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Is substance abuse treatment actually ‘treating’? The effectiveness of pre- and post-release substance abuse programming within the reentry process

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Abstract

The process of reintegrating back into society can be a difficult time for formerly incarcerated individuals in desisting from substance use. Although prior work has shown that experiences like securing employment or abstaining from criminal peers can help individuals desist from substance use, one aspect about which criminologists know considerably less concerns the role of substance abuse treatment programming during reentry. Using the Serious and Violent Offender Reentry Initiative data, we explore the role of substance treatment programming on substance use through multiple avenues. Namely, we investigate the impact of substance abuse treatment during prison, during reentry, and over time. Results of longitudinal models demonstrate that individuals who participated in pre-release substance abuse treatment programming report significantly lower levels of substance use than those who did not participate in pre-release substance programming. Yet, we find that individuals who participated in substance treatment programming post-release reported significantly higher levels of substance use than those who did not participate in post-release programming. Finally, we find no evidence that substance use treatment programming relates to decreases in substance use across time.

Keywords

Substance use/abuse; substance treatment; incarceration; reentry

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Introduction

In 2014, the United States incarcerated more people than another other country in the world (Carson, 2015), continuing a trend that has existed for the past few decades (Raphael, 2011). Although incarceration rates remain near historic highs in the U.S., the vast majority of individuals who go to prison will eventually be released. Supporting this observation, over 600,000 American individuals are released from prison each year, the vast majority of whom return to their former neighborhoods (Kirk, 2016). The timeframe immediately following release, generally referred to as reentry (Visser & Travis, 2003), can present a host of challenges to returning men and women. These challenges represent a major hurdle for reentering persons, as about two-thirds of all returning men and women will be rearrested within the first three years of release, and a little over half will be reincarcerated (Bahr, Harris, Fisher, & Armstrong, 2010). Overall, research demonstrates that finding a consistent place to live, maintaining a legal occupation, getting married, avoiding criminal peer influence, building family support, and avoiding substance use all contribute to avoiding rearrest and reincarceration (Bahr et al., 2010; Boman & Mowen, 2017; Mowen & Visser, 2016; Phillips, 2010; Visser & Courtney, 2007; Visser & Travis, 2003; Western, Braga, Davis, & Sirois, 2015).

The latter of these challenges – the avoidance of substance use and misuse – represents one of the major difficulties faced by formerly incarcerated men and women. In addition to the sheer number of persons in prison on drug related charges (e.g. West & Sabol, 2008), this issue becomes even more important when it is considered that research over several decades demonstrates that many more serious, violent offenders were under the influence of some form of substance when they committed the crime that led to their incarceration (Bureau of Justice Statistics [BJS], 1994). While a fair amount of research has investigated the role of substance use and treatment during the reentry process, less is known about the efficacy of substance abuse treatment among inmates who have specifically committed serious and violent offenses. Considering that violent offenders are often seen as being high-risk/high-needs individuals in terms of programming (e.g. Polaschek, Wilson, Townsend, & Daly, 2005), developing a more nuanced understanding of the way that desistance from substance use and abuse is impacted by drug treatment programming is something of considerable importance. In an attempt to advance research in this area, we use four waves of data from the Serious and Violent Offender Reentry Initiative (SVORI) study to examine the relationship between substance abuse treatment programming and substance use post-release to shed light on the effectiveness of substance abuse treatment for severe and violent offenders.

Reentry and substance use

Individuals undergoing reintegration into society face a number of challenges, including securing employment, locating housing, reuniting with their family members, and desisting from criminal offending (Begun, Early, & Hodge, 2016). Given the difficulties associated with reentry, some returning men and women turn to substances to help cope with the stresses – and often embarrassment – that are presented to them by everyday life outside of prison (e.g. Severson, Veeh, Bruns, & Lee, 2012; Western et al., 2015). Considering that

returning individuals represent a population with already very high rates of substance abuse, the number of challenges that they face back in society only add to the extent to which substances are identified as a key cause of reentry failure. With myriad factors that make life outside prison difficult, it is perhaps unsurprising that scholars regularly identify substance use as one of the primary reasons for reincarceration (Fazel, Bains, & Doll, 2006; Phillips, 2010).

