

Florida State University Libraries

2015

Assessing Attitude and Reincarceration Outcomes Associated with In-Prison Domestic Violence Treatment Program Completion

Annelise M. Mennicke, Stephen J. Tripodi, Chris Veeh, Dina J. Wilke and Stephanie C. Kennedy



Abstract

Studies indicate that as many as 30%-56% of incarcerated men have perpetrated domestic violence, and that factors related to domestic violence perpetration are associated with long-term recidivism after release. The current study evaluates the effectiveness of an in-prison domestic violence treatment program called STOP and Change Direction to increase positive attitudes toward women, decrease levels of criminal thinking, and reduce general recidivism rates for program completers. Two research designs are used: a single-group pretest-posttest design to assess the attitude-related outcomes, and a quasi-experimental design with a comparison group created using propensity score matching to assess the impact of program participation on reincarceration. Paired samples t-tests revealed significant increases in positive attitudes toward women and decreases in criminal thinking. Binary logistic regressions revealed no significant differences in the five- and seven-year reincarceration rates, although examination of the 95% confidence intervals suggests encouraging clinical implications of program completion.

Introduction

In the early 1970s, after 50 years of stability, both the incarceration rate and the total number of prisoners in the United States began to rise dramatically (Travis & Western, 2014). In 1971, there were approximately 200,000 federal and state prisoners, compared to more than 1.6 million prisoners today (Carson, 2014; Guerino, Harrison, & Sabol, 2011). Since the overall adult incarceration rate peaked in 2007, the total number of prisoners held in state and federal facilities has remained flat or declined slightly in annual census counts. However, in 2013 – the most recent year for which data are available – the three-year decline in the prison population reversed due to an increase of 6,300 inmates (or approximately .5%) in the state prison population (Carson, 2014; Carson & Golinelli, 2013).

The majority of incarcerated men have an index (or most serious) criminal charge related to drug or property crimes, although many male offenders have perpetrated domestic violence, defined as assault against an intimate partner. Several investigations indicate that 30%-56% of incarcerated men, regardless of their index crime, have perpetrated domestic violence (Dutton & Hart, 1992; Robertson & Murachver, 2007; Robinson & Taylor, 1995; Stewart & Power, 2014). Extrapolating these rates to the general prison population, an estimated 400,000 to 800,000 of the 1.4 million men currently incarcerated in the US have assaulted an intimate partner, underscoring the need to identify programs and interventions that rehabilitate offenders.

The prison milieu provides an ideal environment for domestic violence education and intervention as the prison environment has been associated with increased retention in domestic violence treatment programming when compared to similar interventions conducted in community settings (Olver, Stockdale, & Wormith, 2011). Further, the prison environment is also associated with the proliferation of problematic attitudes known to contribute to domestic

violence perpetration (e.g., machoism, aggression, and misogyny; Pascual-Leone, Bierman, Arnold, & Stasiak, 2011). In-prison domestic violence treatment programs may, therefore, prevent these harmful attitudes from worsening, as program content explicitly challenges attitudes related to patriarchy and misogyny, controlling behaviors, anger management, and seeks to enhance personal responsibility and accountability for behavior.

Additionally, it is clear that incarceration alone does not serve as an effective intervention to prevent future crime. Langan and Levin (2002) tracked 272,111 former inmates for three years after their release from state prisons in 15 states. Two-thirds of those released were rearrested within three years, and more than half were reincarcerated within three years for either violating parole (19%) or for charges associated with a new crime (33%). Further, examining three-year recidivism rates from 41 states, a Pew Center on the States (2011) report found that nearly half (43.3 - 45.4%) of all people released from prison were reincarcerated within three years, either for parole violations or for committing a new crime. In general, recidivism rates are highest for drug and property offenders and lowest for violent and sex offenders (Langan & Levin, 2002). However, little is known about recidivism rates which relate specifically to domestic violence offenders. No studies which specifically examined recidivism among this population were identified. Although much is known about offender characteristics which lead to attrition from domestic violence prevention programs, less is known about whether and how these demographic and attitudinal characteristics relate to recidivism, specifically for domestic violent offenses (Olver et al., 2011). Without empirical evidence of what programs work and under which circumstances, Departments of Corrections may be spending valuable time and resources implementing programs that are not effective in achieving the desired result of reducing recidivism rates.

In-Prison Domestic Violence Treatment Programs

Most of the research on domestic violence treatment programs has been conducted in community-based settings, including services delivered as part of diversion programs, probation or parole requirements, or civil rulings within family courts. These programs have generally shown slight reductions in domestic violence reoffending (Babcock, Green, & Robie, 2004). Far less is known, however, about the effectiveness of in-prison domestic violence treatment programs for men. The studies evaluating the efficacy of in-prison domestic violence treatment programs vary in methodological rigor, and range from single-group pre-experimental designs exploring attitudes associated with domestic violence (e.g., Donnelly, Smith, & Williams, 2002) to more sophisticated methodologies using quasi-experimental designs to explore recidivism rates as the outcome variable (e.g., Pascual et al., 2011).

Attitude changes. Self-report measures of attitudes are commonly used as outcome variables for in-prison domestic violence treatment program evaluations. Three known studies have used a single-group pre-experimental design. These studies suggest that in-prison treatment completion is associated with a variety of pre- to post-test improvements on interpersonal relationship skills, individual mental health and wellness, and criminal thinking (Donnelly et al., 2002; Stewart, Gabora, Kropp, & Lee, 2014). Specifically, knowledge about what constitutes domestic violence, attitudes about relationships, violence prevention skills, and respect for partners significantly increased from pre- to post-test for treatment completers (Stewart et al., 2014). Significant pre- to post-test increases in self-esteem, locus of control, and general contentment were also noted (Donnelly et al., 2002). Further, Yorke et al. (2010) found incarcerated program participants had significant improvements in power orientation at post-test, although participants did not show improvements in entitlement, justification, cold-heartedness,

criminal rationalization, or personal irresponsibility – all of which have been associated with domestic violence perpetration (Knight, Garner, Simpson, Morey & Flynn, 2006).

