., Simpson, D.D., & Vance, J. (2010). Male methamphetamine-user inmates in prison treatment: During-treatment outcomes. *Journal of Substance Abuse Treatment, 38*, 141-152.

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*(2), 113-125.

Joe, G.W., Simpson, D.D., Greener, J.M., & Rowan-Szal, G.A. (2004). Development and validation of a client problem profile and index for drug treatment. *Psychological Reports, 95*, 215-234.

Knight, K., Garner, B.R., Simpson, D.D., Morey, J.T., & Flynn, P.M. (2006). An assessment for criminal thinking. *Crime & Delinquency, 52*(1), 159-177.

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*(3), 337-351.

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: Springer.

Knight, K., Simpson, D.D., & Morey, J.T. (2002).Evaluation of the TCU Drug Screen. NIJ Grant 1999-MU-MU-K008. Retrieved from https://www.ncjrs.gov/pdffiles1/nij/grants/196682.pdf

Koons, B.A., Burrow, J.D., Morash, M., & Bynum, T. (1997). Expert and offender perceptions of program elements linked to successful outcomes for incarcerated women. *Crime & Delinquency, 43*, 512-532.

Latessa, E. (2012). Why Work Is Important, and How to Improve the Effectiveness of Correctional Reentry Programs that Target Employment. *Criminology & Public Policy, 11*(1), 87-91.

McLellan, A.T., Arndt, I.O., Metzger, D.S., Woody, G.E., & O'Brien, C.P. (1993). The effects of psychosocial services in substance abuse treatment. *The Journal of the American Medical Association, 269*(15), 1953-1959.

McKean, L., & Ransford, C. (2004). Current strategies for reducing recidivism. Retrieved from http://www.impactresearch.org/documents/recidivismexecutivesummary.pdf

McMurran, M. & Theodosi, E. (2007). Is treatment non-completion associated with increased reconviction over no treatment? *Psychology, Crime & Law, 13*(4), 333-343.

Moos, R., Finney, J., & Cronkite, R. (1990). *Alcoholism treatment: Context, process, and outcome.* New York: Oxford University Press.

Morf, C.C., Torchetti, L., Schu..rch, E. (2011) In Campell, K., & Miller, J.D. (Eds). *The Handbook of Narcissism and Narcissistic Personality Disorder: Theoretical Approaches, Empirical Findings, and Treatments* (p.56-70). New Jersey, US: John Wiley & Sons, Inc.

Murphy, W.D. (1990). Assessment and modification of cognitive distortions in sex offenders. In Marshall, William L., Laws, D. R., & Barbaree, H. E. (Eds), *Handbook of sexual assault: Issues, theories, and treatment of the offender. Applied clinical psychology* (pp. 331-342) New York, NY, US: Plenum Press.

Olver, M.E., Stockdale, K.C., & Wormith, J.S. (2011). A meta-analysis of predictors of offender treatment attrition and its relationship to recidivism. *Journal of Consulting and Clinical Psychology, 79*(1), 6-21.

Ouellette, J.A., & Wood,W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin, 124*, 54–74.

Peters, R. H., Greenbaum, P. E., Steinberg, M. L., Carter, C. R., Ortiz, M. M., Fry, B. C., & Valle, S. K. (2000). Effectiveness of screening instruments in detecting substance use disorders among prison inmates. *Journal of Substance Abuse Treatment, 18*(4), 349-358.

Raskin, R. & Terry, H. (1988). A principle-components analysis of the narcissistic personality inventory and future evidence of its construct validity. *Journal of Personality and Social Psychology, 54* (5), 890-902.

Pew Center on the States, (2011). *State of Recidivism: The Revolving Door of America's Prisons.* Washington, DC: The Pew Charitable Trusts, April 2011.

R Development Core Team (2008). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL http://www.R-project.org.

Rowan-Szal, G.A., Joe, G.W., Hiller, M.L., & Simpson, D.D. (1997). Increasing early engagement in methadone treatment. *Journal of Maintenance in the Addictions, 1*(1), 49-61.

Rowan-Szal, G.A., Joe, G.W., Simpson, D.D., Greener, J.M., & Vance, J. (2010). During-treatment outcomes among female methamphetamine-using offenders in prison-based treatments. *Journal of Offender Rehabilitation, 48*(5), 388-401.

Samenow, S.E. (1984). *Inside the criminal minds.* New York: Crown.

Samenow, S.E. (2004). *Inside the criminal minds: revised and updated edition.* New York: Crown.