With the significant problems that substance abuse causes for returning individuals and the resource- and finance-based strain that it puts on the criminal justice system (e.g. Maruna, 2001), the need to understand the reasons for effectiveness (and ineffectiveness) in substance abuse treatment during the reentry process is pressing. Before reentering society, incarcerated persons are generally in prison for enough time to make an observable, positive impact on their lives through substance abuse treatment. However, some research suggests that many men and women are not receiving the substance treatment they need while they are in prison. For example, Belenko and Peugh (1998) found that 75 percent of state inmates in the late 1990s needed some type of substance abuse treatment. Despite this massive number of people having a real need for programming, the authors found that only 17 percent of those who had substance abuse treatment needs received some form of programming. Given that the seriousness of the prison overpopulation problem is attributable to extraordinarily high incarceration rates (e.g. Marvell, 1995), it is apparent that many correctional institutions are likely releasing formerly incarcerated persons into the community while they still have a substance abuse problem (Mauer & King, 2007). Since violence and substance use can co-occur (see Wright & Decker, 1996), this unfortunately means that the system is failing to address substance use as a key cause of physically aggressive behaviors, thereby putting the offender at risk for reincarceration while simultaneously endangering the community.

The lack of treatment issue, however, represents only one side of the coin. People having a *need* for treatment is distinct from the *quality* of treatment they receive. Our goal with this study more closely meshes with the latter of the two issues, and concerns whether substance abuse treatment is effective during the reentry process. Overall, research on the relationship between substance use and substance abuse treatment shows mixed findings. Some previous research, for example, finds that individuals who receive treatment tend to have higher rates of success abstaining from drug use and crime compared to individuals who do not receive treatment (see Bahr, Masters, & Taylor, 2012 for a review of these findings). Likewise, Seiter and Kadela (2003) found that substance abuse treatment programs were effective in reducing substance use because these programs tend to make the transition out of prison easier for returning individuals. However, other researchers find that some treatment programs have no effect (Taxman & Thanner, 2006) or tend to be successful only when accompanied by other forms of treatment or cognitive behavioral therapy (Bahr et al., 2012). Taxman and Thanner (2006), for example, found no difference in rates of substance use in a sample comparing individuals participating in differing forms of treatment compared to those not participating in treatment at all. Even worse, other research demonstrates that substance abuse treatment is not only ineffective, but also detrimental (McMurrin, 2007). Some programs may be harmful because they fail to address co-occurring issues such as mental illness (Mallik-Kane & Visser, 2008) or other criminogenic factors that drive

substance use and crime alike (see Taxman & Manassas, 2006), consequentially ignoring a large part of the root cause of substance use in the first place.

As such, the literature on substance abuse treatment during the reentry timeframe shows mixed findings, leaving researchers with the question of whether or not substance use treatment programs result in decreased use patterns during the time period of reentry. Given that reentry is already a trying period where returning men and women face severe hardships and challenges, developing a more comprehensive understanding on how treatment impacts substance use patterns is imperative. Because substance abuse can be viewed as a ‘need’ and treatment programming as a ‘response,’ we approach the issue of substance abuse treatment for violent offenders during reentry from the perspective of the risk-need-responsivity (RNR) framework.

The risk-need-responsivity (RNR) model

The RNR model is a tool designed to assess individualized needs and provide rehabilitative services to formerly incarcerated individuals. This model focuses on three principles: risk, need, and responsivity (Bonta & Andrews, 2007). The goal of the first principle – risk – is to match the appropriate level of service to the individual’s risk of reoffending, and asks *who* should be receiving service. The risk principle, for example, accounts for the fact that it would make little sense to give treatment to someone who had very little offending history. Instead, services would be targeted towards persons who have long histories of offending, as they have a much greater risk of reoffending.

The second principle – need – defines what criminogenic need should be treated. The seven specific criminogenic needs defined by RNR include antisocial personality, pro-criminal attitudes, social supports for crime, family/marital relationships, school/work, prosocial recreational activities, and substance abuse (Bonta & Andrews, 2007). Because it is unnecessary from the RNR’s perspective to give substance abuse programming to those who do not need it, the need principle represents a necessary screening process to ensure that services are being targeted towards those who actually could benefit from them. As such, those who have long histories of substance use would be defined as high need individuals on the substance abuse domain.

