Published in final edited form as:

J Offender Rehabil. 2013 ; 52(8): 544–564. doi:10.1080/10509674.2013.840353.

The Influence of Client Risks and Treatment Engagement on Recidivism

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Abstract

The current study modeled 12 month post-release re-arrest (recidivism) in terms of pretreatment risk factors (i.e., criminal history, criminal thinking,) and during-treatment engagement in a sample of 653 subjects admitted to four prison-based substance treatment programs. Structural Equation Modeling was used to test during-treatment engagement as a mediator variable in explaining the relationship between the pretreatment risk factors and recidivism. Results indicated that (1) a long history of criminal conduct correlated with criminal thinking, which in turn had a significantly negative relationship with engagement in treatment; (2) the level of criminal involvement had a significant relationship with re-arrest, whereas the level of criminal thinking did not influence being re-arrested directly; (3) the relationship between criminal history and re-arrest was partially mediated by criminal thinking and treatment engagement, whereas the relationship between criminal thinking and re-arrest was fully mediated by treatment engagement. The findings suggest that it is important to design interventions targeting criminal thinking and monitor treatment engagement as an indicator of treatment performance. Clinical implications also include the importance of facilitating treatment engagement and the utility of conducting prognostic assessment to inform treatment.

Keywords

criminal history; criminal thinking; risk factor; treatment engagement; recidivism

INTRODUCTION

Substance abuse is a widespread problem among criminal offenders with more than two-thirds of inmates being classified as substance-dependent (The Bureau of Justice Statistics, 2002). For drug-related offenders, relapse and recidivism are two persistent problems. Those with drug addictions often relapse upon release and they return to doing illegal activities, such as committing acquisitive crimes or getting involved in the drug market.

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Researchers and clinicians in the substance abuse treatment and criminal justice field have designed assorted approaches (individual, family, and group therapies) to treat substance abusing offenders (Ashford, Sales, & Reid, 2001). A variety of treatment modalities for illegal drug use have been evaluated. Studies to understand pretreatment and during-treatment factors that affect posttreatment outcomes have shown that corrections-based treatments which engage clients in their recovery (such as therapeutic communities) have reduced illicit drug use and crime after release from prison (Jensen & Kane, 2010; Knight, Simpson, & Hiller, 1999).

This study seeks to extend the knowledge about risk and protective factors in corrections-based treatment settings. Specifically, this study examines static and dynamic risks that have been identified as significant predictors of recidivism (Evans, Huang, & Hser, 2011; Hiller, Knight, Saum, & Simpson, 2006), with a focus on measuring the impacts that risk factors and treatment engagement have on recidivism.

Static Risk: Criminal History

Gendreau, Little, and Goggin (1996) have defined static risk factors as those that are immutable to change and associated with treatment failure and recidivism. Among all the static attributes of drug abuse and crime, the influence of criminal history in corrections-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). For example, the intensity of acquisitive crime in the last 90 days correlated with the intensity of both heroin use and crack cocaine use (Packer, Best, Day, & Wood, 2009). Another study found that offenders with more than five prior convictions were more likely to be re-arrested after 12 months post-discharge than their counterparts with fewer convictions (Evans et al., 2011).

Additionally, criminal history not only predicts future criminal behaviors, but also impacts current criminal thinking. The relationship can be accounted for by the self-perception theory (Bem, 1972) which posits that people evaluate and develop current attitudes by observing past behaviors. Moreover, people often consider the possible consequences of their behavior and, as a result, form a new attitude toward the behavior (Fishbein & Ajzen, 1975); the strong association between the resulting attitude and behavior has the potential to spontaneously activate this new attitude when decisions about behavior are being made (Albarracín & Wyer, 2000; Fazio, 1990). For those involved in committing crimes, their criminal activity also is associated with how they structure their experiences into specific cognitive patterns (Walters, 1990). One behavioral health study with a cross-lagged design demonstrated that past binge eating and smoking behaviors predicted future attitudes towards those particular behaviors (Stacy, Bentler, & Flay, 1994).

Dynamic Risks: Criminal Thinking

The static risk factors do not account for dynamic changes in risk level. Dynamic risk factors, also referred to as criminogenic needs, reflect the offenders' current and changing conditions or attributes that they bring with them to treatment.

