

Meta regression analysis framework: the effectiveness of correctional education in reducing recidivism

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Abstract

There have been a number of meta-analyses that look at the effect of prison rehabilitation programs, including correctional education, on recidivism (Lipton, Martinson, and Wilks (1975), Wilson, Gallagher, and MacKenzie (2000), MacKenzie (2006), and Aos, Miller, and Drake (2006)) . These meta-analyses had different results. Davis *et al.* (2013) report that

“... early reviews of correctional education programs administered to adults by Lipton, Martinson, and Wilks (1975) found inconclusive evidence to support their efficacy. The lack of consistent positive effects contributed to the popular belief that “nothing works” in prisoner rehabilitation; however, this conclusion may have been premature, given that appropriate analysis techniques had not been developed. More recent reviews using meta-analysis techniques question the conclusions of the earlier work, finding evidence of a relationship between correctional education program participation before release and lower odds of recidivating after release (pg. 8).

Davis *et al.* (2013) is the most recent meta-analysis of the effectiveness of correctional education on recidivism. Unlike the earlier studies, Davis *et al.* examine three output measures - recidivism, employment, and achievement test scores. These authors used fifty studies published between January 1, 1980 and December 31, 2011. Their main finding was that correctional education reduces post-release recidivism and is cost-effective. In addition the study found that prison education may increase post-release employment. However, Davis *et al.* did not report how differences in study design contributed to differences in effectiveness stated in each of the fifty studies.

This paper outlines a framework for a proposed meta-regression analysis that will bring to light the differences between the fifty studies included in the Davis *et al.* (2013) meta-analysis, and how these lead to differences in the relative effectiveness of correctional education programs.

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Introduction

Much has been written about the contribution of correctional education to post-release outcomes for ex-prisoners, such as improving employment opportunities (Cho and Tyler 2010; Raphael 2010) and discouraging offending behaviours (Kling & Krueger 2001; Steurer et al. 2001; Batchelder & Pippert 2002; Social Exclusion Unit Great Britain 2002; Lochner & Moretti 2004; Chavez & Dawe 2007; Anders & Noblit 2011; Nally et al. 2012). For example, Cho and Tyler (2010) reported that prisoners, especially minorities, who enrolled in adult basic education classes, and did not voluntarily withdraw, have higher employment rates. Specifically, 66 percent of prisoners who studied adult basic education course in prison were employed within one year of release compared with 62 percent of prisoners who did not. Raphael (2010), using nationally representative survey data on federal and state inmates in the US, reported a 7.1 percentage point difference between the employment rates of education program participants and those who did not participate.

Nally et al. (2012), in their study of all-aged US prisoners, found that 29.7 percent of prisoners who studied whilst in prison re-offended compared with 67.8 percent of prisoners who did not study; Anders & Noblit (2011), using data on US prisoners aged 18 to 25 years, reported recidivism rates of 19 percent and 49 percent for prisoners who studied and those that did not, respectively.

Davis et al. 2013, in their systematic review of fifty studies of the effectiveness of correctional education, found that study in prison unequivocally reduces post-release recidivism (all fifty studies) and may increase post-release employment (one of nineteen studies). Better employment and offending outcomes auger well for the successful reintegration of offenders into their communities as well as producing cost savings into the future for justice authorities and social welfare services.

The logic behind these results is that education reduces the propensity to commit crime in two ways (Lochner and Moretti 2004). First, education increases post-release opportunities and raises the cost of time spent in prison (Riddell 2006: 21). Second, education makes individuals less impatient (low time discount rates) and more risk averse. High time discount rates are commonly accepted as the norm for individuals with a propensity to crime (Torre & Wraith 2012).

The contribution of study in prison to reduced recidivism appears to hold irrespective of how recidivism is defined. The types of recidivism measures in the literature are various. In its most uncomplicated form, it refers to the cessation of offending behaviour which can include offending, being charged, being sentenced and being incarcerated. For example, studies that use longitudinal incarceration data might refer to prisoners who reappear in the prison system more than once as recidivists and those that do not as successfully re-integrated into the community. Some studies suggest a revolving door of offenders leaving and re-entering the prison system as typical of recidivists. Other studies suggest a longer time frame in which to judge whether or not the offending behaviour has stopped. For example, Petersilia (2009) suggests that reduced recidivism can only be judged by at least seven years of lack of offending. A US study by Steurer et al. (2001) found that re-arrest, re-conviction and re-incarceration rates (using criminal history data) were lower for those who undertook education and training while incarcerated compared with non-participants.

In most cases, these studies used justice system data to examine recidivism and its link to prior prison study. Few studies have been able to relate reduced recidivism to post-release employment information for ex-prisoners. The study by Nally et al. (2012) is one such study. Here the authors have been able, through collaboration between corrective services and workforce development public agencies, to access identified post-release employment data (primarily occupation and income) on a cohort of ex-prisoners together with the prisoner/ex-prisoner socio-demographic and

offence information. Thus, the authors were able to report on the links between in-prison study and both recidivism and post-release employment.

Generally studies of post-release outcomes link the attainment of skills through in-prison study directly to employability and hence to reduced recidivism. However, there is also an indirect link summarised by Anders and Noblit (2011) as the effects of in-prison study participation on reducing opportunities to incur infractions (misbehaviour inside prison). Such pre-release transgressions can jeopardise parole or early release and might also jeopardise opportunities for employment.

