THE EFFECTS OF MINNESOTA PRISON-BASED EDUCATIONAL PROGRAMMING ON RECIDIVISM AND EMPLOYMENT

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Research Summary

This study evaluated the effectiveness of prison-based educational programming by examining the effects of obtaining secondary and post-secondary degrees on recidivism and post-release employment outcomes among offenders released from Minnesota prisons between 2007 and 2008. Obtaining a secondary degree in prison significantly increased the odds of securing post-release employment by 59 percent but did not have a significant effect on recidivism or other employment measures such as hourly wage, total hours worked, and total wages earned. Earning a post-secondary degree in prison, however, was associated with greater number of hours worked, higher overall wages, and less recidivism.

Introduction

Most offenders in Minnesota state prisons will eventually reenter society, but more than one-third of those offenders will be convicted of new felony offenses within three years of release (Minnesota Department of Corrections, 2013). Because incarceration disproportionately affects the young and the under-educated, many released offenders lack the education and basic job skills it takes to reintegrate back into society (Tolbert, 2012; Western, Kling, & Weiman, 2001). Formerly incarcerated men are employed an average of 9 fewer weeks per year than men who have never been incarcerated (Western & Pettit, 2010). They also earn 11 percent less per hour and about 40 percent less per year. Besides slashing potential earnings, a history of incarceration stifles upward economic mobility (Western & Pettit, 2010). Thus, prison-based education and career training may be a key component of successful offender reentry.

Educational programming is currently available in all Minnesota state correctional facilities, and more than 9,000 offenders were enrolled in educational programs between July 2011 and June 2012 (Minnesota Department of Corrections, 2013). The prominence of education in prisons is likely due to the well-documented relationship between low educational achievement and antisocial behaviors. Several studies have linked poor academic performance among adolescents to juvenile delinquency and future offending, although the direction of the causal relationship remains unclear (e.g., Farrington, 2005; Hagan and McCarthy, 1997; Huizinga et al., 2000; Maguin and Loeber, 1996; Moffitt, 1993). A large proportion of adult offenders lack their General Educational Development (GED) or (HS) high school diploma (Harlow, 2003).

Although corrections administrators usually value educational programming (Adams et al., 1994), these programs require funding from prison budgets that have not kept pace with growing prison populations and operations costs. Despite the four-fold increase in corrections spending between 1987 and 2007 (Pew Center on the States, 2008), corrections departments are being forced to eliminate non-essential services, such as educational programming (Lillis, 1994). Moreover, legislatures are reluctant to allocate education funds to this unpopular demographic, as evidenced by the elimination of Pell grants for offenders (Batiuk et al., 2005; Tewksbury and Taylor, 1996).

Policy makers and the general public may view prison educational programming as a waste of tax dollars to an undeserving population, but these programs may offer public safety benefits and future savings in corrections spending. If participation in prison education programs reduces recidivism, the public is safer and future offender populations could be reduced. Moreover, by increasing employment opportunities for offenders, states can increase tax revenues.

Given the current high rates of unemployment in the U.S., educational achievement and career training for offenders may be more important than ever. Unemployment rates appear to directly correspond with levels of education. According to the Bureau of Labor Statistics (2012), the unemployment rate is highest for individuals who have less than a high school diploma (12.5 percent as of April, 2012), and lowest for individuals who hold a bachelor's degree or higher (four percent as of April, 2012). With or without educational attainment, the employment prospects for offenders are already weak. A felony record diminishes the likelihood of future employment (Berstein and Houston, 2000), and many offenders have unstable work histories (Visher et al., 2004).

Present Study

This research examines correctional education programming by analyzing the effects of earning secondary and post-secondary degrees in prison on recidivism and post-release employment. Offenders in this study were released from Minnesota prisons between 2007 and 2008. Propensity score matching (PSM) was used to reduce observable selection bias. Recidivism and post-release employment data were collected through the end of 2010.

The Minnesota Department of Corrections (MnDOC) mandates educational programming for all offenders who do not have at least a GED or HS diploma. Completion of a GED/HS diploma is required for employment within MnDOC facilities. MnDOC's overall educational goal is to not only ensure that all offenders have at least a GED/HS diploma upon release, but to also prepare offenders for enrollment in post-secondary education. Upon intake into prison, MnDOC staff verifies whether new offenders hold a GED/HS diploma by contacting the diploma-granting institution. New offenders also take the Test of Adult Basic Education (TABE). Based on GED/HS diploma status and TABE scores, offenders are directed into secondary or post-secondary educational programs.

In the ensuing section, this report reviews existing research on prison-based educational programming. Next, it discusses the data and methods used in this study. The study then concludes by discussing the implications of the results for correctional policy and practice.

Prior Research on Prison Educational Programming

Although existing research has evaluated the effects of prison educational programs on post-release outcomes, the results of these studies have been mixed and many suffer from methodological shortcomings (Batiuk, et al., 2005; Cho and Tyler, 2010). For example, in

their evaluation of the effects of correctional education programs on recidivism in three states (including Minnesota), Steurer, Smith and Tracy (2003) found that offenders who participated in educational programs while imprisoned had lower rates of recidivism. However, the authors of this study failed to differentiate between types of educational programs (i.e., secondary and post-secondary), employ multivariate analyses to control for other relevant factors, or construct a suitable comparison group. Similarly, although Lockwood, Nally, Ho, and Knutson (2012) reported in their recent evaluation that prison education and post-release employment reduced recidivism, the non-experimental design they used lacked a comparison group and the study did not include important controls such as prior criminal history or participation in other prison programming.

In one of the earliest and most notable reviews of research on correctional programming, Martinson (1974) and Lipton, Martinson, and Wilks (1975) found that prison education programs could be effective but were of limited value. While many observers assumed that offenders were incapable of achieving academic success (Adams, et al., 1994), Martinson and Lipton et al.'s review of prison education program evaluations revealed that offenders were willing to participate in these programs. As long as the teachers and offenders were invested, prison education programs could improve academic performance among offenders but were not found to have a significant effect on recidivism.

Although the authors (Martinson, 1974; Lipton et al., 1975) claimed they reviewed only the most rigorous program evaluations (e.g., they included treatment and control groups, had clearly defined and measurable outcomes), other researchers have questioned whether the studies they included could be expected to have reliable results due to implementation issues (Gottfredson, 1979; Palmer, 1978; Van Voorhis and Brown, 1996; Wholey, 1979).

More recent meta-analyses of prison education research have produced promising results, although the effect sizes are usually modest. Adams et al.'s (1994) review of more than 90 studies on prison education programs revealed that prison education reduces the likelihood of recidivism, especially for offenders with the largest education deficits. Aos, Miller, and Drake (2006) found that basic adult education programs in prison reduced recidivism by more than five percent, and prison-based vocational programs reduced recidivism by more than 12 percent (based on the results of three studies). Wilson et al.'s (2000) meta-analysis of 33 evaluations of prison-based education programs showed modest increases in post-release employment and reductions in recidivism for participants.