Criminal Thinking

The most widely accepted component of dynamic risk is criminal thinking, which is strongly predictive of criminal behavior (Walters, 2006). Criminal thinking represents the distorted attitudes, beliefs, and thought patterns that underlie criminal behaviors through denial, rationalization and justification of an individual's acts (Blumenthal, Carssow, & Burns, 1999; Knight, Garner, Simpson, Morey, & Flynn, 2006; Murphy, 1990). For instance, offenders may use statements such as "I didn't mean to hurt him/her" and "He/She deserved it" to justify their criminal behaviors. 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, 2004; Walters, 2006). Therefore, offenders with high levels of criminal thinking are considered at higher risk for recidivating upon release into a community.

The literature has consistently shown criminal thinking as a good predictor of criminal behaviors. A meta-analysis review identified that antisocial attitudes yielded the largest effect size in terms of predicting criminal behaviors compared to five other factors: lower-class origins, personal distress/psychopathology, personal education/vocational achievement, parental/family factors, and temperament (Gendreau, Andrews, Goggin, & Chanteloupe, 1992). Likewise, another meta-analysis indicated that criminogenic needs and antisocial personality have surmounted actuarial factors in terms of predicting recidivism (Gendreau et al., 1996). By using The Psychological Inventory of Criminal Thinking Styles (PICTS), researchers found that criminal thinking predicted recidivism for both federal and state inmates (Walters, 1997; Walters & Elliott, 1999).

Another type of evidence supporting the prediction of criminal thinking on recidivism is in the intervention research literature. One review of 20 studies of offender-based treatment programs in North America, Western Europe, and Australia has demonstrated that Cognitive-Behavioral Therapy (CBT), which helps the offenders reconstruct the distorted cognitive thinking, is effective at reducing recidivism (Wilson, Bouffard, & MacKenzie, 2005). Taken together, the evidence demonstrates that criminal thinking is a reliable and amenable dynamic factor that predicts recidivism and, if addressed, is likely to result in a reduction in re-offending.

Treatment Process: Treatment Engagement

Among treatment process variables, treatment engagement is one of the best dynamic predictors 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 embody the increased treatment participation and positive treatment experience (such as greater treatment satisfaction and counseling rapport), which lead to increased treatment retention and facilitate further service utilization (Simpson, Joe, Dansereau, & Chatham, 1997). Moreover, a greater intensity of services and

an extended retention in treatment programs produces a longer drug abstinence, low rates of relapse, and less criminal behaviors (Fiorentine, Anglin, Gil-Rivas, & Taylor, 1997; Hser, Huang, Teruya, & Anglin, 2003; Rowan-Szal, Joe, Hiller, & Simpson, 1997; Simpson et al., 1997). Joe, Simpson, Dansereau, and Rowan-Szal (2001) found that lower counselor rapport predicted more cocaine use and criminality for patients in a community-based treatment program. Another study investigating the predictors of recidivism among probationers assigned to residential substance abuse treatment highlighted the role of treatment engagement (i.e., high counselor competence and peer support) in the recovery process in terms of reductions in re-arrest rates (Broome et al., 1996). Despite the importance of treatment engagement in increasing treatment effectiveness and maintaining positive treatment gains, a scarcity of studies have been conducted to specifically investigate the impact of treatment engagement on post-release re-arrests.

The Impact of Risks on Treatment Engagement

The aforementioned risk factors not only undermine treatment outcomes in terms of increasing recidivation, but also attenuate treatment engagement.

Criminal History and Treatment Engagement—A history of criminal involvement is associated with treatment disengagement. For example, studies have demonstrated that a shorter criminal history is a significant predictor of treatment engagement and retention (Fiorentine, Nakashima, & Anglin, 1999; Magura, Nwakeze, & Demsky, 1998). One recent study, however, found that criminal thinking significantly predicted treatment engagement, whereas static risks could not predict such engagement, suggesting dynamic risks (such as criminal thinking) were more robust predictors of engagement than static variables (Welsh & McGrain, 2008). The mixed evidence about the relationship between criminal history and treatment engagement implies that criminal thinking may mediate the impact of criminal history on engagement.