The final principle, responsivity, seeks to assess the most efficient way to treat the individual. In doing so, responsivity defines *how* to treat the individual. In the case of responding to the risk of substance abuse, a relatively straightforward responsivity response is substance abuse treatment. With the three principles merged into the context of the current study, risk refers to high-risk individuals, need refers to substance use, and responsivity refers to substance abuse treatment.

Current study

Using panel data from the Serious and Violent Offender Reentry Initiative (SVORI) project, this study examines the effectiveness of substance abuse treatment on subsequent substance use during the process of reentry. To aid in the ability to generalize findings, we use a unique form of statistical technique capable of separating effects of substance use treatment received in prison (time invariant) from substance abuse treatment received in the

community after release from prison (time variant). Along with the use of a wide variety of control variables, this study should be able to shed light on whether prison-based substance abuse treatment or community-based treatment is the most effective for decreasing the use of drugs during the process of returning home.

Although previous findings on the effectiveness of substance abuse programming are mixed (McCollister et al., 2003), we expect (H1) that individuals who participate in pre-release (in prison) substance abuse treatment will report lower levels of substance use during reentry than individuals who did not participate in pre-release substance abuse programming. Correspondingly, we hypothesize (H2) that individuals who participate in substance abuse treatment programming post-release (during the reentry process) will also report lower levels of substance use than those who do not participate in post-release treatment programming. Finally, we expect (H3) that substance abuse treatment programming will generally relate to lower levels of substance use over the reentry time period.

Methods

Data for this project are drawn from all four waves of the SVORI data. SVORI, a federally funded, panel data initiative, was designed to examine the role of enhanced reentry services on reentry outcomes in a sample of 1,697 men across 14 different states. Data were collected between 2005 and 2007 in four phases. In the first phase, individuals were interviewed approximately 30 days prior to release while they were still incarcerated. In the second phase, data were collected from these same individuals about 3 months post-release. The third and fourth phases collected data from respondents about 9 and 15 months post-release, respectively. As a result, the SVORI data contain four waves, one which was captured during incarceration and three waves during reentry.

Dependent variable

The dependent variable in this study is an index of self-reported substance use. To capture substance use, we rely on a series of questions asking the respondent if they had used a variety of substances. At wave one, this measure asked respondents about their experiences prior to incarceration. At waves two, three, and four, this measure asked respondents about their substance use since the last interview. At each wave, the substances captured were cocaine, heroin, methadone, methamphetamine, alcohol, sedatives, narcotics, inhalants, hallucinogens, marijuana, steroids, stimulants, or tranquilizers used in any manner not as prescribed by a physician. To create a scale capturing the total amount of substances used, each item was coded '1' if the respondent answered 'yes' and '0' if the respondent answered 'no.' Each item was then added together to create a variety index with higher values representing more types of substances used. This index has a mean of 1.35, a standard deviation of 1.47, and has an observed range of 0–11. Descriptive statistics for all variables used are shown in Table 1, below.

Focal independent variable

The primary independent variable of interest to the current study is substance abuse treatment. At each wave, respondents were asked if they participated in a substance abuse

treatment program (1 = yes, 0 = no). In lieu of simply using this variable as a time-variant measure, we try to more comprehensively capture the role of substance abuse treatment programming on substance use during the reentry process. Therefore, we use this variable in three different capacities.

First, some individuals participated in pre-release substance abuse treatment programming while they were incarcerated (42.9 percent reported receiving substance abuse treatment while in prison). This measure represents a time-invariant, between-individual effect that captures a between-person difference while in prison. Since this variable does not change over time, it is a level 2 measure.

Second, individuals could also participate in substance abuse treatment programming post-release. Overall, a total of 37.7 percent of individuals in the sample participated in substance abuse treatment during the reentry period. This measure also represents a time-invariant between-individual effect – again at level 2 – as some individuals participated in post-release programming while others did not.

Both the pre- and post-release measures of substance abuse treatment programming are included in forthcoming models. These level 2 measures are separated because many individuals who participated in pre-release programming did not participate in post-release programming and vice-versa. In fact, the correlation between these two measures is .221 ($p < .001$), suggesting that pre-release and post-release measures may exert independent effects on self-reported substance use.