The above meta-analyses produced positive findings, but not all of the reviewed studies looked at pre-college, vocational, and college-level educational programs separately. Also, not all of the studies looked at both recidivism and post-release employment outcomes. Individual studies of pre-college prison education have produced mixed results.

In a recent study, Cho and Tyler (2010) examined recidivism and post-release employment outcomes among more than 13,137 released offenders who participated in Adult Basic Education (ABE) programs while in Florida prisons. ABE participation did not have a significant effect on recidivism, but it did significantly improve post-release employment outcomes. The authors found differences between offenders who chose to stay in ABE classes and those who voluntarily dropped out. Offenders who chose to complete ABE classes tended to come from disadvantaged backgrounds. Compared to all ABE participants, offenders who completed ABE classes did not fare much better in the job market. However, when comparing ABE completers to ABE participants who were involuntarily removed, the completers were able to work longer hours for higher wages after release from prison.

Cho and Tyler (2010) also found that post-release earnings were especially improved when ABE classes were completed without interruption and when the offenders pursued GED diplomas. The authors reported that the average ABE participant earned nearly 600 dollars more per year than ABE dropouts in the second year after release.

Anderson (1995) found that GED diploma programs reduced the likelihood of recidivism in a two-year follow-up of more than 18,000 offenders released from Ohio prisons in 1992. Participation in ABE programs, on the other hand, did not significantly affect the likelihood of recidivism. Anderson also found that the negative effects of GED diploma programs on recidivism were greater for certain groups. Males, younger offenders, African-Americans, offenders with no prior history of incarceration, and offenders who committed less serious offenses benefitted the most from involvement in GED programs. ABE programs benefited females more than males, older offenders more than younger offenders, offenders with a limited history of incarceration more than those with lengthy incarceration histories, and offenders serving longer sentences more than those serving shorter sentences.

Using the same sample of 18,000 offenders released from Ohio prisons, Anderson (1995) found that college-level academic programs and vocational training significantly reduced recidivism, especially for certain groups. Females, younger offenders, persons incarcerated for drug or non-violent offenses, and offenders with no prior history of incarceration benefited the most from college-level academic training.

In a more recent analysis on the effects of college-level prison educational programming, Batiuk and colleagues (2005) found that college-level academic programming significantly reduced the likelihood of recidivism. Not only did college-level programming have the strongest effect on recidivism, but it was also the only type of educational

programming that had a significant effect in an analysis that also included high school and GED programming and vocational training.

One common criticism of educational program evaluations is that researchers fail to explain the connection between prison education and recidivism (Batuik, Moke, and Rountree, 1997). One theory is that prison educational achievement increases the likelihood of employment, which in turn decreases the likelihood of recidivism. Post-release employment keeps offenders occupied and provides them with a disincentive to engage in offending. Batuik et al. (1997) provided support for this explanation, finding that post-release employment mediated the relationship between college-level educational programming in prison and a reduction in recidivism. College-level educational programming in prison increased the likelihood of post-release employment, which in turn decreased the likelihood of recidivism.

Data and Methodology

This study used a retrospective quasi-experimental design to determine whether the completion of prison-based educational programming has had an impact on recidivism and post-release employment. The effectiveness of educational programming was evaluated by comparing recidivism and employment outcomes between offenders who earned secondary (GED or HS diploma) or post-secondary degrees (e.g., Associates degrees or diplomas/ certificates from career/technical programs) in prison and matched comparison groups of offenders who did not earn educational degrees while incarcerated.

The population for this study contained 9,394 individual offenders released from Minnesota prisons between January 2007 and December 2008. This two-year period was selected because individual-level employment data on Minnesota prisoners did not first

become available until 2007. In addition, to allow a sufficient follow-up period for the recidivism and employment analyses, this study includes offenders released through 2008.

Of the 9,394 offenders, 38 percent (3,582) entered prison without a secondary degree (i.e., GED or HS diploma). Of these offenders, 1,212 (33 percent) earned a secondary degree in prison. To estimate the effects of earning a secondary degree on recidivism and employment, PSM was used to individually match offenders who earned a GED or HS diploma in prison with a comparison group of offenders released from prison without a secondary degree.

This study examined the impact of earning a post-secondary degree on recidivism and employment by using PSM to individually match offenders who obtained a post-secondary degree in prison with a comparison group of offenders with a secondary degree who did not earn a post-secondary degree while incarcerated. Among the 9,394 offenders released from prison during the 2007-2008 period, 62 percent (5,812) had a secondary degree at the time of their most recent admission to prison. Of the 5,812 offenders, 545 earned a post-secondary degree in prison. In addition, there were 148 offenders who obtained both a secondary degree and a post-secondary degree in prison prior to their release to the community. The PSM analyses that examined the effects of earning a post-secondary degree thus included the 693 offenders who earned this type of degree in prison with 5,267 offenders admitted to prison with a secondary degree but were released without obtaining a post-secondary degree.

Dependent Variables

As discussed above, two main outcome measures—recidivism and post-release employment—were used to assess the effectiveness of educational programming. The following section discusses how each outcome measure was operationalized.

Recidivism

In this study, recidivism was defined as a 1) rearrest, 2) reconviction, 3) reincarceration for a new sentence, or 4) supervision revocation for a technical violation. It is important to emphasize that the first three recidivism variables strictly measure new criminal offenses. In contrast, technical violation revocations (the fourth measure) represent a broader measure of rule-breaking behavior. Offenders can have their supervision revoked for violating the conditions of their supervised release. Because these violations can include activity that may not be criminal in nature (e.g., use of alcohol, failing a community-based treatment program, failure to maintain agent contact, failure to follow curfew, etc.), technical violation revocations do not necessarily measure reoffending.

Recidivism data were collected on offenders through December 31, 2010. Considering that offenders in this study were released between 2007 and 2008, the follow-up time for the offenders examined in this study ranged from 24-36 months. Data on arrests and convictions were obtained electronically from the Minnesota Bureau of Criminal Apprehension. Reincarceration and revocation data were derived from the Correctional Operations Management System (COMS) database maintained by the MnDOC. The main limitation with using these data is that they measure only arrests, convictions and incarcerations that took place in Minnesota. As a result, the findings presented later will likely underestimate the true recidivism rates for the offenders examined here.