Criminal Thinking and Treatment Engagement

Unlike criminal history, more criminal thinking has been consistently reported to be predictive of poor treatment engagement and deficient client functioning (Best, Day, Campbell, Flynn, & Simpson, 2009; Garner, Knight, Flynn, Morey, & Simpson, 2007). A study by Joe, Rowan-Szal, Greener, Simpson, and 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, and Dumenci (2011) studied the criminal thinking patterns of drug-using probationers and found that those with higher levels of criminal thinking were less likely to engage in treatment. Individuals with a high level of pre-treatment risk and strong treatment needs that should benefit the most from treatment were least likely to complete their programs (Olver, Stockdale, & Wormith, 2011). They may not believe that treatment services are helpful or worthwhile, therefore they are less likely to engage in treatment and more likely to drop out (Fiorentine et al., 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 re-offending.

The Current Study

The literature has primarily concentrated on static risk factors, and researchers have paid less attention to the impact of dynamic characteristics on post-treatment behaviors. Additionally, most previous studies have explored and compared the single direct relationship between predictors and recidivism, without much consideration of the indirect relationships through other variables. The sophisticated nature of the relations between predictors and recidivism calls for a more complex model integrating risk factors, treatment engagement, and recidivism. Research is needed to examine pre-treatment and during-treatment characteristics that may explain individuals' resistance to enter, make them less likely to engage, and thus more likely to fail in treatment. Thus, the present study focused simultaneously on the impact of pretreatment static and dynamic risks and treatment engagement. Because risk factors may directly impact recidivism and indirectly affect re-offending 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 rationale implies that treatment engagement may mediate the effect of risk factors on recidivism.

The model for the present study examines the prospective relations between pretreatment risks, during-treatment engagement, and recidivism. The purposes of the model are (1) to determine whether criminal history directly impacts treatment engagement or plays a distal role in treatment engagement through criminal thinking; (2) to determine more conclusively the impact of risks and treatment engagement on recidivism; and (3) to ascertain whether treatment engagement mediates the impact of risks on recidivism.

We posit that criminal history is expected to be positively associated with criminal thinking, which in turn exerts a negative impact on treatment engagement and a positive influence on recidivism (Hypothesis 1). We posit that criminal history and criminal thinking will have a positive relationship with recidivism; whereas treatment engagement will have an inhibitive influence on recidivism (Hypothesis 2). Furthermore, we posit that treatment engagement will mediate the impact of risks on recidivism (Hypothesis 3).

METHOD

Participants

This study used secondary data from Texas Christian University Institute of Behavioral Research's Disease Risk Reduction (DRR) project (R01DA025885, W.E.K. Lehman, principal investigator). Participants were criminal justice clients from four residential prison-based treatment facilities in a southwestern state. The sample included 382 males (58%) and 271 females (42%). The overall mean age was 34.8 (18–67) years, with no difference between male and female participants. Within each gender group, the 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. Two facilities were all-male units and two were all-female units. The duration of the programs ranged from 6 to 12 months.

Measures

Criminal history and criminal thinking were measured upon treatment intake. Treatment engagement was measured at the end of the orientation phase of treatment (approximately 30 days after admission). The intervention occurred within three months of release from prison.

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. The composite score of the LCI subscale was used to represent the criminal history in the model analysis.

Criminal Thinking—Entitlement, Rationalization, and Personal Irresponsibility were used to assess Criminal Thinking ($\alpha = .78, .71, \text{ and } .74$, respectively; Knight et al., 2006). All ratings in the three scales used a Likert-type scale ranging from 1 to 5 in which 1 indicated *disagree strongly* and 5 indicated *agree strongly*. Six items were used to measure Entitlement. These statements focused on an offender's belief that he/she deserves some privilege, rewards, or benefit (e.g., "You have paid your dues in life and are justified in taking what you want" and "Society owes you a better life"). Six items were used to gauge Rationalization, which refers to an offender's disrespect or negative attitude toward people and the legal system (e.g., "This country's justice system was designed to treat everyone equally"). Six items were used to assess Personal Irresponsibility, which is an offender's attribution for criminal actions and incarceration (e.g., "You are locked-up because you had a run of bad luck").