In addition to the single-group pre-experimental designs described above, Wolfus and Bierman (1996) used a quasi-experimental design to evaluate the effectiveness of an in-prison domestic violence treatment program. Fifty-seven men with a history of violence completed the program; pre- to post-test data were compared to standardized measures completed by 30 incarcerated men with a history of violence who did not participate in a treatment program and 30 incarcerated men with no history of violence. The treatment group showed reduced aggression attitudes compared to the untreated non-abusive group, and reductions in defensiveness when compared to both groups. There were no differences in pre- to post-test scores on the self-concept measure.

These findings demonstrate how in-prison domestic violence treatment programs may improve attitudes related to domestic violence perpetration (e.g., improving attitudes towards women and intimate relationships) as well as criminal thinking more generally. Many domestic violence treatment programs, whether offered in the community or within the prison environment, address individual endorsement of societal systems such as patriarchy and misogyny, and aim to address general patterns of criminal thinking. It is likely that the skills taught in these programs are not applicable only to the intimate partner relationship, but also relate to general antisocial attitudes, a key factor related to criminal behavior (Gendreau, Little, & Goggin, 1996). Therefore it is important to understand how in-prison domestic violence programs affect attitudes, not just about relationships with women, but also to criminal thinking.

Recidivism. Recidivism is another outcome often used to assess prison-based treatment effectiveness, and it is certainly an outcome many stakeholders in the criminal justice system are

motivated to change. Incarceration is extremely costly, and subsequently, some state and federal prisons have developed programs specifically designed to reduce recidivism. However, few studies evaluate in-prison domestic violence treatment programs using recidivism as an outcome variable. Only four empirical investigations were identified that examined the relationship between completion of an in-prison domestic violence treatment program on recidivism. In general, these studies use a natural comparison group (i.e., individuals who met program inclusion criteria, but were not able to participate for various reasons), but results are difficult to synthesize across studies due to heterogeneity of the recidivism construct.

Jenkins and Menton (2003) conducted an evaluation of an in-prison cognitive-behavioral therapy based domestic violence treatment program for 114 program completers and 156 program non-completers (69 program drop-outs and 87 program participants released from prison prior to program completion). Recidivism was defined as the number of violent offenses committed by inmates upon release. At 30-month follow-up, the authors note that treatment completers had lower rates of violent recidivism when compared to program drop-outs, although no significant differences in recidivism were found between treatment completers and those participants who were simply released prior to program completion.

Similarly, in an unpublished dissertation, Ley (2005) evaluated the effectiveness of a manualized in-prison cognitive-behavioral therapy based domestic violence treatment program for 70 program completers and 70 comparisons, all of whom had histories of domestic violence. Men in the treatment group were significantly less likely to recidivate (defined as probation violations, probation revocations, new charges, and new convictions) than the comparison group. However, no information about the length of time since release for either group was provided,

which means that between-group differences could be plausibly related to differences in release dates rather than treatment condition.

In addition to the attitudinal benefits aforementioned, Stewart et al. (2014) also examined recidivism as an outcome of participation in a domestic violence program based on the effective corrections principles of risk-needs-responsivity. The Risk-Needs-Responsivity (RNR) model suggests moving beyond a one-size-fits-all approach to treatment programs, especially those offered within the prison environment. First proposed by Andrews and Bonta (1998), the RNR model assesses the criminogenic risk of individuals and then matches both the type of intervention and the intervention intensity levels to those needs. Stewart et al. (2014) assigned participants into high intensity treatment or moderate intensity treatment based on assessed risk level for domestic violence. They defined their dependent variables as general recidivism, violent recidivism, and domestic violence reoffending. Recidivism rates for treatment completers (n = 160) were compared to a group of individuals who met inclusion criteria of the study but did not start or did not complete the program (n = 86). Program completers had lower levels of spousal violence and general violent recidivism, however, there were no significant differences in the rate of recidivism for non-violent crimes between treatment completers and the comparison group.

Finally, Pascual et al. (2011) evaluated recidivism outcomes of 66 men who completed an in-prison emotion-focused psychotherapy group domestic violence treatment program when compared to 184 matched comparisons, identified using propensity score matching (PSM). PSM allows the researcher to create a statistically equivalent comparison group, and is considered a robust methodological alternative to experimental design in settings where randomization into treatment conditions is not feasible or there are complicated ethical considerations surrounding

the withholding of treatment (Pascual et al., 2011). Violent crime recidivism (a conviction for assault or sexual assault) was significantly lower at eight-month follow-up for program completers when compared to the statistically matched comparison group. Although statistically significant between-group differences in violent crime recidivism were not maintained in one-, two-, or three-year follow-up analyses, program completers had a violent crime recidivism rate that was seven to eight percentage points lower than the PSM comparisons.

Description of the Intervention

The domestic violence treatment program evaluated in the current project is called STOP and Change Direction. STOP stands for Survey, Think, Options, and Prevention and the intervention is a manualized 20-week program consisting of weekly group and individual sessions created and facilitated by prison employees. STOP has been operating in a North Carolina prison since 2001, and has not had any notable or influential changes throughout the years. Each cohort is comprised of 25 men who participate in one closed group. Sessions cover 12 primary areas including: psychoeducation on what constitutes domestic violence, personal responsibility and accountability for violence prevention, issues of power, control, and equality in intimate relationships, improving communicating with others, and healthy relationships. Each topic pairs educational materials with handouts and homework, along with reflection and application exercises. STOP program content addresses the culturally-sanctioned system of power that men have over women, stresses the importance of anger management and disruption of criminal thinking patterns, and has components congruent with cognitive behavioral therapy. STOP views domestic violence as a social problem rooted in personal choice and responsibility. There were two goals of the STOP program: to reduce attitudes related to perpetration of

domestic violence and to prevent reincarceration, and no other research has evaluated the program's capacity to achieve these goals.

Most in-prison domestic violence treatment program research focuses on violent recidivism rates, and the literature is mixed on whether such programs have an effect on reducing recidivism more generally, including parole violations and the commission of new crimes. However, the STOP program addresses attitudes and behaviors broadly related to criminal thinking, with content on improving antisocial attitudes, particularly toward people whom participants hold hostile attitudes, which is associated with criminal behaviors generally (Gendreau, Little, & Goggin, 1996). Further, as the majority of violent offenders who do recidivate are reincarcerated for committing non-violent crimes (Langan & Levin, 2002), considering recidivism more broadly is imperative.