Finally, we include a time-variant measure of substance abuse treatment programming. This measure represents a within-individual effect as individuals could report being in substance abuse treatment at one wave, but not others. As such, the use of this variable as a within-individual predictor allows for people to enter and leave treatment over the course of the process of reentry. Due to the modeling strategy chosen (to which we speak momentarily), this measure will also be included in forthcoming models. This treatment variable varies within-persons over time, making it a level 1 effect ($M = .225$, $SD = .248$).

Time variant control variables

Based on prior research, we control for a host of time variant measures that may relate to substance use during the reentry process. First, because research demonstrates that employment can be an important predictor of reentry outcomes (e.g. Visser & Courtney, 2007), we control for whether the respondent was employed at each wave after release from prison. To capture this, respondents were asked if they had been employed since the prior interview. Based on this binary measure (0 = unemployed, 1 = employed), 65.7 percent of the sample reported being employed at some point. This measure varies across time since individuals could be employed in one wave but not another.

We also control for levels of depression, as mental health has been demonstrated to relate to both substance use and reentry outcomes (Mallik-Kane & Visser, 2008). To assess depression, we rely on a series of ten questions asking the respondent about their feelings and emotions. For each question, respondents were asked how much they agreed with a

given statement along a five point scale (not at all, a little bit, moderately, quite a bit, extremely). These items asked the respondent if they felt 1) lonely, 2) blue, 3) inferior to others, 4) hopeless, 5) worthless, 6) emotionally numb, 7) distant, and if they 8) had trouble sleeping, 9) had no interest in activities, and 10) had experienced a loss of interest in other things. To create this measure, we took the summed average for each respondent. Overall, this measure has a mean score of 1.29 at wave 2 ($\alpha_{w2} = .856$), 1.37 at wave 3 ($\alpha_{w3} = .875$), and 1.41 at wave 4 ($\alpha_{w4} = .877$).

The presence of criminal peers also relates to criminal offending and substance use post-release (Boman & Mowen, 2017). To account for the influence of criminally-inclined peers, we draw data from four measures asking how many of the respondent's close friends has been incarcerated, assaulted someone, committed theft, or sold drugs. Answers ranged along a four point scale (1 = none, 2 = some, 3 = most, and 4 = all). Each answer was summed to create a scale with higher values indicating a greater number of criminal peers. This measure ranges from 4 (no criminal peers) to 16 (all criminal peers) with an overall mean of 8.27 and a standard deviation of 3.21.

Marital status may also relate to substance use (Bahr, Armstrong, Gibbs, Harris, & Fisher, 2005). To account for the potential influence of marital status, we created dummy variables representing that the respondent was single (72.5 percent of the sample) or divorced (10.9 percent of the same) at each wave (married contrast). This measure is time variant as individuals could report changes in marital status across the study timeframe (variance within people over time = .275).

Time invariant control variables

In addition to the time variant controls, we incorporate several measures that account for characteristics at only one point in time. We would expect that individuals who need treatment would be far more likely to have previously used substances than individuals who are not in need (e.g. Belenko & Peugh, 1998). To account for this, individuals were asked how much they needed substance abuse treatment with scores ranging from 1 (not at all) to 3 (a great deal). This measure has a mean of 1.53 and a standard deviation of .715.

Research also suggests that individuals who have longer periods of incarceration are more likely to struggle in their adjustment back to everyday life (Bahr et al., 2010). To control for this, we include a time invariant measure capturing the total length of incarceration in days. As this measure is skewed to the point where it affected equation estimation, we use the natural logarithm of the variable (logged M = 6.43, SD = .904).

Prior convictions are controlled because individuals who have been convicted before tend to exhibit higher rates of recidivism (Bahr et al., 2010; Visser & Courtney, 2007). Accordingly, we include a variable representing the total number of convictions the individual had received prior to their most recent term of incarceration. This measure has a mean of 5.98, a standard deviation of 8.27, and has observed ranges from 1 to 90.

Younger offenders are more likely to reoffend and return to prison than older offenders (Severson et al., 2012). Therefore, we include age as a time invariant measure. While age

does change across this study time frame, all respondents are aging at an extremely similar rate due to static timeframes between waves. As such, there is little to no within-individual variability. Age has an overall mean of 30.1 and varies by about seven years in the SVORI sample ($SD = 7.1$; observed range is 18 to 70).