Treatment Engagement—Treatment Participation, Treatment Satisfaction, Counselor Rapport, and Peer Support forms were used to measure treatment engagement. All ratings in the four scales used a Likert-type scale ranging from 1 to 5 in which 1 indicated *disagree strongly* and 5 indicated *agree strongly*. Twelve items were used to measure Treatment Participation ($\alpha = .85$; Joe, Broome, Rowan-Szal, & Simpson, 2002). These statements focused on a client's participation and involvement in treatment (e.g., "You have learned to analyze and plan ways to solve your problems"). Seven items were used to measure Treatment Satisfaction ($\alpha = .80$; Joe et al., 2002). The statements assess satisfaction (including overall satisfaction, convenience, program procedure, etc.) with the program (e.g., "Time schedules for counseling sessions at this program are convenient for you"). Twelve items were used to assess Counselor Rapport ($\alpha = .92$; Joe et al., 2002). Responses indicate the quality of the therapeutic relationship between clients and counselor/staff (e.g., "You

trust your counselor”). Five items were used to assess Peer Support ($\alpha = .81$; Joe et al., 2002). These items evaluate the degree to which clients establish a supportive relationship with peers in the program (e.g., “Other clients at this program care about you and your problems”).

Re-arrest—In the current study, recidivism was defined as whether participants were re-arrested for a felony offense 12 months after release. Department of Public Safety records were searched in September 2012 for arrest information. The duration that participants had been in the community after release was between 12 and 32 months. Participants were classified into two groups representing no felony arrests (coded as 0) or 1 or more felony arrests (coded as 1).

Covariates—Two control variables that could confound the hypothesized effects were included in a structural equation model (SEM): age and gender. Although the onset of involvement in crime varies, as age increases, individuals may have more chances to commit crimes and the number of criminal involvements would increase correspondingly. As for gender, men and women tend to have differences in criminality, criminal cognition, and treatment needs and concerns (Benda, 2005; Collins, 2010; Knight et al., 2006; Taxman, et al., 2011), which may impact the relationship between risk factors, treatment engagement, and recidivism.

Data Analysis Method

Descriptive analyses including means, standard deviations, and correlations were conducted, as well as principal component analyses to assess the number of latent factors of the criminal thinking indicators and the treatment engagement indicators, respectively using SAS 9.2. Then confirmatory factor analyses measured the estimates of factor loadings for each indicator on the corresponding latent construct and fit indices of the measurement model using Mplus 6 (Muthén & Muthén, 1998–2011) with maximum likelihood estimation procedures. The measurement model of criminal thinking was represented by the Entitlement, Rationalization, and Personal Irresponsibility scales. Treatment engagement was represented by the Treatment Participation, Treatment Satisfaction, Counselor Rapport, and Peer Support scales.

Structural equation modeling (SEM) tested the hypothesized models using Mplus 6. The procedure simultaneously examined the significance of all predictions 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 Weighted Least Squares Mean and Variance (WLSMV) estimation was used in the SEM. WLSMV has been found to be superior to Weighted Least Square (WLS) for categorical outcomes (Muthén, du Toit, & Spisic, 1997). The model specification proceeded in two steps. In the first step, the effect of risks and treatment engagement was tested on the likelihood of re-arrest at least 1 year post release. In the second step, the covariates, including age and gender, were introduced into the model.

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 comparative fit index (CFI), the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), and the weighted root mean square residual (WRMR). The chi-square statistic is overly sensitive to model misspecification when sample sizes are large. The CFI ranges from 0 to 1 with values greater than .95 generally representing reasonable fit. The RMSEA and SRMR represent lack of fit per degree of freedom and reflect model parsimony and should be less than .08 for reasonable fit (Hu & Bentler, 1999). However, a large RMSEA value may result from a small degree of freedom (Kenny, Kaniskan, & McCoach, 2011). The SRMR was only reported in CFA, since it is not a recommended index for the dichotomous outcome (Yu, 2002). The WRMR is a relatively new fit index that is believed to be better suited to categorical data. WRMR values less than 1.0 depict a good fitting model (Hancock & Mueller, 2006).