Current Study Focus

In the 2010/2011 fiscal year, the North Carolina Sentencing and Policy Advisory Commission (2014) reported a two-year reincarceration rate of 21.2% for prison releasees. This rate, while slightly lower than national averages, could be explained by the use of a two-year follow-up period instead of the commonly used three-year period. Regardless, these rates are cause for concern and warrant investigation of strategies aimed to reduce them. In collaboration with the North Carolina Division of Adult Correction and Juvenile Justice, this investigation focuses on long term reincarceration rates (five and seven years upon release from prison). While many correctional-based treatment evaluations focus on shorter-term recidivism rates, focusing on longer-term reincarceration captures the majority of potential recidivists.

The current study addresses several key gaps in the literature. First, evaluations of in-prison domestic violence treatment programs are limited by small sample sizes, short follow-up

time periods, lack of a control or comparison group, and an overreliance on self-report proxy measures as the sole outcomes. STOP program defines domestic violence as a social problem rooted in personal choice and responsibility, with an ultimate goal of altering attitudes toward women and criminal thinking patterns in order to reduce antisocial attitudes related to domestic violence perpetration and general recidivism. The purpose of the current study is to evaluate the effectiveness of the STOP program on changing attitudes toward women and criminal thinking, and reducing recidivism using a sample of 597 treatment completers and a comparison group matched using PSM techniques.

We aimed to answer the following research questions:

1. Do STOP program completers have more positive attitudes toward women and lower levels of criminal thinking from pre- to post-test?
2. Do STOP program completers have lower reincarceration rates than a matched comparison group who did not participate in STOP programming?

Method

Study Design

This investigation used two study designs: a single-group, pre-experimental design to evaluate the scale score differences on attitudes toward women and criminal thinking, and a quasi-experimental design using propensity score matching (PSM) to assess five- and seven-year reincarceration rates. Data were provided by the North Carolina Division of Adult Correction and Juvenile Justice. Protection of human subjects was ensured by institutional review board approval from both the Florida State University and the North Carolina Division of Adult Correction and Juvenile Justice.

Treatment Selection

The current investigation focuses on offenders who completed the STOP program between 2001 and 2011 (N = 597). All participants volunteered to be part of the program, and program staff determined admittance based on several of the following factors: prior domestic violence involvement (e.g., perpetrator, victim, or witness), whether or not applicants had completed a similar program in the past, criminal history, infraction history, release dates, custody level, reading level, mental health history, and substance abuse history. These factors were considered holistically on a case-by-case basis by program staff with the goal of creating a functioning group. Volunteer participants were ineligible if they had a history of uncontrolled behavioral health issues related to substance abuse or mental health and chronic infraction histories. Program staff also considered release dates to ensure available time for program completion and to maximize the potential participant pool. Overall, the 597 program completers had a mean age of 35.4 years and an average of 2.6 prior felony convictions. Just over half (53%) of the sample identified as black, 40% as white, and 7% identified with other racial identities (which included Asian, Native American, Hispanic/Latino, or Other).

Samples

Single-group pre-experimental sample. A total of 176 individuals completed pre- and post-test surveys. This sample is limited by a lack of pre- and post-test survey collection prior to 2008. The average age of participants with pre- and post-test data was 36.1 years (SD = 9.79), and participants reported 2.6 prior felony charges, and identified as 53% black, 39% white, and 8% other racial identities. This is not significantly different from treatment participants who did not complete pre- and post-test measures, who had a mean age of 35.1 ($t = -1.28$, $df = 590$, $p = .202$, 95% CI: -2.57, 0.55), and an average number of felonies of 2.6 ($t = -0.01$, $df = 403$, $p = .99$, 95% CI: -0.60, 0.59). The racial breakdown was also not significantly different from the rest of

the sample who completed the STOP program but did not complete pre- and post-test measures (52% Black, 43% White, 5% other) according to a chi-square test of independence ($\chi^2(2) = 1.17$, $p = .558$). Although undetected and undetectable differences may still exist between the two groups, we are cautiously confident that the results found within this subsample are generalizable to the greater treatment group.

Quasi-experimental sample. A total of 506 offenders were assessed on five- and seven-year reincarceration rates – 253 STOP program participants in the treatment group and 253 matched individuals in the comparison group. This sub-sample was created by identifying those individuals who completed the STOP program and were later released from prison ($n = 405$), and further limited to those who had been released at least one year ($n = 253$). The average age at release from prison for this group was 37.2 years ($SD = 10.2$). The average number of prior felony charges was 2.43 ($SD = 2.6$) and participants identified as 55% black, 36% white, and 8.5% other racial identities. The majority of the treatment sample was incarcerated for violent crime charges (48%), while the remaining individuals were incarcerated for sex crime charges (17%), property crime charges (11%), and drug crime charges (9%), while 15% of participants had an index crime categorized as other.

Comparison group. The reincarceration comparison group was created using a one-to-one PSM function (Guo & Fraser, 2010; Lunt, 2013; Shadish, Cook, & Campbell, 2011). The goal of PSM is to create a statistically comparable group to help assess treatment impact. PSM reduces self-selection bias by controlling for factors related to treatment selection, and allows researchers to control for other factors known to be associated with reincarceration. The North Carolina Division of Adult Correction and Juvenile Justice provided offender information for all prisoners ($N = 182,337$) who were released between 2001 and 2011, which overlaps with STOP

program implementation. An important requirement of PSM is a large sample size. The comparison pool of 182,083 (which reflects the total released minus 254 STOP program participants) resulted in a comparison to treatment ratio of 716:1, which exceeds the current recommendation of 20:1 (Lunt, 2013). Constrained by the data provided to the researchers, nine covariates were used to find a matched comparison sample. These included: entry year, exit/release reason, days from release, exit age, prior felony charges, race, total incarceration days, sentence months, and primary offense committed. In order for PSM to be effective, propensity scores between the treatment and comparison groups must demonstrate a priori an overlap in values (Shadish et al., 2002). Both groups had a substantial majority of cases with propensity score values less than .05 (treatment = 98.4%; comparison = 99.9%).