Post-Release Employment

Data on post-release employment were obtained from the Minnesota Department of Employee and Economic Development (DEED). The main caveat with using these data is that it does not capture any labor (or compensation for that labor) not reported to DEED,

which can occur in situations where employees are paid "under the table" for their labor. Still, the DEED data provide important information not only on whether offenders obtained employment, but also on how much they worked and the extent to which they were compensated. Because the employment data are compiled on a quarterly basis, information was not available on the specific date(s) when offenders entered and/or exited a job. As a result, the post-release employment measures included: 1) any employment (dichotomized as "1" for employment and "0" for no employment), 2) total number of hours worked, 3) total wages earned, and 4) hourly wage.

Educational Programming Variables

The main objective of this evaluation is to determine whether prison-based educational programming has had an impact on recidivism and post-release employment. For the secondary degree variable, offenders who earned a GED or HS degree in prison were assigned a value of "1", whereas those in the comparison group received a value of "0". For the post-secondary degree variable, offenders who earned this type of degree were given a value of "1", while those in the comparison group were assigned a value of "0".

Independent Variables

The independent, or control, variables included in the statistical models were those that were not only available in the COMS database but also might theoretically have an impact on recidivism and post-release employment. A description of the covariates used in the statistical models can be found in Table 1.

Propensity Score Matching

PSM is a method that estimates the conditional probability of selection to a particular treatment or group given a vector of observed covariates (Rosenbaum & Rubin, 1985). The

predicted probability of selection is typically generated by estimating a logistic regression model in which selection (0 = no selection; 1 = selection) is the dependent variable while the predictor variables consist of those that theoretically have an impact on the selection process. Once estimated, the propensity scores are then used to match individuals who received educational degrees with those who did not. Thus, an advantage with using PSM is that it can simultaneously "balance" multiple covariates on the basis of a single composite score.

PSM reduces selection bias by creating a counterfactual estimate of what would have happened to offenders had they not earned a secondary or post-secondary degree. PSM has several limitations, however, that are worth noting. First, and foremost, because propensity scores are based on observed covariates, PSM is not robust against "hidden bias" from unmeasured variables that are associated with both the assignment to treatment and the outcome variable. Second, there must be substantial overlap among propensity scores between the two groups in order for PSM to be effective (Shadish, Cook & Campbell, 2002); otherwise, the matching process will yield incomplete or inexact matches. Finally, as Rubin (1997) points out, PSM tends to work best with large samples.

Although somewhat limited by the data available, an attempt was made to address potential concerns over unobserved bias by including as many theoretically-relevant covariates (22) as possible in the propensity score model. In addition, this study later demonstrates there was substantial overlap in propensity scores between the treated and untreated offenders. Further, the sample size limitation was addressed by assembling a large number of cases on which to conduct the propensity score analyses.

Matching for Secondary Degree

Table 1. Logistic Regression Models for Educational Degree Selection

Predictors	*Predictor Description*	*Secondary* Coefficient	*Post-Secondary* Coefficient
Male	Male = 1; female = 0	0.264	-0.818**
Minority	Minority = 1; White = 0	-0.968**	-0.068
Age at Release (years)	Offender age in years at time of release from prison	-0.059**	-0.038**
Prior Supervision Failures	Number of prior revocations while under correctional supervision	-0.105*	-0.058
Prior Convictions	Number of prior felony convictions, excluding index conviction(s)	0.033*	-0.001
Metro Commit	Twin Cities metropolitan area = 1; Greater Minnesota = 0	-0.191*	-0.003
Offense Type	Person offense serves as the reference		
Property	Property offense = 1; non-property offense = 0	-0.525*	0.126
Drugs	Drug offense = 1; non-drug offense = 0	-0.551*	-0.171
Criminal Sexual Conduct	Sex offense = 1; non-sex offense = 0	-0.165	-0.199
Felony DWI	Felony DWI offense = 1; non-Felony DWI offense = 0	-0.505*	-0.099
Other	Other offense = 1; non-other offense = 0	-0.264	-0.133
Admission Type	New commitment serves as the reference		
Probation Violator	Probation violator = 1; new commitment or release violator = 0	0.242*	-0.242*
Release Violator	Release violator = 1; new commitment or probation violator = 0	-0.999**	-0.887**
Length of Stay (months)	Number of months between prison admission and release dates	0.052**	0.058**
Discipline	Number of discipline convictions received during imprisonment prior to release	-0.029	-0.062**
CD Treatment	Entered chemical dependency treatment during current prison sentence	-0.087	-0.136
Sex Offender Treatment	Entered sex offender treatment during current prison sentence	0.105	-0.482
Supervision Type	Supervised release serves as the reference		
ISR	Intensive supervised release (ISR) = 1; non-ISR = 0	-0.289*	-0.146
Work Release	Work Release = 1; non-Work Release = 0	0.160	-0.247
CIP	Challenge Incarceration Program (CIP) = 1; non-CIP = 0	1.899**	-0.360
Discharge	Discharge = 1; released to correctional supervision = 0	-1.166**	-0.234
Release Year	Year in which first released from prison for instant offense	-0.216*	-0.132
Constant		435.589	263.463
N		3,582	5,960
Log-likelihood		3515.174	3640.498
Nagelkerke R^2		0.359	0.200

** $p < .01$
* $p < .05$

Propensity scores were calculated for the 1,212 offenders who earned a secondary degree in prison and the 2,370 prisoners in the comparison group pool by estimating a logistic regression model in which the dependent variable was obtaining a secondary degree. The predictors were the 22 control variables used in the statistical analyses (see Table 1). Even though the difference in mean propensity score between both groups was statistically significant at the .01 level (see Table 2), there was substantial overlap in propensity scores. Indeed, the vast majority of offenders in both groups (87 percent for secondary degree and 98 percent for those without a secondary degree) had propensity scores less than 0.80.

After obtaining propensity scores for the 3,582 offenders, a greedy matching procedure was used to match the offenders who earned a secondary degree in prison with those who did not. Using a relatively narrow caliper of 0.10, matches were found for 910 (75 percent) of the 1,212 offenders who earned a secondary degree in prison. Table 2 presents the covariate and propensity score means for both groups prior to matching ("total") and after matching ("matched"). In addition to tests of statistical significance ("t test p value"), Table 2 provides a measure ("Bias") developed by Rosenbaum and Rubin (1985) that quantifies the amount of bias between the treatment and comparison samples (i.e., standardized mean

$$\text{Bias} = \frac{100(\overline{X}_t - \overline{X}_c)}{\sqrt{\frac{(S_t^2 + S_c^2)}{2}}}$$

difference between samples), where $\overline{X}_t$ and S_t^2 represent the sample mean and variance for the treated offenders and $\overline{X}_c$ and S_c^2 represent the sample mean and variance for the untreated offenders. If the value of this statistic exceeds 20, the covariate is considered to be unbalanced (Rosenbaum & Rubin, 1985).