Some studies find that black offenders have higher rates of reincarceration and recidivism (Marbley & Ferguson, 2005). Dummy variables were included indicating whether the respondent was black (53.3 percent of the sample) or other race (12.7 percent of the sample), and we withhold white as the contrast category.

Prior convictions on drug offenses likely relate to higher levels of substance use during the reentry process (Severson et al., 2012). To account for conviction type, we include variables representing whether the individual was incarcerated for a property conviction (11.8 percent of the sample), a drug offense (22.2 percent of the sample), or a violent offense (15.4 percent of the sample; 'other' offense contrast).

Finally, research suggests that participants in the SVORI program were less likely to fail drug tests on parole and are arrested at a much lower rate once they are released from parole (Bouffard & Bergeron, 2006). To control for this effect, a binary variable is included that indicates that the respondent was a SVORI program participant (50.9 percent of the sample) in contrast to not participating in the SVORI programming.

Analytic strategy

To examine the relationship between substance abuse treatment programming and substance use during reentry, we use a cross-lagged dynamic panel model (Allison, 2015). This model is an extension of the classic cross-lagged model (e.g. Matsueda, 1982) and the mixed-effects model, a genre of models which traditionally allow for the estimation of within-individual change (a time variant effect) and between-individual differences (a time invariant effect; see Osgood, 2009). Despite its advantages, a significant limitation to the mixed modeling technique is that researchers are unable to include a lagged measure of the dependent variable. Stated differently (and in the context of this study), we would be unable to include a measure of pre-incarceration substance use if a mixed model were used.

The reason why lagged dependent variables are undesirable is because they result in violations of the assumption of independence (see Allison, 2015 for an overview of this issue; also Achen, 2000). The violation of independence of errors is a significant limitation – especially in assessing behaviors like substance use – because the best predictor of substance use at time t is, not surprisingly, substance use at $t-1$. To overcome this limitation, the cross-lagged dynamic panel model allows for the inclusion of $t-1$ as a control variable through the use of chained equation modeling, while still allowing for the estimation of level-1 within-person change as well as level-2 between-individual differences. In short, this model estimates a cross-lagged, structurally-based, fixed-effects model while also allowing for the ability to include between-individual effects.

To assess the impact of substance abuse treatment on substance use during reentry, we begin by controlling for wave 1 substance use (a self-reported pre-incarceration measure of

substance use). We also include three separate independent coefficients representing substance abuse treatment programming. The first predictor is a time variant, within-individual measure of substance abuse treatment. This variable captures within-person change in substance abuse treatment across the post-release waves (refer to the independent variables section). The second variable is a level 2, between-individual measure capturing whether the individual participated in substance abuse treatment programming during incarceration. This variable compares individuals who participated in pre-release treatment to those who did not participate in pre-release treatment. Third, and finally, another between-individual, time invariant measure is used that captures between-individual differences in substance abuse programming after release by comparing persons who participated in substance abuse treatment after release from prison to those who did not. Overall, including these three measures allows us to 1) examine whether individuals who participated in pre-release and/or post-release treatment programming engaged in lower substance use than individuals who did not participate in these respective programs, *and* 2) determine whether substance abuse treatment has an effect on substance use across the time period of reentry.

Results

Prior to presenting results from the cross-lagged dynamic panel data models, it is noteworthy that baseline models demonstrate that individuals who reported substance use prior to being incarcerated were significantly more likely to report using substances upon release (results not reported). While this is what would be expected by prior literature (e.g. Fazel et al., 2006), dynamic panel data models are extraordinarily comprehensive in the paths they can validly estimate and, accordingly, can provide a more inclusive and accurate estimate of how pre-incarceration substance use relates to use after release from prison.

In Model 1, we steer away from the baseline model and introduce the main effects of the time-variant and -invariant predictors.¹ After accounting for pathways estimated in the model, the lagged dependent variable – prior substance use – fails to reach significance. This finding contrasts that of the baseline model and directly refutes prior research that shows a pre-prison to post-prison substance use similarity. This leads to the precursory conclusion that – after controlling for relevant within- and between-person effects – substance use prior to prison is inconsequential for substance use following release.