An initial chi-square test of model fit ($\chi^2(9) = 1377, p < .001$) indicated that the treatment group and unmatched comparison group were highly dissimilar on these nine covariates, indicating the need to match (Bowers, Fredrickson, & Hansen, 2013). A propensity score was created using logistic regression for all cases based on the nine covariates, and the treatment group propensity score was then matched to a case in the comparison sample using nearest neighbor matching with caliper, with a standard caliper of .25 (Guo & Fraser, 2010). Guo and Fraser (2010) specify that using nearest neighbor with caliper allows multivariate analysis assumptions to be met between two matched groups. Matched controls were identified using this method for 253 of the 254 treatment cases. A match was not identified for one case, an outlier on two of the nine covariates assessed (admitted in 1963 and admitted at age 14). This case was removed from the analysis. A chi-square test of model fit was re-run using the treatment group and the matched comparison group, and was non-significant ($\chi^2(9) = 8.01, p = .533$), which suggests a good match between the two groups on the nine covariates.

Variables

Dependent variables.

Attitudes. Attitudes were assessed on two domains: attitudes toward women and criminal thinking.

Attitudes toward women. The Attitudes Toward Women Scale, a 15-item scale, was used to assess the respondents' attitudes toward the roles of women in society (Daugherty & Dambrot, 1986). Items are scored on a 4-point Likert scale ranging from Agree Strongly to Disagree Strongly. Responses are summed for an overall scale score, with higher scores indicating a more positive and pro-egalitarian attitude toward women. This scale has demonstrated good reliability, with a Cronbach's alpha of .85 and test-retest reliability of .86 (Daugherty & Dambrot, 1986), and performs adequately on measures of criterion-related validity (Lee, Kim, & Lim, 2010).

Criminal thinking. The Texas Christian University (TCU) Criminal Thinking Scale, a 37-item scale, was used to measure the respondent's criminal thinking errors by measuring the following subscales: 1) Sense of Entitlement, 2) Justification, 3) Power Orientation, 4) Cold Heartedness, 5) Criminal Rationalization, and 6) Personal Irresponsibility. Items are scored on a 5-point Likert ranging from Strongly Agree to Strongly Disagree. Within each subscale, items are summed for a final subscale score, with higher scores indicating more criminal thinking. Cronbach's alpha for the six subscales are reported as follows: Entitlement = .78; Justification = .75; Personal Irresponsibility = .68; Power Orientation = .81; Cold Heartedness = .68; Criminal Rationalization = .71 (Knight et al., 2006).

Recidivism. Recidivism was measured as reincarceration to a North Carolina state prison, dichotomized as yes/no, and limited to the time frame of interest. This definition of recidivism includes individuals who were reincarcerated for revocations or other parole violations as well as

for new criminal charges. As the STOP program was designed to alter attitudes related to criminal thinking generally, overall recidivism was explored. Limiting the dependent variable to violent offenses would overlook important and practical information regarding the effectiveness of STOP. Five- and seven-year reincarceration rates were analyzed for this study, which limited the sample to individuals who had been released for at least five years at time of analysis to ensure that all members of the sample had an equal chance of recidivating.

Control variables. Recidivism after release from North Carolina prisons has been associated with being younger age, more prior arrests, and non-white racial identity (Craddock et al., 2012). These factors have also been associated with recidivism in other state prison populations (e.g., Stewart et al., 2014). Therefore, age at exit from prison, number of prior felony charges, and race were included as control variables for all regression models.

Results

Attitude Related Outcomes

The first research question asked whether attitude changes are associated with participation in STOP from pretest to posttest. This was determined by evaluating attitude changes on two domains: attitudes toward women and criminal thinking. Using the single-group pre-experimental sample of 176 STOP program completers, paired samples t-tests determined whether mean scale scores were significantly different from pre- to post-test.

Attitudes toward women. Significant pre- to post-test differences were identified on the Attitudes Toward Women Scale ($t = -7.70$, $p < .001$, 95% Confidence Interval [CI]: -6.24, -3.72). Mean score at pre-test were 31.02 (SD = 5.76), which significantly increased to a mean of 35.99 (SD = 6.29). Results indicate that STOP program completion is associated with more positive and pro-egalitarian attitudes toward women than prior to the start of the STOP program.

Criminal thinking. Significant pre- to post-test differences were identified on all six subscales of the TCU Criminal Thinking Scale (see Table 1). The mean scores on endorsement of entitlement, justification, power orientation, cold heartedness, criminal rationalization, and person irresponsibility were all lower at post-test. Overall, STOP program completion is associated with lower levels of criminal thinking at post-test.

Recidivism

The second research question asked whether STOP program completers had lower reincarceration rates than a matched comparison group that did not participate in the STOP program. Binary logistic regression models assessed five- and seven-year reincarceration rates of 253 STOP program completers and 253 matched comparisons. For each model we examined the following: case-to-predictor variable ratio, multicollinearity by examining the Variance Inflation Factors (VIF), model fit, and relationships between predictor variables and the dependent variable (Hosmer & Lemeshow, 2000). The independent variable in both five- and seven-year recidivism models was STOP program completion and the control variables were age, number of prior felony charges, and race. The first model assessed the influence of STOP program completion on five-year reincarceration rates for offenders who have been out of prison for at least five years, and the second model assessed the influence of STOP program completion on seven-year reincarceration rates for offenders who have been out of prison for at least seven years.

Five-year recidivism. The first model explored the relationship between STOP program completion and five-year reincarceration rates. There were four predictor variables, including the independent variable (i.e., STOP program completion) and three control variables (i.e., age, number of prior felony charges, and race). There were 249 cases used in the analysis (based on

the number of people who had been released for at least five years), for a case to predictor ratio of 62:1, which satisfied the minimum case-to-predictor variable ratio for logistic regression (Hosmer & Lemeshow, 2000). Multicollinearity was assessed by examining the VIF (Hosmer & Lemeshow, 2000). A VIF value over 10 indicates problems of multicollinearity. The VIF values for the variables in this analysis ranged from 1.007 to 1.094, which suggests that multicollinearity between predictor variables was not evident in the model.

The presence of a relationship between the dependent variable (reincarceration within five years of release) and the combination of predictor variables is based on the statistical significance for the model chi square for the -2 log likelihood at Block 2 after the independent variable (STOP program completion) has been added to the analysis. Table 2 presents the overall model statistics and individual predictor information for Block 1 (just control variables), and Block 2 (control and independent variables). We then examined the relationship between the predictor variables and the dependent variable by analyzing model and predictor significance, 95% CIs of the β coefficient, and interpretation of the odds ratios. Age and race were non-significant in the model, although the number of prior felony charges was significantly related to five year reincarceration (OR = 1.25, $p < .01$, 95% CI: 1.107, 1.415). A one-unit increase in the number of prior felony charges was associated with a 25% increase in the likelihood of recidivating within the follow-up period.