Table 2. Propensity Score Matching and Covariate Balance for Secondary Degree

Variable	*Sample*	*Secondary Mean*	*Comparison Mean*	*Bias (%)*	*Bias Reduction*	*t test p Value*
Propensity Score	Total	51.84%	24.63%	102.84		0.00
	Matched	43.86%	42.92%	4.05	-96.07%	0.29
Male	Total	94.06%	91.39%	8.64		0.01
	Matched	93.08%	93.52%	1.42	-83.52%	0.71
Minority	Total	49.34%	67.81%	30.83		0.00
	Matched	57.03%	59.45%	4.00	-87.01%	0.30
Age at Release (Years)	Total	30.85	34.44	30.91		0.00
	Matched	31.58	31.23	3.15	-89.83%	0.41
Prior Supervision Failures	Total	0.68	1.44	51.34		0.00
	Matched	0.81	0.83	1.40	-97.28%	0.72
Prior Convictions	Total	4.18	4.62	10.55		0.00
	Matched	4.21	4.29	2.05	-80.59%	0.59
Metro	Total	39.77%	53.00%	21.91		0.00
	Matched	43.74%	46.48%	4.50	-79.46%	0.24
Property Offenders	Total	17.00%	22.74%	11.99		0.00
	Matched	19.23%	19.67%	0.91	-92.42%	0.81
Drug Offenders	Total	28.47%	26.33%	3.90		0.17
	Matched	24.29%	24.29%	0.00	-100.00%	1.00
Sex Offenders	Total	10.81%	11.10%	0.76		0.79
	Matched	11.43%	9.89%	4.04	431.03%	0.29
DWI Offenders	Total	6.44%	4.30%	7.54		0.01
	Matched	6.48%	6.48%	0.00	-100.00%	1.00
Other Offenders	Total	13.20%	13.08%	0.29		0.92
	Matched	13.74%	14.40%	1.55	436.89%	0.69
Probation Violators	Total	30.36%	25.86%	8.11		0.00
	Matched	34.07%	35.16%	1.87	-76.91%	0.62
Release Violators	Total	4.37%	31.43%	69.87		0.00
	Matched	5.71%	5.60%	0.39	-99.45%	0.92
Length of Stay (months)	Total	23.19	13.10	55.48		0.00
	Matched	20.37	19.71	3.71	-93.31%	0.34
Institutional Discipline	Total	2.71	1.98	18.32		0.00
	Matched	2.73	2.61	2.99	-83.67%	0.44
CD Treatment	Total	28.55%	13.63%	29.09		0.00
	Matched	20.55%	21.54%	1.99	-93.16%	0.61
Sex Offender Treatment	Total	2.97%	2.74%	1.12		0.70
	Matched	2.97%	2.31%	3.28	193.96%	0.38
Intensive Supervised Release	Total	23.76%	22.07%	3.27		0.25
	Matched	25.93%	25.82%	0.20	-93.73%	0.96
Work Release	Total	10.73%	8.40%	6.35		0.02
	Matched	10.44%	11.76%	3.45	-45.62%	0.37
CIP	Total	9.49%	1.56%	25.93		0.00
	Matched	4.29%	4.07%	0.89	-96.55%	0.82
Discharge	Total	2.72%	21.86%	57.06		0.00
	Matched	3.63%	3.85%	0.95	-98.33%	0.81
Release Year	Total	2007.44	2007.43	2.37		0.41
	Matched	2007.44	2007.45	1.08	-54.26%	0.73

Total Secondary Degree N = 1,212
Total Comparison N = 2,370
Matched Secondary Degree N = 910
Matched Comparison N = 910

Table 3. Propensity Score Matching and Covariate Balance for Post-Secondary Degree

Variable	*Sample*	*PSD Mean*	*Comparison Mean*	*Bias (%)*	*Bias Reduction*	*t test p Value*
Propensity Score	Total	22.56%	10.19%	70.29		0.00
	Matched	22.56%	22.38%	0.96	-98.63%	0.83
Male	Total	88.46%	91.51%	8.12		0.01
	Matched	88.46%	89.18%	1.86	-77.15%	0.67
Minority	Total	36.94%	39.19%	3.79		0.25
	Matched	36.94%	37.23%	0.49	-87.07%	0.91
Age at Release (Years)	Total	33.92	35.46	13.32		0.00
	Matched	33.92	33.83	0.81	-93.92%	0.85
Prior Supervision Failures	Total	0.90	1.51	35.55		0.00
	Matched	0.90	0.85	3.41	-90.40%	0.43
Prior Convictions	Total	5.30	5.72	7.77		0.02
	Matched	5.30	5.49	3.59	-53.85%	0.41
Metro	Total	40.69%	44.33%	6.02		0.07
	Matched	40.69%	40.12%	0.95	-84.28%	0.83
Property Offenders	Total	21.36%	21.40%	0.08		0.98
	Matched	21.36%	24.24%	5.65	6988.37%	0.20
Drug Offenders	Total	27.99%	26.24%	3.20		0.33
	Matched	27.99%	23.09%	9.08	183.82%	0.04
Sex Offenders	Total	10.10%	12.61%	6.57		0.06
	Matched	10.10%	10.25%	0.41	-93.83%	0.93
DWI Offenders	Total	8.23%	8.77%	1.59		0.63
	Matched	8.23%	9.96%	4.97	213.68%	0.26
Other Offenders	Total	12.55%	13.31%	1.86		0.58
	Matched	12.55%	13.13%	1.42	-23.57%	0.75
Probation Violators	Total	20.20%	25.61%	10.68		0.00
	Matched	20.20%	19.77%	0.88	-91.79%	0.84
Release Violators	Total	7.79%	29.26%	51.25		0.00
	Matched	7.79%	6.20%	5.00	-90.24%	0.25
Length of Stay (months)	Total	28.81	14.76	72.21		0.00
	Matched	28.81	28.21	2.81	-96.10%	0.53
Institutional Discipline	Total	259.88%	168.63%	25.12		0.00
	Matched	259.88%	256.13%	0.97	-96.12%	0.83
CD Treatment	Total	31.46%	22.95%	15.42		0.00
	Matched	31.46%	32.47%	1.77	-88.53%	0.69
Sex Offender Treatment	Total	3.75%	3.97%	0.94		0.78
	Matched	3.75%	4.04%	1.23	31.22%	0.78
Intensive Supervised Release	Total	21.36%	20.52%	1.68		0.61
	Matched	21.36%	22.37%	2.00	18.93%	0.65
Work Release	Total	14.43%	11.58%	6.81		0.03
	Matched	14.43%	14.29%	0.33	-95.23%	0.94
CIP	Total	4.91%	5.77%	3.16		0.35
	Matched	4.91%	3.75%	4.55	43.92%	0.29
Discharge	Total	4.33%	13.61%	29.35		0.00
	Matched	4.33%	3.61%	2.98	-89.86%	0.49
Release Year	Total	2007.46	2007.42	6.78		0.04
	Matched	2007.46	2007.48	3.07	-54.66%	0.49

Total Post-Secondary Degree (PSD) N = 693
Total Comparison N = 5,267
Matched PSD N = 693
Matched Comparison N = 693

As shown in Table 2, the matching procedure reduced the bias in propensity scores between both groups by 96 percent. Whereas the p value was 0.00 in the unmatched sample, it was 0.29 in the matched sample. In the unmatched sample, there were nine covariates that were significantly imbalanced (i.e., the bias values exceeded 20). But in the matched sample, covariate balance was achieved given that no covariates had bias values greater than 20.