RESULTS

Phase 1: Descriptive Analyses

Means and standard deviations of the criminal history, criminal thinking, and treatment engagement scales, and the re-arrest percentage are presented in Table 1. Overall, 16% of our full sample of 653 participants were re-arrested after 1 year post release and the percentage of male participants (19%) being re-arrested was larger than that of female participants (12%).

Correlations were calculated to determine the relationships between predictors and the dependent variable. The results are presented in Table 2. Correlations among components of criminal thinking were statistically significant, as were correlations among components of treatment engagement. More importantly, significantly negative correlations were observed between criminal thinking variables and treatment engagement variables.

The correlations of felony re-arrest with the variables in the model to be tested indicated that the level of Personal Irresponsibility was significantly associated with re-arrest ($r = .09$, $p = .02$). However, neither entitlement nor rationalization correlated with re-arrest (both p values $> .05$). As for the correlations between treatment engagement indicators and re-arrest, treatment participation and peer support were negatively associated with re-arrest ($r = -.08$, $p = .03$; $r = -.08$, $p = .05$); whereas treatment satisfaction and counselor rapport did not correlate with re-arrest (both p values $> .05$). Furthermore, criminal history was positively associated with re-arrest ($r = .12$, $p = .003$). The correlation between covariates (i.e., age, gender) and re-arrest were computed as well. Gender but not age was significantly related to re-arrest, $r = .10$, $p = .01$; $r = -.01$, $p = .79$, respectively.

Phase 2: Structural Equation Modeling Analyses

Measurement model—A confirmatory factor analysis (CFA) was carried out for the latent variables used in the model: criminal thinking and treatment engagement, assuming all errors to be uncorrelated. The CFA results indicated adequate internal reliability for criminal

thinking (Cronbach's $\alpha = .79$) and treatment engagement (Cronbach's $\alpha = .85$). The factor loadings of entitlement, rationalization, and personal irresponsibility on criminal thinking were .74, .61, and .96, respectively. The factor loadings of treatment participation, treatment satisfaction, counselor rapport, and peer support on treatment engagement were .81, .79, .86, and .69, respectively. Principal component analyses revealed that there was only one latent factor for criminal thinking with the criterion of an eigenvalue larger than 1.00. The eigenvalue for the latent factor was 2.16, which suggests that the three indicators explained 72% of the total variance in criminal thinking. There was only one latent factor for treatment engagement. The eigenvalue for the latent factor was 2.85, which suggests that the four indicators accounted for 71% of the total variance in treatment engagement.

The measurement model results suggested that the observed measures constituted relatively cohesive latent measures for treatment engagement, $\chi^2(2) = 54.26, p < .001$, RMSEA = .20 (95% CI [.16, .25]), CFI = .96, SRMR = .03. The large RMSEA value which indicates the model may not have enough parsimony could be due to the small degrees of freedom ($df=2$ for the measurement model of treatment engagement) in the measurement model. Because the measurement of criminal thinking is a saturated model, the fit indices for this model have not been reported.

Structural Equation Model—The hypothesized model was tested with Structural Equation Modeling. The model fit the data adequately, $\chi^2(23) = 115.53, p < .001$, RMSEA = .08 (95% CI [.07, .09]), CFI = .93, WRMR = .98. However, the coefficients of the paths from criminal history to treatment engagement and from criminal thinking to re-arrest were nonsignificant, $\gamma = .26, S.E. = 0.28, p = .35$; $\gamma = .01, S.E. = 0.02, p = .41$, respectively. The reduced model was tested with the removal of two nonsignificant paths. The model yielded better fit indices, $\chi^2(25) = 82.59, p < .001$, CFI = .96, RMSEA = .06 (95% CI [.05, .07]), WRMR = 1.01. Criminal history had a positive influence on criminal thinking ($\gamma = .73, S.E. = 0.33, p = .03$) and re-arrest ($\gamma = .29, p = .004$). Criminal thinking negatively affected treatment engagement ($\gamma = -.36, S.E. = 0.04, p < .001$), which in turn negatively predicted re-arrest ($\gamma = -.04, S.E. = 0.02, p = .02$). The deviance statistics were used to compare the reduced model with the full model regarding which model fit the data better. The results showed that the reduced model was a better fit model with the given data, $\chi^2 = 32.94, df = 2, p < .001$. The model accounted for 5% (R^2) of the total variance.