STOP program completion was not significantly related to five-year reincarceration, using a pre-determined alpha of .05 (OR = .624, $p = .092$, 95% CI: .360, 1.080). For members of the sample, STOP program completers were 37.6% less likely to be reincarcerated within five years when compared to matched individuals who did not participate in the STOP program, although there was a 9.2% chance these results were due to error. Examination of the 95% CIs

shows that the true odds-ratio likely lies between 0.360 and 1.080. Figure 1 graphically displays the range of possible true odds ratios of five-year reincarceration rates by program completion produced by the 95% CI. The visual depiction of the CI shows that the majority of the interval falls below the odds ratio of 1, suggesting that STOP program completion is likely associated with a decrease in the odds of reincarceration during the follow-up period.

Seven-year recidivism. The second model explored the relationship between STOP program completion and seven-year reincarceration rates. There were four predictor variables, including the independent variable (i.e., STOP program completion) and three control variables (i.e., age, number of prior felony charges, and race). There were 157 cases used in the analysis (based on the number of people who had been released for at least seven years), which satisfied the minimum case-to-predictor variable ratio for logistic regression. The case-to-predictor variable ratio was 39:1 and the VIF for the predictor variables ranged from 1.007 – 1.094, indicating no evidence of multicollinearity.

The logistic regression model identified a relationship between the dependent variable and the combination of independent and control variables. The probability of the model chi-square at Block 1 was statistically significant ($p = .001$). Age was non-significant in the model, although the number of prior felony charges ($OR = 1.24$, $p = .009$, 95% CI: 1.055, 1.459) and race ($OR = 1.988$, $p = .05$, 95% CI: .974, 1.374) were both significantly associated with seven-year recidivism. Table 2 presents the overall model statistics as well as individual predictor statistics for Block 1 and Block 2. A one-unit increase in the number of prior felony charges was associated with a 25% increase in the likelihood of reincarceration within the follow-up period. The odds of reincarceration was nearly twice as high for offenders who identified as black when compared to offenders who identified as white.

Mirroring the five-year recidivism analysis above, STOP program completion was not significantly related to reincarceration within seven years (OR = .611, $p = .160$, 95% CI: .307, 1.215). For members of the sample, STOP program participants were 38.9% less like to be reincarcerated within seven years, although there was a 16% chance that these results were obtained in error, so this difference should be interpreted with caution. Examination of the 95% CI revealed that the range of potential true odds-ratios lies between .307 and 1.215. Figure 1 graphically displays the 95% CI of the odds ratio of seven-year reincarceration rates by program participation, after controlling for age, number of prior felony charges, and race.

Discussion

Participation in the STOP program appears to be associated with attitude-related benefits, at least in the short term, as indicated by analysis of mean scale score differences on two domains. STOP program completers had improved attitudes toward women and decreased levels of criminal thinking at the end of the program. This study revealed that the five- and seven-year reincarceration rates for STOP program completers were not statistically different from the reincarceration rates of a matched comparison group who did not participate in the program. However, examination of the CIs suggests encouraging clinical implications of STOP program completion.

Using the CIs as indicators, there is evidence that the true impact of STOP program completion could yield a reduction in long-term reincarceration. While these results are not definitive, we advocate that social science research in general, and criminal justice research in particular, should be examined using a lens of clinical significance in concert with statistical tests (Rosenthal, 1994). While it is possible that STOP program completion has no effect on long-term recidivism, or may even increase reincarceration rates, it appears to be more likely that STOP

program completion decreases reincarceration rates, as indicated by the ranges of the 95% CIs. In the case of five-year reincarceration rates, the odds ratio ranged from 0.36 to 1.08. In other words, if we were to draw 100 different samples, there would be a reduction of reincarceration rates in the vast majority of them, in some cases, this reduction might be as dramatic as 64%. Although the models did not achieve statistical significance, the clinical significance of the relationship between STOP program completion and reduced recidivism is encouraging. As Babcock et al. (2004) detail, the clinical significance of a reduction in reincarceration can be concretely understood as successfully averting the injury or death of a certain number of persons at the individual level, and saving money at the institutional level. While our results were not statistically significant for reincarceration rates with an alpha of .05, the clinical importance of reduced long-term reincarceration is important enough to not completely discount the promising impact of this program, as it has the potential to save both money and lives.

While these results are not conclusive about the benefits of STOP program completion, they do make a contribution to the knowledge base of in-prison domestic violence treatment programs. The current investigation adds to the literature by assessing the attitude related outcomes assessed using standardized proxy measures as well as long-term reincarceration rates using a statistically created comparison group. And, the follow-up period of five to seven years is substantially longer than any prior investigation of in-prison domestic violence treatment program effectiveness. Prisons across the country are investing in domestic violence treatment programs, and it is important to understand the long-term impact of outcomes associated with these programs.

Limitations

These findings must be considered in the context of the several key limitations. Statistical significance is directly related to sample size; thus continued evaluation of this program should be conducted to allow for sufficient statistical power to detect difference. Additionally, this study did not utilize a true control group, considered the “gold standard” for evaluation research (Shadish et al., 2011). While one-to-one PSM provides a sound alternative to experimental design, we may not have accounted for all important covariates. Further, due to data restrictions, potential covariates, especially those related to how inmates were selected for program admittance, were not available. And, the number of included covariates is lower than traditionally recommended (Lunt, 2013). Therefore, the statistically created comparison group may not be comparable on variables of interest, and these unaccounted differences could affect the power of statistical tests to detect difference. Particularly, the North Carolina Division of Adult Correction and Juvenile Justice did not collect information on inmates’ association with domestic violence (whether as a perpetrator, victim, or witness), and therefore individuals were not able to be matched on this variable. These different roles related to domestic violence have different implications for the potential effectiveness of a targeted intervention program, and could have yielded a comparison group that differed from the treatment group in meaningful ways. Utilizing a true control group, where research participants are randomly assigned to treatment or control groups may address this issue. The most parsimonious interpretation of these limitations and alternative interpretations of program outcomes, however, is that perhaps the STOP program has no effect on reincarceration rates.