Matching for Post-Secondary Degree

Propensity scores were calculated for the 693 offenders who earned a post-secondary degree in prison and the 5,267 prisoners in the comparison group pool by estimating a logistic regression model in which the dependent variable was obtaining a post-secondary degree (see Table 1). Similar to the analyses for secondary degree, there was substantial overlap in propensity scores (i.e., 96 percent of those in the post-secondary group had scores lower than 0.60 compared to 99 percent in the comparison group pool). After calculating propensity scores for the 5,960 offenders, the greedy matching procedure was used, once again, to match the offenders who earned a post-secondary degree in prison with those who did not. Using the same caliper of 0.10, matches were found for all 693 offenders who earned a post-secondary degree in prison. Table 3 presents the covariate and propensity score means for both groups prior to matching ("total") and after matching ("matched").

As shown in Table 3, the matching procedure reduced the bias in propensity scores between post-secondary and comparison group offenders by 98 percent. In the unmatched sample, there were five covariates that were significantly imbalanced. In the matched sample, however, none of the covariates had bias values greater than 20.

Analytical Procedures

In analyzing recidivism, survival analysis models are preferable in that they utilize time-dependent data, which are important in determining not only whether offenders recidivate but also when they recidivate. As a result, this study uses a Cox regression model, which uses both "time" and "status" variables in estimating the impact of the independent variables on recidivism. For the analyses presented here, the "time" variable measures the amount of time from the date of release until the date of first rearrest, reconviction, reincarceration, technical violation revocation, or December 31, 2010, for those who did not recidivate. The "status" variable, meanwhile, measures whether an offender recidivated (rearrest, reconviction, reincarceration for a new crime, and technical violation revocation) during the period in which s/he was at risk to recidivate. In the analyses presented below, Cox regression models were estimated for each of the four recidivism measures.

As noted above, the DEED data are compiled on a quarterly basis and, thus, do not provide information on the specific date(s) when offenders entered and/or exited employment. Because employment start date information would be needed to use Cox regression, multiple logistic regression was used to assess the impact of educational programming on obtaining employment. Considering that logistic regression assumes the lengths of follow-up periods do not vary among offenders, the follow-up period was capped at 24 months, or eight quarters, for all offenders (i.e., for the most recently released offenders, eight was the maximum number of quarters for which DEED data were available). Because the remaining employment variables (total numbers of hours worked, total wages earned, and hourly wage) were ratio-level measures, ordinary least squares (OLS) regression was used to estimate the impact of educational programming on these three outcomes.

Results

In Table 4, recidivism and post-release employment results are presented for offenders who earned secondary and post-secondary degrees in prison as well as for those in the comparison groups. Offenders who obtained a secondary degree had the same rearrest rate as prisoners in the comparison group, although they had slightly lower rates of reconviction and reincarceration for a felony offense. Secondary degree offenders had a higher technical violation revocation rate, however, than those in the comparison group. Offenders who earned a post-secondary degree in prison had lower rates of recidivism than their comparison group counterparts for all four measures.

Table 4. Recidivism and Employment by Educational Degree

Outcomes	*Secondary Degree*	*Secondary Comparison*	*Post-Secondary Degree*	*Post-Secondary Comparison*
Recidivism				
Rearrest	58.5%	58.5%	54.1%	59.3%
Reconviction	41.3%	43.1%	37.8%	43.4%
Reincarceration	17.3%	21.0%	14.6%	18.6%
Revocation	41.5%	37.8%	34.3%	38.4%
Employment				
Employment	59.5%	49.8%	71.0%	68.3%
Total Hours	885	767	1,255	1,057
Total Wages	$10,533	$9,082	$16,380	$13,432
Hourly Wage*	$11.91	$15.49	$12.05	$12.09
N	910	910	693	693

***** Hourly wage calculated only for offenders who obtained post-release employment

Post-release employment data show that 60 percent of offenders who earned secondary degrees in prison found employment within the first two years compared to 50 percent in the comparison group. The employment rate for offenders who earned post-secondary degrees (71 percent) was slightly higher than that of the prisoners in the comparison group (68 percent). Offenders in both educational degree groups fared better than their comparison group counterparts regarding total hours worked and total wages earned.

Among offenders who obtained employment, those who obtained a secondary degree had a lower hourly wage than their counterparts in the comparison group. There was no difference in hourly wage, however, for offenders who earned a post-secondary degree in prison and those in the comparison group.

These findings suggest that obtaining educational degrees in prison may have an impact on the outcomes measured, particularly post-release employment. It is possible, however, that the observed recidivism and employment differences are due to other factors such as time at risk, prior criminal history, discipline history, or post-release supervision. To statistically control for the impact of these other factors on reoffending, Cox regression models were estimated for each of the four recidivism measures. In addition, logistic and OLS regression models were estimated to assess the impact on post-release employment.

The Impact of Education on Recidivism

The results in Table 5 indicate that, controlling for the effects of the other independent variables in the statistical model, obtaining a secondary degree in prison did not have a significant effect on any of the four recidivism measures. It is worth noting, however, that although the effect for new offense reincarceration was not statistically significant at the .05 level, it did approach statistical significance ($p = .06$). The results also showed that the hazard ratio was significantly greater for all four recidivism measures for males, minority offenders, younger offenders, offenders with more prior supervision failures and convictions, offenders with a metro-area county of commitment, offenders with shorter lengths of stay in prison, and those who incurred institutional discipline convictions.

The results in Table 5 also suggest that, net of the effects of the other predictors in the model, earning a post-secondary degree in prison significantly decreased the risk of reoffending, lowering the hazard by 14 percent for rearrest, 16 percent for reconviction, and

24 percent for new offense reincarceration. Obtaining a post-secondary degree did not have a significant impact on technical violation revocations, although this finding approached statistical significance (p = .13).