Contrary to hypothesis one, the time variant measure of substance abuse treatment fails to reach significance. This result suggests that substance abuse treatment after release from prison does not relate to differing levels of substance use across time. Turning to the other time variant measures, employment is significantly related to decreased substance use as individuals who are employed report significantly lower levels of substance abuse than individuals who are not employed. Supporting prior literature, depression and the presence of criminal peers are significantly and positively associated with increased substance use. On the other hand, changes in marital status were not significantly associated with variations in substance use.

¹Missing data was imputed with a full-information maximum likelihood technique that is available in Stata's dynamic panel data modeling package. All statistics were conducted in Stata (v. 14.2).

Turning to the time invariant measures, and in support of hypothesis two, results reveal that individuals who participated in pre-release substance abuse treatment programs report significantly lower levels of substance use than individuals who did not participate in pre-release substance treatment ($a = .161$ substance to treatment difference). Interestingly, however, participation in post-release substance abuse programming significantly relates to *increased* substance use, in direct contrast to hypothesis three. Individuals who participated in post-release substance programming, compared to individuals who did not, report using significantly higher levels of substances.

Additionally, individuals who reported needing substance abuse treatment before release from prison have significantly higher levels of substance use than individuals who did not think they needed substance abuse treatment. Persons convicted of a property offense were significantly more likely to report using substances than individuals convicted of some other type of offense, and the number of prior convictions also significantly relates to increased substance use. On the other hand, black respondents (compared to white respondents) used significantly less substances. Also, age was negatively and significantly associated with substance use.

Given the unexpected effects by the pre-release and post-release measures of substance abuse programs, we computed a multiplicative interaction between these two measures (from grand mean centered main effects) to further investigate the nature of their relationship. As shown in Model 2 of Table 2, the interaction between substance treatment while in prison and during reentry failed to reach significance. This suggests that the two mechanisms of substance abuse treatment exert independent effects on substance use post-release. In other words, pre-release substance abuse treatment does not appear to condition the negative influence of post-release substance abuse treatment across the reentry process for the multi-state, high-needs offenders in the SVORI data.

Overall, these findings present a mixed portrait on the role that substance abuse treatment plays on subsequent substance use. Pre-release treatment programming is related to significantly lower levels of substance use, post-release treatment is related to significantly higher levels of substance use, but the two treatments do not interact in relation to substance use during reentry. In order to more closely understand these opposite direction effects, we investigate these relationships further by examining particular types of substance abuse treatment programming on substance abuse, the results of which are shown in Table 3.

At each of the four waves, respondents were asked about the various types of treatment programs in which they had participated. These included Alcoholics Anonymous (AA), drug education courses, group counseling, individual counseling, residential counseling, methadone treatment, and detox treatment. To examine the role of specific programs on substance use during reentry, we included these measures as pre-release, between-person effects as well as post-release, within-individual effects.

Results from Table 3 demonstrate that pre-release AA, group counseling, individual counseling, residential counseling, and detox were all unrelated to subsequent substance use. However, those who underwent drug education were significantly less likely to use, and

those who were in methadone treatment were significantly more likely to use. After release from prison, both residential counseling and detox were related to significantly higher rates of substance use. Post-release AA, drug education, group counseling, individual counseling, and methadone treatment all had non-significant effects on drug use during reentry. Coinciding with the results of the prior models, no specific post-release program significantly related to decreased levels of substance abuse.

Overall, the findings suggest a complicated picture of the role of substance abuse treatment on substance use during reentry. First, substance abuse treatment programming does not appear to have an effect on substance use across time. Second, pre-release substance abuse programming relates to reductions in substance abuse following release.

Third, post-release substance abuse programming significantly relates to increased substance abuse. Fourth, these two time-invariant effects are independent. Fifth, and finally, results further show that some specific programming is effective in reducing substance abuse, while other programs appear to exacerbate it.

Discussion and conclusions

The goal of this project was to examine how substance abuse treatment related to substance use during reentry in a sample of serious, violent offenders. An analysis of the SVORI data presents mixed results. In support of the first hypothesis, we find that individuals who participated in pre-release substance abuse treatment programs reported significantly lower levels of substance use during reentry than individuals who did not participate in prison-based substance abuse treatment programs. This finding supports prior research that finds programs aimed at preparing individuals for reentry can have a host of positive benefits (Bouffard & Bergeron, 2006).