Further, the operationalization of recidivism as reincarceration in a North Carolina prison influences the applicability of our findings. As recommended by Stewart, Flight, and Slavin-Stewart (2013), research on the effectiveness of in-prison domestic violence treatment programs

should include outcomes assessing rates of incidents of partner abuse as an outcome variables, which was not captured in this study. Further, the inclusion of individuals who are reincarcerated for parole violations or revocations may yield higher recidivism rates than other studies that solely look at new offenses, new violent offenses, or new domestic violence-specific offences. Additionally, our dependent variable was limited to reincarceration and did not capture other forms of recidivism such as rearrest or reconviction. It is possible that a broader operationalization of the dependent variable would result in different findings. For example, STOP program completers may be more likely to be rearrested, but less likely to engage in behaviors that lead to reincarceration. Further, individuals who were incarcerated in other states during the follow-up period were not tracked due to limitations in data access and tracking.

It is also important to note that all program participants voluntarily participated in this program. This inclusion criterion has the potential to influence the significance of the results, as voluntary offenders may be more motivated to change and the program may be more effective for this group as compared to groups where participation is mandatory. As such, the results reported here may not be generalizable to mandatory samples. Additionally, due to limitations in the available data, none of the analyses included information about the offenders' alcohol or drug use, which has a strong relationship to criminal behaviors and recidivism (Carns, McKelvie, Cohn, & Martin, 2007). The absence of this important control variable may impact the ability to detect a significant relationship between STOP program completion and recidivism in unknown and unknowable ways.

Recommendations

There are several elements of the STOP program in particular that could have influenced its effectiveness that should be considered for implementation and evaluation of in-prison

domestic violence treatment programs. First, this group consisted of 25 men per cohort, which exceeds the recommended size for a therapeutic group (8-10 members; Wheelan, 2005). Prison staff made treatment selection decisions based on inmates' association with domestic violence as a perpetrator, witness, or victim. It is unlikely that the treatment needs of individuals with these three very different histories would be similar, and further, some may consider it to be ethically questionable to include victims in the same group that treats offenders. To control for such differences, only men with prior histories of perpetration of partner abuse should be referred for participation in domestic violence treatment programs.

As recommended by Stewart et al., (2013), prisons can incorporate principles of the RNR framework to enhance the effectiveness of domestic violence treatment programs by assessing risk level and providing a more intensive treatment for higher risk offenders, by addressing criminogenic needs directly associated with partner abuse (such as substance abuse and impulse control), and by ensuring treatment fidelity. This framework is especially important to consider in light of recent research on a typology of intimate partner violence (IPV), which suggest that not all IPV is used as a mechanism of power and control and that different types of IPV may require different forms of prevention and intervention (Johnson, 2006). As researchers refine theories on a typology of IPV and develop accurate assessment tools, correctional staff can use these tools to evaluate the risks and needs of offenders and implement appropriate treatment programs accordingly.

In addition to the practical applications aforementioned, in-prison domestic violence treatment programs can incorporate effective community-based domestic violent treatment principles with research on prison-based treatment to enhance the effectiveness of these programs. Evaluations of domestic violence treatment programs implemented in community

settings suggest a strong link between motivation to change and both program completion and improved outcomes (Bennet, Stoops, Call, & Flatt, 2007; Gordon & Moriarty, 2003). The prison in North Carolina where the STOP program is implemented has recently begun using the University of Rhode Island Change Assessment (URICA) as an assessment of motivation to change (McConnaughy, Prochaska, & Velicer, 1983). Potential participants who are not motivated to change their attitudes and behaviors, may benefit from strategies associated with increasing motivation levels prior to enrolling them in interventions. These strategies include motivational interviewing and solution-focused brief therapy, which have been recommended for justice system involved individuals (Tripodi, Bender, & Kim, 2010). Motivational interviewing can help program participants overcome their ambivalence toward change and has been found to be useful within criminal justice settings (Clark, Walters, Gingerich, & Meltzer, 2006). This could be especially beneficial if services are delivered to non-voluntary participants.

Additionally, solution-focused brief therapy can help clients identify their goals and work toward them by utilizing techniques such as the miracle question and scaling. These techniques help offenders imagine a life without violence, identify their feelings about their goals, and take control of their future (Berg & De Jong, 2008). Taken together, these strategies can be incorporated into existing programs to address general patterns of criminal thinking that contribute to high rates of recidivism among incarcerated men.

Implementation of these strategies by correctional staff and policy developers may lead to reductions in rates of reincarceration and improvement in attitudes that are associated with domestic violence perpetration. This investigation underscores the need to incorporate evidence-based practices when guiding treatment decisions and evaluating these programs, to improve in-prison domestic violence treatment programs and produce desired outcomes.

References

- Andrews, D. A., & Bonta, J. (2010). Rehabilitating criminal justice policy and practice. *Psychology, Public Policy, and Law*, 16(1), 39-55.
- Andrews, D. & Bonta, J. (1998). *The psychology of criminal conduct* (2nd edition). Cincinnati, OH: Anderson.
- Babcock, J. C., Green, C. E., & Robie, C. (2004). Does batterers' treatment work? A meta-analytic review of domestic violence treatment. *Clinical Psychology Review*, 23, 1023 – 1053.
- Berg, I. K., & De Jong, P. (2008). *Interviewing for solutions*. Belmont, CA: Thompson.
- Bennet, L. W., Stoops, C., Call, C., & Flett, H. (2007). Program completion and re-arrest in a batterer intervention system. *Research on Social Work Practice*, 17, 42 – 54.
- Black, M. C., Basile, K. C., Breiding, M. J., Smith, S. G., Walters, M. L., Merrick, ... Stevens, M. R. (2010). *The National Intimate Partner and Sexual Violence Survey: 2010 summary report, executive summary*. Atlanta, GA: National Center for Injury Prevention and Control Centers for Disease Control and Prevention.
- Bowers, J., Fredrickson, M., & Hansen, B. (2013). *Package 'RITools'*. Retrieved from <http://cran.r-project.org/web/packages/RITools/RITools.pdf>
- Carns, T. W., McKelvie, S., Cohn, L., & Martin, S. (2007). *Criminal recidivism in Alaska*. Anchorage, AK: Alaska Judicial Council.
- Carson, E. A. (2014). *Prisoners in 2013* (NCJ 247282). Washington, D.C.: Bureau of Justice Statistics.
- Carson, E. A., & Golinelli, D. (2013). *Prisoners in 2012 – Advanced counts* (NCJ 242467). Washington, D.C.: Bureau of Justice Statistics.