Many of the significant predictors in the secondary degree analyses presented in Table 5 were also significant for the post-secondary degree analyses. Metro-area county of commit, however, was not a significant predictor in any of the models. In addition, intensive supervised release (ISR), work release, and participation in the Challenge Incarceration Program (CIP) lowered the risk of recidivism.

Table 5. Impact of Secondary and Post-Secondary Degrees on Time to First Recidivism Event

	Rearrest		*Reconviction*		*Reincarceration*		*Revocation*	
	SD HR	PSD HR	SD HR	PSD HR	SD HR	PSD HR	SD HR	PSD HR
Secondary Degree	0.994		0.982		0.817		1.107	
Post-Secondary Degree		0.860*		0.844*		0.759*		0.870
Male	1.701**	1.469**	1.943**	1.996**	2.512**	3.644**	1.996**	1.510*
Minority	1.386**	1.348**	1.264**	1.272*	1.466**	1.638**	1.412**	1.323**
Age at Release (years)	0.970**	0.967**	0.970**	0.968**	0.966**	0.969**	0.982**	0.975**
Prior Supervision Failures	1.094**	1.189**	1.092**	1.175**	1.094**	1.263**	1.053**	1.020
Prior Convictions	1.158**	1.056**	1.149**	1.052**	1.200**	1.073**	1.233**	1.267**
Metro Commit	1.379**	1.130	1.224**	0.891	1.255*	0.772	1.299**	1.074
Offense Type								
Property	1.167	1.085	1.101	1.030	1.117	0.997	0.917	1.021
Drugs	1.029	1.152	0.890	1.021	0.803	0.755	0.908	0.963
Criminal Sexual Conduct	0.444**	0.556**	0.347**	0.515**	0.454**	0.282**	1.346*	1.926**
Felony DWI	0.997	0.818	0.996	0.845	1.350	0.936	0.869	1.406
Other	1.123	0.898	1.069	0.907	1.029	0.569*	0.985	1.273
Admission Type								
Probation Violator	0.934	0.852	0.952	0.936	0.677**	0.602**	1.080	0.967
Release Violator	1.081	1.118	1.155	0.907	1.041	0.675	0.795	1.084
Length of Stay	0.974**	0.984**	0.974**	0.982**	0.977**	0.975**	0.986**	0.992
Institutional Discipline	1.076**	1.075**	1.062**	1.060**	1.071**	1.059*	1.094**	1.100**
CD Treatment	1.124	1.301	1.141	1.410	1.029	1.356	1.283	1.268
Sex Offender Treatment	0.571	0.860	0.331	0.914	0.516	1.515	0.921	0.912
Supervision Type								
ISR	0.926	0.715**	1.040	0.764*	0.966	0.760	2.019**	1.340*
Work Release	0.894	0.706**	0.964	0.781	0.779	0.690	2.128**	1.339*
CIP	0.385**	0.444**	0.484*	0.381**	0.562	0.220*	1.176	1.141
Discharge	1.396	1.015	1.416	1.665*	0.720	0.773		
Release Year	1.019	1.047	0.847*	0.896	0.658**	0.602**	0.941	1.053
N	1,820	1,386	1,820	1,386	1,820	1,386	1,752	1,331

Notes: SD = Secondary Degree; PSD = Post-Secondary Degree; HR = hazard ratio

** $p < .01$

* $p < .05$

The Impact of Education on Post-Release Employment

The results from the logistic regression models, shown in Table 7, reveal that obtaining a secondary degree in prison significantly increased the chances of securing employment within the first two years after release from prison by 59 percent. The odds of

Table 6. Logistic Regression Models for Post-Release Employment

Predictors	*Secondary Degree*		*Post-Secondary Degree*	
	Odds Ratio	SE	Odds Ratio	SE
Secondary Degree	1.587**	0.101		
Post-Secondary Degree			1.206	0.125
Male	1.351	0.218	0.594*	0.242
Minority	0.804	0.116	0.860	0.138
Age at Release (years)	0.979**	0.007	0.964**	0.008
Prior Supervision Failures	1.018	0.018	0.912	0.059
Prior Convictions	0.951	0.059	1.010	0.017
Metro Commit	0.750**	0.108	0.916	0.136
Offense Type				
Property	0.987	0.165	0.847	0.208
Drugs	0.748	0.167	0.574*	0.215
Criminal Sexual Conduct	0.789	0.203	0.874	0.269
Felony DWI	1.063	0.276	0.807	0.304
Other	0.860	0.168	1.046	0.230
Admission Type				
Probation Violator	1.549**	0.131	1.072	0.173
Release Violator	1.053	0.315	0.680	0.332
Length of Stay	1.004	0.005	1.008	0.005
Institutional Discipline	0.995	0.018	0.932**	0.023
CD Treatment	1.601**	0.155	1.832**	0.177
Sex Offender Treatment	1.218	0.354	1.686	0.384
Supervision Type				
ISR	1.581**	0.133	1.357	0.178
Work Release	7.670**	0.218	9.081**	0.328
CIP	5.778**	0.344	1.598	0.405
Discharge	0.963	0.343	0.749	0.372
Release Year	0.643**	0.103	0.679**	0.126
Constant		206.787		253.930
N	1,820		1,386	
Log-likelihood	2267.433		1517.245	
Nagelkerke R^2	0.165		0.177	

** $p < .01$
* $p < .05$

finding a job were significantly greater for younger offenders, probation violators, chemical dependency (CD) treatment participants, offenders released to ISR, offenders placed on work release, CIP participants, and those with an earlier release year. The odds were significantly less, however, for those with a metro-area county of commit.

Table 7. Impact of Secondary and Post-Secondary Degrees on Post-Release Employment