In contrast, our second hypothesis – that post-release substance abuse programming would relate to decreased levels of substance use during reentry – was not supported. In fact, our findings suggest the opposite; individuals who participate in substance abuse treatment programming during reentry experience significantly higher levels of substance use. A potential explanation for this could be that post-release treatment unknowingly provides users a way of getting associated with other users. Stated differently, post-release treatment might provide for a mechanical, fluid way for reentering persons to meet peers who also have a history of using substances. From the perspective of differential association (Sutherland, 1947) and social learning theories (Akers, 2009), this introduction of deviant peer influence would certainly not be something that practitioners should encourage. Furthermore, this effect could be worsened by the stress that is associated with the reentry process, especially considering that it is likely that individuals may meet peers who are also going through reentry and sharing similar experiences. This may give persons who have a need for substance abuse treatment a common bond (albeit for an unforeseen reason), which in turn could escalate into the newly formed peer group (re)initiating substance abuse.

Our third hypothesis, that substance abuse treatment programming would relate to lower levels of substance abuse as a time variant effect, was also not supported. We find no

evidence that continued participation in substance abuse treatment program relates to any significant differences in substance use across time. To probe these findings further, we examined how particular forms of treatment relate to substance use post-release. Findings suggest that drug education during incarceration was related to significantly lower levels of substance abuse post-release. From an RNR framework, the significant effect of drug education may be explained by cognitive learning techniques that are structured to change the way individuals think. That is, drug education courses may change an individual's attitudes and beliefs toward substance use in a way other forms of treatment do not. This finding, therefore, echoes Bahr et al. (2012) assertions concerning how treatment programming can contribute to a change in the behavioral cognition of the individual. Drug education programs may impact the process of social learning and contribute to lower rates of substance use. This may also explain why methadone treatment and detoxification treatment actually contribute to less desirable outcomes during reentry as these types of programs may be directed at treating the substance use itself as opposed to the cognitive process that may lead an individual to use intoxicants.

Although we are wary of the limitations of this project (see comments below), this study can offer some preliminary policy recommendations. Because we find that substance use treatment after release from prison significantly increases substance use during reentry, we recommend that agencies avoid sending violent offenders to post-release substance abuse treatment. In the perspective of the RNR, substance abuse treatment is not a sufficient 'responsivity' response to the need of substance use post-release for violent offenders. Not only is post-release treatment ineffective (at best), it appears that it is in fact harmful. Additionally, we recommend that drug education programs be instilled into prison-based substance abuse treatment, as we speculate these may 'retune' the thought patterns of individuals with substance abuse treatment needs. Of course, these findings must be replicated and extended going into the future to help hone policy recommendations. Accordingly, future research should more closely examine how pre- and post-release substance programs differ to provide additional insight into this process. Policy-makers should also consider the role of other prosocial processes like family support (e.g. Mowen & Visser, 2016) and community and peer groups (e.g. Western et al., 2015), as they could be effective in bringing about desistance from substance use.

Despite the contributions of this research, this study is not without limitations. First, the sample is comprised entirely of men, and there is ample evidence that reentry experiences differ between men and women (Spjeldnes & Goodkind, 2009). It may be possible, or perhaps even likely, that what does and does not 'work' for men is different for women within the context of treatment, substance use, and reentry. Additionally, this sample is comprised of severe and violent offenders, and findings from this study may not be generalizable to the broader incarcerated population of individuals. Finally, our data's timeframe stretches to only 15 months, and the difficulties associated with the process of reentry certainly can last longer than this. As such, future research should examine the role of substance abuse treatment programming further into the reentry process.

Despite some limitations, this study's main findings – that pre-release drug education programming is valuable, and post-release treatment (in any form) is detrimental – should

prove useful to researchers and practitioners alike. From an RNR framework, substance abuse treatment programming may be an appropriate response while individuals are incarcerated, but it does not seem to serve the need of individuals at risk for substance use during the reentry process. We can recommend, however, that incarcerated persons be provided with drug education programs while imprisoned, as these programs significantly reduce later substance use. Despite this encouraging finding, the criminal justice system cannot afford to put resources into programming that makes people 'worse.' As such, we recommend that incarcerated individuals not be mandated to attend post-release substance abuse treatment during the period of reentry.