- Clark, M. D., Walters, S., Gingerich, R., & Meltzer, M. (2006). Motivational interviewing for probation officers: Tipping the balance toward change. *Federal Probation*, 70, 38 – 44.
- Craddock, A., Gallagher, A., Hevener, G., Flinchum, T., Hall, M., Katzenelson, S. & Perdue, S. (2012). Correctional program evaluation: Offenders placed on probation or released from prison in fiscal year 2008/09. Raleigh, NC: North Carolina Sentencing and Policy Advisory Commission.
- Daugherty, C. G., & Dambrot, F. H. (1986). Reliability of the attitudes toward women scale. *Educational and Psychological Measurement*, 46, 449 – 453.
- Donnelly, D. A., Smith, L. G., & Williams, O. J. (2002). The batterer education program for incarcerated African-American Men, 1997 – 2000. In E. Aldarondo & F. Mederos (Eds.) *Programs for men who batter: Intervention and prevention strategies in a diverse society* (13-1 – 13-18). Kingston, NJ: Civic Research Institute.
- Dutton, D. G. & Hart, S. D. (1992). Risk markers for family violence in a federally incarcerated population. *International Journal of Law and Psychiatry*, 15, 101-112.
- Fiebert, M. S. (2010). References examining assaults by women on their spouses or male partners: An annotated bibliography. *Sexuality and Culture*, 14, 49-91.
- Gendreau, P., Little, T., & Goggin, C. (1996). A meta-analysis of the predictors of adult offender recidivism: What works! *Criminology*, 24(4), 575-607.
- Gordon, J. A., & Moriarty, L. J. (2003). The effects of domestic violence batterer treatment on domestic violence recidivism: The Chesterfield County Experience. *Criminal Justice and Behavior*, 30, 118 – 134.
- Guerino, P., Harrison, P. M., & Sabol, W. J. (2011). *Prisoners in 2010* (NCJ 236096). Washington, D.C.: Bureau of Justice Statistics.

- Guo, S., & Fraser, M. W. (2010). Propensity score analysis: Statistical methods and applications. Thousand Oaks, CA: SAGE Publications, Inc.
- Hosmer, D. W., & Lemeshow, S. (2000). Applied logistic regression. New York, NY: Wiley-Interscience Publication.
- Jenkins, J. A., & Menton, C. (2003). The relationship between incarcerated batterers' cognitive characteristics and the effectiveness of behavioral treatment. *Corrections Compendium*, 28(3), 1-4, 25-27.
- Johnson, M. P. (2006). Conflict and control: Gender symmetry and asymmetry in domestic violence. *Violence Against Women*, 12, 1003-1018.
- Knight, K., Garner, B. R., Simpson, D. D., Morey, J. T., & Flynn, P. M. (2006). An assessment for criminal thinking. *Crime & Delinquency*, 52, 159 – 177.
- Langan, P. A., Levin, D. J. (2002). Recidivism of prisoners released in 1994. *Federal Sentencing Reporter*, 15, 58-65.
- Lee, J., Kim, J., & Lim, H. (2010). Rape myth acceptance among Korean college students: The roles of gender, attitudes toward women and sexual double standard. *Journal of Interpersonal Violence*, 25, 1200-1223.
- Ley, L. F. (2005). A study of domestic violence recidivism following treatment among incarcerated men who batter (Unpublished doctoral dissertation). University of Miami, Coral Gables, FL.
- Lunt, M. (2013). Selecting an appropriate caliper can be essential for achieving good balance with propensity score matching. *American Journal of Epidemiology*, 179, 226-235.

- Max, W., Rice, D.P., Finkelstein, E., Bardwell, R. A., & Leadbetter, S. (2004). The economic toll of intimate partner violence against women in the United States. *Violence and Victims, 19*, 259-272.
- McConaughy, E. A., Prochaska, . O., & Velicer, W. F. (1983). Stages of change in psychotherapy: Measurement and sample profiles. *Psychotherapy: Theory, Research, and Practice, 20*, 368 – 375.
- North Carolina Sentencing and Policy Advisory Commission (2014). Correctional program evaluation: Offenders placed on probation or released from prison in fiscal year 2010/11. Raleigh, NC: Division of Adult Correction and Juvenile Justice of the North Carolina Department of Public Safety.
- 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. doi:<http://dx.doi.org/10.1037/a0022200>
- Pascual-Leone, A., Bierman, R., Arnold, R., & Stasiak, E. (2011). Emotion-focused therapy for incarcerated offenders of intimate partner violence: A 3-year outcome using a new whole-sample matching method. *Psychotherapy Research, 21*, 331 – 347.
- Pence, E., & Paymar, M. (1992). *Education groups for men who batter: The Duluth Model*. New York, NY: Springer.
- Pew Center on the States. (2011). *State of recidivism: The revolving door of America's prisons*. The Pew Charitable Trusts. Retrieved from <http://www.pewtrusts.org/en/research-and-analysis/reports/2011/04/12/state-of-recidivism-the-revolving-door-of-americas-prisons>
- Robertson, K. & Murachver, R. (2007). Correlates of partner violence for incarcerated women and men. *Journal of Interpersonal Violence, 22*, 639 – 655.

- Robinson, D. & Taylor, J. (1995). The incidence of family violence perpetrated by federal offenders: A files review study. Ottawa: Correctional Service of Canada. Retrieved from <http://www.csc-scc.gc.ca/text/pblct/fv/fv03/fv03e05-eng.shtml>
- Rosenthal, R. (1994). Parametric measures of effect size. In H. Cooper & L.V. Hedges (Eds.) *The handbook of research synthesis* (231 – 244). New York, NY: Russell Sage Foundation.
- Shadish, W.R., Cook, T.D., & Campbell, D.T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Belmont, CA: Wadsworth.
- Stewart, L. A., Flight, J., & Slavin-Stewart, C. (2013). Applying effective corrections principles (RNR) to partner abuse interventions. *Partner Abuse*, 4, 494-534.
- Stewart, L. A., Gabora, N., Kropp, P. R., & Lee, Z. (2014). Effectiveness of risk-needs-responsivity-based family violence programs with male offenders. *Journal of Family Violence*, 29, 151 – 164.
- Stewart, L. A., & Power, J. (2014). Profile and programming needs of federal offenders with histories of intimate partner violence. *Journal of Interpersonal Violence*, 29, 2723-2747.
- Travis, J. & Western, B. (2014). *The growth of incarceration in the United States: Exploring causes and consequences*. Washington, D.C.: The National Academies Press.
- Tripodi, S. J., Kim, J. S., & Bender, K. (2010). Is employment associated with reduced recidivism?: The complex relationship between employment and crime. *International Journal of Offender Therapy and Comparative Criminology*, 54, 706 – 720.
- Wheelan, S. A. (2005). *The handbook of group research and practice*. Thousand Oaks, CA: Sage.