Predictors	*Total Hours*		*Total Wages*		*Hourly Wage*	
	SD	PSD	SD	PSD	SD	PSD
	B	B	B	B	B	B
Secondary Degree	116.596		1362.642		-0.443	
Post-Secondary Degree		176.387*		2649.196*		0.247
Male	110.347	-480.371**	3200.968	-2705.783	-11.051**	1.032
Minority	-177.580*	-312.905**	-4349.971**	-6193.005**	0.864	-1.740**
Age at Release (years)	-4.225	-6.552	-39.868	-42.210	-0.184	-0.085*
Prior Supervision Failures	-7.013	-5.806	127.626	-130.783	0.424	-0.027
Prior Convictions	-79.487	-96.701*	-1543.478**	-1497.041**	-0.230	-0.405
Metro Commit	-264.332**	-88.764	-2224.258	-727.374	1.860	-0.084
Offense Type						
Property	141.604	-270.743*	2267.045	-2698.761	-2.653	1.119
Drugs	108.482	-64.111	2573.237	153.443	-3.505	-0.571
Criminal Sexual Conduct	55.481	-200.669	1170.708	-4694.389	-0.031	-1.203
Felony DWI	321.133	-157.298	5121.191*	48.694	-3.602	-0.259
Other	-24.898	-9.928	-113.276	1960.952	-3.761	0.522
Admission Type						
Probation Violator	107.196	7.936	1189.582	804.647	-0.098	1.673*
Release Violator	-85.418	-109.167	-1080.260	-63.609	-4.891	-0.352
Length of Stay	7.235*	12.061**	117.508*	196.504**	0.057	0.062**
Institutional Discipline	-48.081**	-79.318**	-570.200**	-1144.693**	-0.587	-0.307**
CD Treatment	200.024	124.768	2064.623	1291.361	3.705	1.463
Sex Offender Treatment	-32.012	37.748	-301.818	824.921	16.340	1.715
Supervision Type						
ISR	283.891**	271.706*	3326.874*	2889.794	0.863	0.070
Work Release	860.134**	776.669**	8956.948**	9600.721**	9.749**	2.627**
CIP	1464.450**	478.938*	16029.020**	5325.057	1.657	3.359*
Discharge	267.795	-98.683	3598.602	-2672.773	0.421	-1.991
Release Year	-483.793**	-524.242**	-6050.838**	-8269.201**	-0.169	-2.045**
Constant	971895.767	1054137.617	12150000.000	16620000.000	360.652	4114.438
N	1,820	1,386	1,820	1,386	1,820	1,386
Adjusted R^2	0.120	0.145	0.099	0.136	0.008	0.043

Notes: SD = Secondary Degree; PSD = Post-Secondary Degree
** $p < .01$
* $p < .05$

The results also show that earning a post-secondary degree in prison did not significantly increase the odds of finding post-release employment. Similar to the results for

obtaining a secondary degree, the odds of finding employment were greater for younger offenders, CD treatment participants, offenders placed on work release and those with an earlier release year. The chances of securing post-release employment were significantly less for male offenders, drug offenders, and those with institutional discipline convictions. As shown in Table 7, obtaining a secondary degree did not have a significant effect on total hours worked, total wages earned, or hourly wage. The results further show that post-release employment was negatively associated with male offenders (hourly wage), minority offenders (total hours and total wages), prior convictions (total wages), metro commit (total hours), institutional discipline (total hours), and release year (total hours and total wages). Employment was positively associated, however, with felony DWI offenders (total wages), offenders placed on ISR (total hours and total wages), offenders placed on work release (all three measures), and CIP participants (total hours and wages).

In Table 7, the findings suggest that although earning a post-secondary degree did not have a significant impact on hourly wage, it significantly increased total hours worked and wages earned. Compared to those in the comparison group, offenders who obtained a post-secondary degree worked 176 more hours in the follow-up period, net of the effects of the control variables in the model. Moreover, controlling for the other covariates, these offenders earned $2,649 more in wages during the follow-up period than comparison group offenders.

Similar to results presented for secondary degree, post-release employment was negatively associated with male offenders (total hours), minority offenders (all three measures), younger offenders (hourly wage), prior convictions (total hours and total wages), property offenders (total hours), institutional discipline convictions (all three measures), and release year (all three measures). Conversely employment was positively related to longer

lengths of stay in prison (all three measures), ISR (total hours), work release (all three measures), and participation in CIP (total hours and hourly wage).

Conclusion

The results reported here suggest that earning a secondary degree in prison significantly improves an offender's chances of securing post-release employment. While obtaining a secondary degree may help offenders "get their foot in the door" with employers, it does not necessarily lead to better pay or more consistent employment. Rather, offenders who earned secondary degrees in prison did not work significantly more hours or earn higher overall wages than those in the comparison group. In contrast, earning a post-secondary degree in prison did not significantly improve an offender's odds of finding post-release employment, nor did it result in a higher hourly wage. Yet, offenders who earned these degrees in prison worked significantly more hours following their release to the community, resulting in a significant increase in total wages during the follow-up period.

There are likely a few reasons why offenders who earned post-secondary degrees were more successful at maintaining employment following their release from prison. First, a secondary degree generally focuses on basic skill development, whereas a post-secondary degree is geared more towards providing students with the knowledge required to succeed within a particular field or discipline. Second, there are likely differences in the types of jobs available to secondary-degree graduates versus those with a post-secondary degree. For example, offenders with post-secondary degrees may be more likely to find permanent positions that require higher levels of skill and education. Offenders with secondary degrees, on the other hand, may be more likely to find short-term, temporary employment.

Ensuring that offenders obtain employment following their release from prison is important for a number of reasons. Yet, when it comes to reducing recidivism, maintaining employment is what appears to be critical. Indeed, existing research suggests individuals are less likely to commit crime when they work more often (Uggen, 1999). This study showed that offenders who earned post-secondary degrees not only worked more hours, but they also earned more total wages, which may have reduced their economic need. Maintaining employment may also expand informal social control by giving individuals a greater stake in conformity and involvement in conventional activities, which inhibit opportunities for criminal behavior. Further, associating with others who are employed increases the likelihood that offenders will develop or maintain pro-social values, beliefs, and attitudes.

While the findings suggest that prison-based educational programming can produce positive recidivism and employment outcomes, it is worth noting the limitations with this study. First, because post-release programming data were not available, this study was unable to determine whether released offenders obtained educational degrees in the community during the follow-up period. Second, this study was unable to control for prior work history due to the absence of pre-incarceration employment data. Still, it is important to note that earning a secondary or post-secondary degree did not have a significant effect on hourly wage, which weakens the argument that the results observed here were due to the fact that offenders who earned degrees had more impressive prior work histories than offenders in the comparison group. If true, then it would be reasonable to expect that this pre-incarceration difference, if it exists, would result in a significantly higher hourly wage for offenders who earned secondary and post-secondary degrees, which was not the case.

Despite these limitations, the results suggest, on the whole, that more emphasis should be placed on increasing offender access to post-secondary educational opportunities. This is not to say, however, that increasing the availability of post-secondary educational programming should limit offender access to secondary education. On the contrary, although this study found that obtaining a secondary degree in prison did not significantly reduce recidivism, it did significantly elevate the odds of finding a job. Moreover, earning a secondary degree is critical insofar as it is a prerequisite to post-secondary educational enrollment.

Expanding the availability of post-secondary education for prisoners would be in step with the ever-increasing educational demands from employers. Compared to the population in general, released prisoners are generally at a disadvantage due not only to the educational and employment history deficits they often have, but also to the harmful effects that prior criminal history has on obtaining employment. While obtaining a post-secondary degree will not erase the stigmatizing mark of a criminal record, it can help make offenders more competitive in the labor market.