As a final step, the same reduced model structure was followed, with the exception that two covariates were included as simultaneous predictors of the outcome variable (see Figure 1). The effects of criminal history on criminal thinking ($\gamma = .93, S.E. = 0.34, p = .007$) and re-arrest ($\gamma = .24, S.E. = 0.10, p = .02$) were maintained with the inclusion of the confounding variables. Moreover, the impact of criminal thinking on treatment engagement was still significant ($\gamma = -.36, S.E. = 0.04, p < .001$), as was the influence of treatment engagement on re-arrest ($\gamma = -.04, S.E. = 0.02, p = .02$). The final model fit the data well, $\chi^2(39) = 105.55, p < .001$, CFI = .96, RMSEA = .05 (95% CI [.04, .06]), WRMR = 1.20. The deviance statistics comparing the reduced model without covariates and the final model showed that there were no differences in the model fit between the two models, $\chi^2(14) = 22.96, p = .06$. Since the reduced model with the covariates controlled for the effect of the confounding variables on re-arrest, we kept the covariates in the final model.

The model explained 13% (R^2) of the variance of re-arrest, which suggests that the final model was able to explain a sizable portion of 1-year post-release re-arrests. Additionally, the percentage of the variance in the outcome accounted for by the final model was bigger than in the reduced model without covariates, which indicates that the final model with covariates had a higher effect size in terms of explaining the outcome. The total effect of criminal history on re-arrest was significant ($E= .25, p = .01$), whereas the total indirect of criminal history on re-arrest was not significant ($IE = .01, p = .07$), accounting for 5% of the total effect. The impact of criminal thinking on re-arrest was fully mediated by treatment engagement and the net indirect effect of criminal thinking on re-arrest was significant ($E= .01, p = .02$).

DISCUSSION

A long history of criminal involvement, more criminal thinking, and low treatment engagement are individual-level characteristics associated with recidivism risk for drug-involved offenders. Although previous research has identified a variety of static and dynamic risks that affect re-offending behaviors, less is known about the mediating mechanism for these factors. In the present study, we examined the role of criminal history and criminal thinking as important predictors of recidivism, and the unique role of treatment engagement as the mediator of the relationship between risks and re-arrest. We hypothesized that criminal history and criminal thinking had a negative influence on treatment engagement, which in turn mediated the intensive impact of those two risk factors on recidivism. The SEM findings of 653 participants from four corrections-based therapeutic communities partially supported the study hypotheses.

With regard to hypothesis 1, criminal history was unrelated to treatment engagement directly; it was incorporated into offender's criminal thinking, which in turn impact treatment engagement. Previous studies have documented associations between criminal history, criminal thinking and treatment engagement (e.g., Best et al., 2009; Fiorentine et al., 1999). The current study found that criminal thinking but not criminal history directly predicted treatment engagement, which is consistent with Welsh and McGrain's (2008) findings that dynamic risk factors are better predictors of treatment engagement than static risks. Past criminal behaviors and their outcomes may reinforce and aggravate the distorted patterns of thoughts, and thereby play a distal role in affecting treatment engagement through criminal thinking as a proximal factor, which had a negative relationship with treatment engagement.

Certain patterns of criminal thinking (e.g., entitlement of criminal conducts and privileges, refusal of personal responsibility, disrespect of the legal system) developed by offenders tend to impact their perception and receptivity of treatment, and alter the way they acknowledge their problems and perceive their interactions with counselors and peers, thus affecting the extent to which they participate in treatment, feel satisfied with therapies, follow the counselor's guidance, endorse the treatment goals, and interact with peer clients. Collectively, these criminal attitudes are believed to have an influence on offenders' acceptance or rejection of corrections-based treatment and, ultimately, on recidivism.

However, it is also worthwhile to acknowledge that our sample was from therapeutic communities with a minimum security level, as opposed to the high-risk offenders in other studies (e.g., Evan et al., 2011). Given the overall lower levels of criminal involvement associated with offenders from minimum security facilities, their criminal histories may not be sensitive enough to predict engagement for substance abuse treatment directly.