Shoptaw, S., Rawson, R.A., McCann, M.J., & Obert, J.L. (1994). The Matrix model of outpatient stimulant abuse treatment: Evidence of efficacy. *Journal of Addictive Diseases, 13*, 25–34.

Simpson, D. D. (2004). A conceptual framework for drug treatment process and outcomes. *Journal of Substance Abuse Treatment, 27*, 99-121.

Simpson, D.D., Joe, G.W., Dansereau, D.F., & Chatham, L.R. (1997). Strategies for improving methadone treatment process and outcomes. *Journal of Drug Issues, 27*(2), 239-260.

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.

Staton-Tindall, M., Garner, B.R., Morey, J.T., Leukefeld, C., Krietemeyer, J., Saum, C.A., & Oser, C.B. (2007). Gender differences in treatment engagement among a sample of incarcerated substance abusers. *Criminal Justice and Behavior, 34*(9), 1143-1156.

Taxman, F.S., Rhodes, A.G., & Dumenci, L. (2011). Construct and predictive validity of criminal thinking scales, *Criminal Justice and Behavior, 38*(2), 174-187.

U.S. Sentencing Commission. (2004). *Research series on the recidivism of federal guideline offenders.* Retrieved from http://www.ussc.gov/Research/Research_Publications/Recidivism/200405_Recidivism_Criminal_History.pdf

Walters, G.D. (1991). Predicting the disciplinary adjustment of maximum and minimum security prison inmates using the lifestyle criminality screening form. *International Journal of Offender Therapy and Comparative Criminology, 35*(1), 63-71.

Walters, G.D. (2006). Appraising, researching and conceptualizing criminal thinking: a personal view. *Criminal Behavior and Mental Health, 16*, 87-99.

Webb, T.L., & Sheeran, P. (2006). Does changing behavioral intentions engender Behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin, 132*, 249–268.

Welsh, W.N. & McGrain, P.N. (2008). Predictors of therapeutic engagement in prison-based drug treatment. *Drug and Alcohol Dependence, 96*, 271-280.

Wilson, D.B., Bouffard, L.A., & MacKenzie, D.L. (2005). A quantitative review of structured, group-oriented, cognitive-behavioral programs for offenders. *Criminal Justice and Behavior, 32*(2), 172-204.

Wood, W., Quinn, J.M., & Kashy, D.A. (2002). Habits in everyday life: Thought, emotion, and action. *Journal of Personality and Social Psychology, 83*, 1281–1297.

The Bureau of Justice Statistics. (2002). Substance Dependence, Abuse , and Treatment of Jail Inmates. Retrieved from http://www.bjs.gov/content/pub/pdf/sdatji02.pdf

APPENDIX A

TCU CRIMINAL HISTORY FORM (TCU CRHSForm):

Lifetime Criminal Involvement (LCI)

1. In total, how many TIMES have you been ARRESTED in your LIFETIME?
   □ None □ 1-5 times □ 6-10 times □ 11-50 times □ Over 50 times
2. In total, how many TIMES have you been CONVICTED (found guilty) of a crime, as an adult or juvenile?
   □ None □ Once □ 2-5 times □ 6-10 times □ Over 10 times
4. Altogether, how many TIMES have you ever been locked up (in detention, jail, or prison)?
   □ None □ Once □ 2-5 times □ 6-10 times □ Over 10 times
5. In total, how many DAYS have you ever spent in jail or prison?
   □ None □ 1-30 days □ 31-60 days □ 61-365 days □ Over 365 days
7. How many TIMES were you arrested BEFORE AGE 18?
   □ None □ Once □ 2-5 times □ 6-10 times □ Over 10 times

APPENDIX B

TCU DRUG SCREEN II (TCU DSII)

During the last 12 months (before being locked up, if applicable) – (Yes or No)

1. Did you use larger amounts of drugs or use them for a longer time than you planned or intended?
2. Did you try to cut down on your drug use but were unable to do it?
3. Did you spend a lot of time getting drugs, using them, or recovering from their use?
4a. Did you get so high or sick from using drugs that it kept you from doing work, going to school, or caring for children?
4b. Did you get so high or sick from drugs that it caused an accident or put you or others in danger?
5. Did you spend less time at work, school, or with friends so that you could use drugs?
6a. Did your drug use cause emotional or psychological problems?
6b. Did your drug use cause problems with family, friends, work, or police?
6c. Did your drug use cause physical health or medical problems?
7. Did you increase the amount of a drug you were taking so that you could get the same effects as before?
8. Did you ever keep taking a drug to avoid withdrawal symptoms or keep from getting sick?
9. Did you get sick or have withdrawal symptoms when you quit or missed taking a drug?
10. Which drug caused the most serious problem? [choose one]