To be sure, investing more in prisoner educational programming, especially access to post-secondary education, may prove to be more costly in the short term. Over the long run, however, this investment may produce dividends by increasing offender employment and decreasing the extent to which offenders recidivate. When released prisoners maintain employment, they contribute to local, state and federal tax revenues. And, when offenders reoffend less often, they victimize fewer people and are less likely to consume costly criminal justice resources, especially prison.

References

Adams, K., Bennett, K.J., Flanagan, T.J., Marquart, J.W., Cuvelier, S.J., Fritsch, E., Gerber, J., Longmire, D.R., and Burton, V.S. (1994). A Large-Scale Multidimensional Test of the Effect of Prison Education Programs on Offenders' Behavior. *The Prison Journal*, 74(4):433-449.

Adams, K., Bennett, K.J., Flanagan, T.J., Marquart, J.W., Cuvelier, S.J., Fritsch, E., Gerber, J., Longmire, D.R., and Burton, V.S. (1994). A Large-Scale Multidimensional Test of the Effect of Prison Education Programs on Offenders' Behavior. *The Prison Journal*, 74(4):433-449.

Anderson, D. (1995). *Evaluation of the Impact of Correctional Education Programs on Recidivism.* Columbus, OH: Office of Management Information Systems Bureau of Planning and Evaluation, Ohio Department of Rehabilitation and Correction.

Aos, S., Miller, M., and Drake, E. (2006). *Evidence-Based Adult Corrections Programs: What Works and What Does Not.* Olympia: Washington State Institute for Public Policy.

Batiuk, M.E., Lahm, K.F., McKeever, M., Wilcox, N., and Wilcox, P. (2005). Disentangling the effects of correctional education: Are current policies misguided? An event history analysis. *Criminal Justice,* 5(1):55-74.

Batiuk, M.E., Moke, P., and Rountree, P.W. (1997). Crime and Rehabilitation: Correctional Education as an Agent of Change – A Research Note. *Justice Quarterly,* 14(1):167-180.

Berstein, J., and Houston, E. (2000). *Crime and Work: What We Can Learn from the Low-Wage Labor Market.* Washington, D.C.: Economic Policy Institute.

Bureau of Labor Statistics. (2012). Economic News Release: Table A-4. Employment status of the civilian population 25 years and over by educational attainment. Retrieved May 4th, 2012. (http://www.bls.gov/news.release/empsit.t04.htm).

Cho, R.M., and Tyler, J.H. (Forthcoming). Does Prison-Based Adult Basic Education Improve Postrelease Outcomes for Male Prisoners in Florida? *Crime & Delinquency.*

Farrington, D.P. (2005). Childhood origins of antisocial behavior. *Clinical Psychology & Psychotherapy,* 12(3):177-190.

Gottfredson, M. (1979). Treatment destruction techniques. *Journal of Research in Crime and Delinquency,* 16, 39-54.

Hagan, J., and McCarthy, B. (1997). Intergeneratioal sanction sequences and trajectories of street-crime amplification. In Gotlib, I.H. and Wheaton, B. (eds.) Stress and Adversity over the Life Course: Trajectories and Turning Points, pp. 73-90. Cambridge: Cambridge University Press.

Harlow, C.W. (2003). *Education and Correctional Populations. Special Report.* Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Huizinga, D., Loeber, R., Thornberry, T.P., and Cothern, L. (2000). *Co-Occurrence of Delinquency and Other Problem Behaviors. Juvenile Justice Bulletin.* Washington, DC: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention.

Lillis, J. (1994). Prison Education Programs Reduced. *Corrections Compendium,* 19(3):1-4.

Lipton, D.S., Martinson, R., and Wilks, J. (1975). *The Effectiveness of Correctional Treatment: A survey of treatment evaluation studies.* Albany, NY: New York Office of Crime Control Planning.

Lockwood, S., Nally, J.N., Ho, T., and Knutson, K. (2012). The effect of correctional education on postrelease employment and recidivism: A 5-year follow-up study in the State of Indiana. *Crime & Delinquency,* DOI: 10.1177/0011128712441695.

Maguin, E., and Loeber, R. 1996. Academic performance and delinquency. In *Crime and Justice: A Review of Research,* vol. 2, edited by M. Tonry. Chicago, IL: University of Chicago Press.

Martinson, R. (1974). What works? Questions and answers about prison reform. *The Public Interest,* 34, 22-54.

Minnesota Department of Corrections. (2013). *Performance Report: Fiscal Year 2012.* St. Paul, MN: Minnesota Department of Corrections.

(http://www.doc.state.mn.us/publications/legislativereports/documents/FY10PerformanceReport.pdf)

Moffitt, T.E. (1993). Adolescent-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review,* 100(4):674-701.

Palmer, T. (1978). *Correctional Intervention and Research: Current Issues and Future Prospects.* Lexington, MA: Lexington Books.

Pew Center on the States. (2008). One in 100: Behind Bars in American 2008. Washington, DC: The Pew Charitable Trusts.

Steurer, S.J., Smith, L., and Tracy, A. *Three State Recidivism Study*. Landham, MD: Correctional Education Association.

Tewksbury, R. and Taylor, T.M. (1996) The Consequences of Eliminating Pell Grant Eligibility for Students in Post-Secondary Correctional Education Programs. *Federal Probation*, 60(3): 60–3.

Tolbert, M. (2012). A Reentry Education Model: Supporting Education and Career Advancement for Low-Skill Individuals in Corrections. Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education. (http://www2.ed.gov/about/offices/list/ovae/pi/AdultEd/reentry-model.pdf)

Uggen, C. (1999). Ex-offenders and the conformist alternative: A job quality model of work and crime. *Social Problems* 46: 127-151.

Van Voorhis, P., and Brown, K. (1996). *Evaluability assessment: A tool for program development in corrections*. Report. Washington, D.C.: National Institute of Corrections.

Visher, C.A., LaVigne, N., and Travis, J. (2004). *Returning Home: Understanding the Challenges of Prisoner Reentry. Maryland Pilot Study: Findings from Baltimore.* Washington, D.C.: Urban Institute, Justice Policy Center.

Western, B., Kling, J.R., & Weiman, D.F. (2001). The Labor Market Consequences of Incarceration. *Crime & Delinquency* 47(3):410-427.

Western, B., & Pettit, B. (2010). *Collateral Costs: Incarceration's Effect on Economic Mobility*. Pew Charitable Trusts.

Wholey, J.S. (1979). *Evaluation: Promise and Performance.* Washington, D.C.: The Urban Institute.

Wilson, D.B., Gallagher, C.A., and MacKenzie, D.L. (2000). A Meta-Analysis of Corrections-Based Education, Vocation, and Work Programs for Adult Offenders. *Journal of Research in Crime and Delinquency*, 37(4):347-368.