With regard to hypothesis 2, criminal history was positively associated with re-arrest. Also, personal irresponsibility as one exogenous indicator of criminal thinking was positively correlated with re-arrest. Moreover, treatment participation and peer support as two exogenous indicators of treatment engagement were negatively correlated with re-arrest in the preliminary correlation analysis. Together with the SEM results, our findings supported the hypothesis that a high level of criminal history and criminal thinking and a low level of treatment engagement were precursors of post-release recidivism. These findings were consistent with previous studies (e.g., Evans et al., 2011; Walters & Elliott, 1999; Joe et al., 2001).

As for hypothesis 3, the results indicated that criminal history had direct and indirect effects, through criminal thinking and treatment engagement, on recidivism, whereas treatment engagement entirely mediated the relationship of criminal thinking and re-arrest. Previous studies (Hoffman, Caudill, Koman, Luckey, Flynn, & Hubbard, 1994; McLellan, Arndt, Metzger, Woody, & O'Brien, 1993; Shoptaw, Rawson, McCann, & Obert, 1994; Simpson, Joe, Rowan-Szal, & Greener, 1995) have indicated that early treatment engagement leads to more frequent and intensive use of treatment services and thus produces more posttreatment behavior improvements (e.g., less illicit drug use). By enhancing the degree to which clients engage in treatment, a counselor may reduce offenders' risk of re-offending at a later time, even if they have a more severe history of crimes and higher levels of criminal thinking.

The results of variance estimation for the total and indirect effects indicated that criminal history exerts a larger proportion of direct effect on re-arrest compared to the indirect effect through criminal thinking and treatment engagement. This finding showed that although both pathways were significant, the impact of criminal history on behavioral tendency was more influential than on cognitive constructs (e.g., attitudes, beliefs), which was consistent with the idea that, although cognitive constructs may change individual's behavioral tendency, the risk behavior is not intentional but rather a reaction to social circumstances (Gibbons, Gerrard, & Lane, 2003). This kind of reaction depends on a learned behavioral pattern based on life experience, which includes past behaviors.

By identifying treatment engagement as a mediator of the influence of criminal thinking and the indirect effect of criminal history through criminal thinking and treatment engagement, the findings help in better understanding the ways in which these distal risk factors can exert an impact on re-arrest. They also help identify promising channels for interventions involving cognitive constructs (i.e., decreasing criminal thinking, facilitating treatment engagement) that should be considered as viable approaches to intervention in criminal conduct.

Several limitations affect the findings of the current study. First, re-arrest figures came from public records, which may take time to process and thus lead to an underestimation of the number of re-arrests. Second, the present study only included self-reported measures of predictors. Offenders may tend to deflate criminal thinking and inflate treatment engagement. Third, treatment engagement was measured as early engagement and thus this may limit it as a measure in capturing the total treatment experience. Fourth, the parsimony index (i.e., $RMSEA = .20$) of CFA for treatment engagement, which was relatively higher than the recommended criterion, suggests that the measurement model is misspecified. This figure could result from the comparatively high correlations between the four indicators of treatment engagement (all r values are above .50). However, a large RMSEA value could be due to the small degree of freedom ($df=2$ for the measurement model of treatment engagement in this study) in the measurement model as well. Researchers argue that one should not compute the RMSEA for low degree of freedom models (Kenny, Kaniskan, & McCoach, 2011). Moreover, the relatively high RMSEA value of the measurement model for treatment engagement did not impact the fit of the final structural equation model (in which RMSEA was equal to 0.04). Fifth, it is important to acknowledge that the present study did not account for the programmatic and contextual factors that researchers have found to correlate with treatment engagement and post-release recidivism (Broome, Simpson, Joe, 1999; Joe, Simpson, & Sells, 1994). For example, the availability of rehabilitative services in different facilities could have profound effects on treatment engagement, particularly for those who have special treatment needs (e.g., maternity services, mental health services). Sixth, the correlations between covariates and re-arrest and the difference in the variances accounted for by two reduced models indicate an influence of gender and age, especially gender, on re-arrest. This gender influence is consistent with the idea that, because of the multiple risk factors offenders may encounter in facility and social contexts (e.g., unsatisfied treatment needs, discrimination from employers), the impact of risks and treatment engagement on re-arrest may differ between women and men. Future studies could conduct direct tests of this hypothesis.