    None Alcohol Marijuana/Hashish Hallucinogens/LSD/PCP/Psychedelics/Mushrooms
    Inhalants Crack/Freebase Heroin and Cocaine (mixed together as Speedball)
    Cocaine (by itself) Heroin (by itself) Street Methadone (non-prescription)
    Other Opiates/Opium/Morphine/Demerol Methamphetamines
    Amphetamines (other uppers) Tranquilizers/Barbiturates/Sedatives (downers)

APPENDIX C

TCU CRIMINAL THINKING SCALES (TCU CTS)

Entitlement (EN)

You have paid your dues in life and are justified in taking what you want.
You feel you are above the law.
It is okay to commit crime in order to pay for the things you need.
Society owes you a better life.
Your good behavior should allow you to be irresponsible sometimes.
It is okay to commit crime in order to live the life you deserve.

Justification (JU)

You rationalize your actions with statements like "Everyone else is doing it, so why shouldn't I?"
When being asked about the motives for engaging in crime, you point out how hard your life has been.
You find yourself blaming the victims of some of your crimes.
Breaking the law is no big deal as long as you do not physically harm someone.
You find yourself blaming society and external circumstances for the problems in your life.
You justify the crimes you commit by telling yourself that if you had not done it, someone else would have.

Criminal Rationalization (CN)

Anything can be fixed in court if you have the right connections.
Bankers, lawyers, and politicians get away with breaking the law every day.
This country's justice system was designed to treat everyone equally.
Police do worse things than do the "criminals" they lock up.
It is unfair that you are locked-up when bankers, lawyers, and politicians get away with their crimes.
Prosecutors often tell witnesses to lie in court.

Personal Irresponsibility (PI)

You are locked-up because you had a run of bad luck.
The real reason you are locked-up is because of your race.
Nothing you do here is going to make a difference in the way you are treated.
You are not to blame for everything you have done.
Laws are just a way to keep poor people down.
You may be a criminal, but your environment made you that way.

APPENDIX D

TCU TREATMENT ENGAGEMENT FORM

Treatment Participation (TP)

You are willing to talk about your feelings during counseling.
You have made progress with your drug/alcohol problems.
You have learned to analyze and plan ways to solve your problems.
You have made progress toward your treatment program goals.
You always attend the counseling sessions scheduled for you.
You have stopped or greatly reduced your drug use while in this program.
You always participate actively in your counseling sessions.
You have made progress in understanding your feelings and behavior.
You have improved your relations with other people because of this treatment.
You have made progress with your emotional or psychological issues.
You give honest feedback during counseling.
You are following your counselor's guidance.

Treatment Satisfaction (TS)

Time schedules for counseling sessions at this program are convenient for you.
This program expects you to learn responsibility and self-discipline.
This program is organized and run well.
You are satisfied with this program.
The staffs here are efficient at doing their job.
You can get plenty of personal counseling at this program.
This program location is convenient for you.

Counseling Rapport (CR)

You trust your counselor.
It's always easy to follow or understand what your counselor is trying to tell you.
Your counselor is easy to talk to.
You are motivated and encouraged by your counselor.
Your counselor recognizes the progress you make in treatment.
Your counselor is well organized and prepared for each counseling session.
Your counselor is sensitive to your situation and problems.
Your treatment plan has reasonable objectives.
Your counselor views your problems and situations realistically.
Your counselor helps you develop confidence in yourself.
Your counselor respects you and your opinions.
You can depend on your counselor's understanding.

VITA

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ABSTRACT

THE INFLUENCE OF CLIENT RISKS AND TREATMENT ENGAGMENT ON RECIDIVISM

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High rates of recidivism among former prisoners have escalated the public financial burden and negatively impacted communities and individuals across the U.S. The current study used structural equation modeling to examine the effect of static and dynamic risk factors and treatment engagement on recidivism. The results indicated that (1) the level of criminal thinking was negatively correlated with the level of treatment engagement; (2) treatment engagement was negatively correlated with re-arrest; (3) criminal thinking impacted the rate of reoffending indirectly through treatment engagement; (4) neither substance abuse severity nor criminal history had direct or indirect effects on re-arrest; and (5) the effect of risk factors and treatment engagement differed in diverse gender and drug type subgroups. The study provided clinical implications for monitoring the

treatment process, designing the appropriate treatment, and predicting prognostic performance of offenders.

Keywords: risk factors, criminal thinking, treatment engagement, recidivism