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Table 1.

SVORI sample descriptive statistics (N = 1,697).

Variable	Mean	Std. Dev.	Range	Variance Between	Variance Within
Dependent Measure					
Substance Use	1.350	1.467	0–11	1.397	0.722
Time Variant Measures					
Substance Treatment	0.225	0.417	0,1	0.354	0.248
Employment	0.657	0.475	0,1	0.409	0.280
Criminal Peers	8.272	3.214	4–16	2.944	1.503
Depression	1.360	0.574	0.9–4.2	0.531	0.275
Marital Status					
<i>Single</i>	0.725	0.447	0,1	0.430	0.133
<i>Divorced</i>	0.109	0.312	0,1	0.283	0.131
Time Invariant Measures					
Substance Treatment Pre-Release	0.429	0.495	0,1	-	-
Substance Treatment Post-Release	0.377	0.485	0,1	-	-
Length of Incarceration	6.427	0.904	3.807–9.158	-	-
Prior Convictions	5.967	8.268	1–90	-	-
Age	30.1	7.18	18–70		
Needed Treatment	1.529	0.715	1–3	-	-
Race				-	-
<i>Black</i>	0.533	0.499	0,1	-	-
<i>Other</i>	0.127	0.333	0,1	-	-
Offense Type				-	-
<i>Property</i>	0.118	0.323	0,1	-	-
<i>Drug</i>	0.222	0.416	0,1	-	-
<i>Violent</i>	0.154	0.361	0,1	-	-
SVORI Participant	0.509	0.450	0,1	-	-

Table 2.

Cross-lagged dynamic panel model assessing substance abuse post-release (N = 1,697).

Variables	Model 1		Model 2	
	Coef.	S.E.	Coef.	S.E.
Lagged Substance Use	−0.001	0.015	−0.001	0.015
Time Variant Measures				
Substance Treatment	−0.081	0.090	−0.083	0.090
Employment	−0.208	0.094 *	−0.205	0.094 *
Criminal Peers	0.088	0.021 ***	0.088	0.020 **
Depression	0.372	0.128 **	0.368	0.128 **
Marital Status				
<i>Single</i>	0.336	0.324	0.328	0.323
<i>Divorced</i>	0.273	0.285	0.264	0.284
Time Invariant Measures				
Substance Treatment Pre-Release	−0.161	0.073 *	−0.161	0.072 *
Substance Treatment Post-Release	0.215	0.106 *	−0.009	0.217 *
Length of Incarceration	−0.107	0.039 **	−0.107	0.039 **
Prior Convictions	0.018	0.004 ***	0.018	0.004 ***
Needed Treatment	0.168	0.052 **	0.168	0.053 **
Age	−0.016	0.008 *	−0.016	0.008 *
Race				
<i>Black</i>	−0.286	0.083 **	−0.286	0.083 **
<i>Other</i>	−0.124	0.107	−0.124	0.107
Offense Type				
<i>Property</i>	0.318	0.105 **	0.319	0.105 **
<i>Drug</i>	0.074	0.089	0.075	0.089
<i>Violent</i>	0.003	0.095	0.004	0.095
SVORI Participant	−0.078	0.066	−0.078	0.066
<i>Substance Treatment Pre-Release x Substance Treatment Post-Release</i>			−0.009	0.217
X ²	72.32		73.15	
RMSEA	0.021		0.020	
CFI/TLI	0.973/0.938		0.974/0.941	

*
p .05**
p .01***
p .001

Table 3.

Summary of results for specific treatment programs on substance use post-release (N = 1,697).

Variables	Coef.	Sig.
Pre-Release Treatment		
AA	0.048	NS
Drug Education	-0.224	*
Group Counseling	0.001	NS
Individual Counseling	0.085	NS
Residential Counseling	0.112	NS
Methadone Treatment	1.913	***
Detox Treatment	0.050	NS
Post-Release Treatment		
AA	-0.810	NS
Drug Education	0.129	NS
Group Counseling	-0.019	NS
Individual Counseling	-0.153	NS
Residential Counseling	0.699	*
Methadone Treatment	0.898	NS
Detox Treatment	1.228	**

*
p .05

**
p .01

p .001