Implications and Future Directions

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, our findings provide support for the benefits of risk-reducing interventions targeting criminogenic needs (e.g., criminal thinking), when such interventions not only enhance treatment performance but also decrease post-release risk behaviors. Second, recent research indicates that criminal thinking is malleable and can be improved with interventions (Lipsey, Landenberger, & Wilson, 2007). Interventions targeting criminal thinking may therefore have promise for reducing the effects of high pretreatment risk factors and criminogenic needs on during-treatment performance as well as the posttreatment outcome. Our findings regarding the total indirect effect of criminal thinking on recidivism suggest that high treatment engagement, as a protective factor, buffers the negative influence of criminal thinking, which also stresses the importance of facilitating treatment engagement. Moreover, clinicians may consider monitoring the ongoing process of treatment for prognostic purposes. Third, in addition to the direct effect, criminal history exerts an indirect effect on

recidivism (even though not as large as the direct effect) by influencing criminal thinking and treatment engagement, which can be changed by an effective treatment. This finding implies that for clients with more criminal involvement, counselors may consider making more efforts to address the distorted cognitive patterns. Fourth, in planning and delivering treatment services, counselors may need to make sure that the intensity and variety of interventions are commensurate with the level of risk factors (Andrews and Dowden, 2006).

Acknowledgments

This work was funded in part by the National Institute on Drug Abuse (NIDA; Grants R01DA025885, 2U01DA16190, and 5R01DA013093). The interpretations and conclusions, however, do not necessarily represent the position of the NIDA, the National Institutes of Health, or the Department of Health and Human Services.

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Figure 1.

The final model estimating the impact of criminal history, criminal thinking, and treatment engagement on recidivism with the covariates of age and gender. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 1

Sample Characteristics and Predictive and Dependent Variable Means (Standard Deviations)

Characteristic	Total (N=653)	Male (n = 382)	Female (n = 271)
Race ^a			
Caucasian	281	121	160
African American	180	115	65
Hispanic	188	146	42
Other	4	0	4
Age (mean; range) ^b	34.8 (18–67)	34.6 (18–67)	35.2 (19–61)
Total (N = 653)			
	Mean	SD	Mean
Criminal History	3.50	0.6	3.31
Criminal Thinking			
Entitlement	17.00	5.63	17.37
Rationalization	27.02	7.83	27.56
Personal Irresponsibility	19.63	6.21	19.96
Treatment Engagement			
Treatment Participation	41.94	4.83	42.46
Treatment Satisfaction	36.77	6.97	35.33
Counselor Rapport	40.31	6.09	40.25
Peer Support	37.49	7.07	37.86
Felony Re-arrest (%)	16%	19%	12%

Note.

^aResults of the Chi-squared test indicated that the distribution of participants in race groups was different between genders, $\chi^2(2) = 58.29, p < .001$. Because the number of participants coded as “Other” race was smaller than 5, “Other” race group was excluded in the Chi-squared test.

^bThe independent t-test indicated that there was no difference in age between males and females, $t = 0.88, p = .38$.

Table 2

Correlations among the Variables (N=653)

Variables	Age ^d	Gender ^d	Criminal Thinking				Treatment Engagement			
			1	2	3	4	5	6	7	8
1. Criminal History	0.01	-.27***								
2. Entitlement	-.05	0.06	0.07							
3. Rationalization	-.03	0.06	.10*	.45***						
4. Personal Irresponsibility	0.004	0.05	.10*	.71***	.58***					
5. Treatment Participation	0.02	.09*	-.07	-.38***	-.20***	-.29***				
6. Treatment Satisfaction	0.06	-.17***	0.06	-.22***	-.30***	-.21***	.58***			
7. Counselor Rapport	0.004	-.01	0.01	-.24***	-.18***	-.20***	.71***	.69***		
8. Personal Support	.09*	0.04	-.03	-.18***	-.24***	-.18***	.59***	.59***	.53***	
9. Re-arrest	-.01	-.10*	.12**	0.06	0.03	.09*	-.08*	-.07	-.06	-.08*

Note.

^a age and gender are two covariates.

* p .05,

** p < .01,

*** p < .001