Wolfus, B. & Bierman, R. (1996). An evaluation of a group treatment program for incarcerated male batterers. *International Journal of Offender Therapy and Comparative Criminology*, 40, 318 – 333.

Yorke, N. J., Friedman, B. D., & Hurt, P. (2010). Implementing a batterer's intervention program in a correctional setting: A tertiary prevention model. *Journal of Offender Rehabilitation*, 49, 456 – 478.

Table 1.

Means, Standard Deviations, and T--Test Results for the TCU Criminal Thinking Scale

Sub Scale	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference	t	p-value	95% CI
Entitlement	19.44 (6.19)	15.84 (4.99)	3.60**	7.12	<.001	(2.60,4.60)
Justification	22.42 (7.69)	16.88 (6.35)	5.54**	7.43	<.001	(4.07,7.03)
Power Orientation	27.62 (7.77)	20.28 (5.82)	7.34**	10.99	<.001	(6.02,8.67)
Cold Heartedness	27.89 (5.71)	20.48 (6.17)	7.41*	2.28	.024	(0.19,2.64)
Criminal Rationalization	31.80 (8.22)	27.34 (8.14)	4.46**	6.45	<.001	(3.10,5.83)
Personal Irresponsibility	21.93 (6.69)	17.08 (6.19)	4.85**	8.29	<.001	(3.70,6.01)

* = mean difference significant at the $p < .05$ level** = mean difference significant at the $p < .001$ level

Table 2

Logistic Regression Analysis Predicting 5- and 7- year Reincarceration Odds

Variable	5-year Models			7-year Models		
	Odds Ratio	95% CI	p-value	Odds Ratio	95% CI	p-value
Block 1						
Constant	0.46		.171	0.58		.427
Prior Felonies	1.23	(1.09, 1.39)	.001	1.22	(1.04, 1.43)	.014
Race						
White			.024			.010
Black	1.62	(0.91, 2.88)	.100	2.06	(1.01,4.18)	.046
Other	0.33	(0.09, 1.26)	.105	0.14	(0.02,1.20)	.073
Exit Age	0.99	(0.96, 1.02)	.368	0.99	(0.95,1.02)	.450
Block 2						
Constant	0.58		.350	0.75		.684
Prior Felonies	1.25	(1.11, 1.42)	.000	1.24	(1.06,1.46)	.009
Race						
White			.035			.018
Black	1.62	(0.91,2.88)	.103	1.99	(0.97,4.06)	.059
Other	.364	(0.10, 1.40)	.140	0.16	(0.02,1.37)	.095
Exit Age	.986	(0.96,1.01)	.317	.985	(0.95,1.02)	.412
Treatment Group	.624	(.36, 1.08)	.092	.611	(0.31,1.2)	.160
Block 1: <i>n</i> = 249; Model Fit Criteria: -2 log likelihood = 309.12, $\chi^2 = 21.95$, <i>df</i> = 4, <i>p</i> < .001, Nagelkerke R Square = .115			Block 1: <i>n</i> = 157; Model Fit Criteria: -2 log likelihood = 195.39, $\chi^2 = 10.95$, <i>df</i> = 4, <i>p</i> < .001, Nagelkerke R Square = .160			
Block 2: <i>n</i> = 249; Model Fit Criteria: -2 log likelihood = 306.24, $\chi^2 = 24.83$, <i>df</i> = 5, <i>p</i> < .001, Nagelkerke R Square = .129			Block 2: <i>n</i> = 157; Model Fit Criteria: -2 log likelihood = 193.40, $\chi^2 = 21.94$, <i>df</i> = 5, <i>p</i> = .001, Nagelkerke R Square = .175			

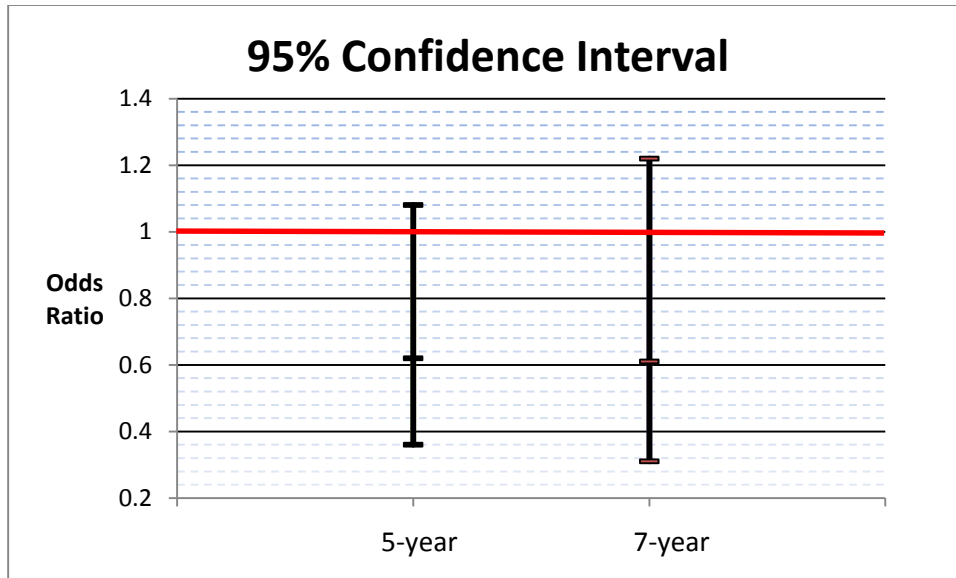


Figure 1. 95% confidence intervals of odds-ratios for 5- and 7-year reincarceration rates.