There have been a number of meta-analyses that look at the effect of prison rehabilitation programs, including correctional education, on recidivism (Lipton, Martinson, and Wilks (1975), Wilson, Gallagher, and MacKenzie (2000), MacKenzie (2006), Aos, Miller, and Drake (2006) and Davis et al. (2013)).

This paper develops a framework for a meta-regression analysis of the fifty studies identified in the Davis et al. (2013) review. This analysis which will follow the 2013 guidelines for reporting meta-regression analyses (Stanley et al. 2013). The framework presented in this paper describes the selection of studies to be included in the analysis and summarises the next steps.

Literature review

The fifty studies listed in Table 1, with 71 effect size estimates, were published between 1980 and 2012. A frequency distribution of studies by publication date is shown in Figure 1.

Figure 1: Frequency distribution of studies by publication date

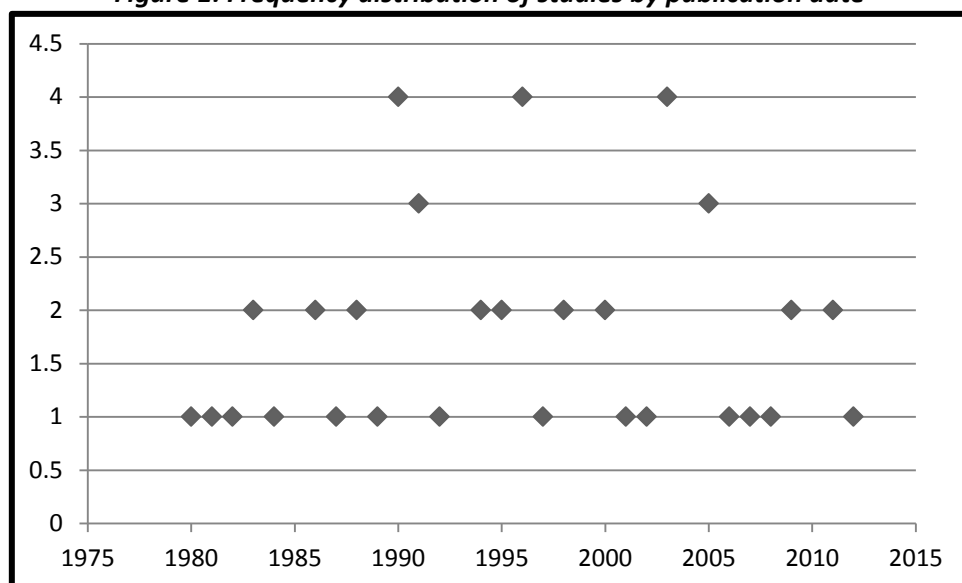


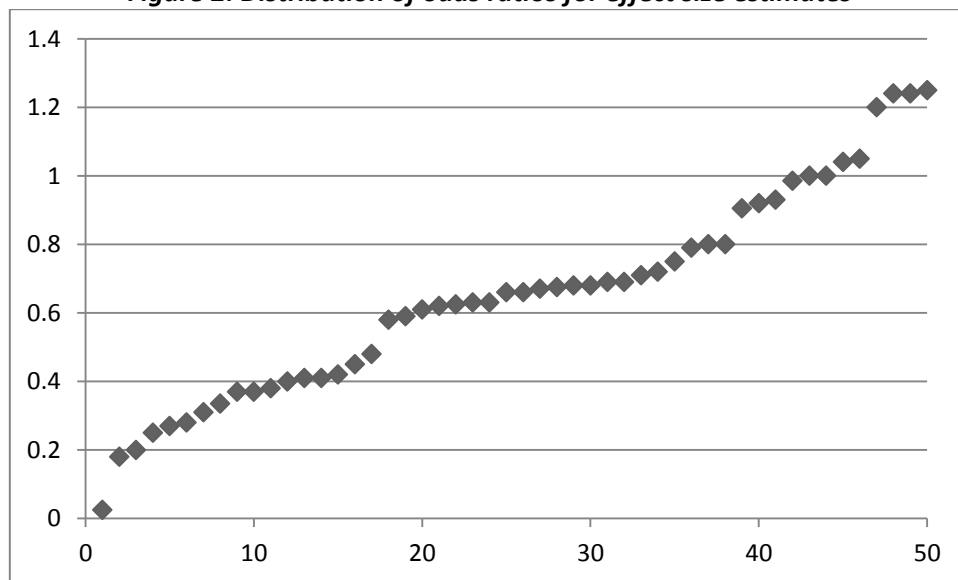
Table 1 provides an overview of these 50 studies. Some authors are listed more than once (column 2). The locations of the studies (column 4) are in the United States (US), either a single or a few states or across all states in the case of analysis of outcomes from imprisonment in federal prisons. Table 1 also shows heterogeneity in the recidivism definitions (column 5) – not all refer to re-incarceration and those that do consider return to prison within a variety of post-release period lengths of time.

Most of the studies ($n = 41$) examine the contribution of prison education to reducing re-incarceration rates alone or with other recidivism measures. Four of the studies consider parole violation or revocation as the recidivism measure and one study considers successful parole (non-recidivism). Re-arrest is considered in five studies although some of the studies that report on re-incarceration also report on re-arrest. One study has not defined the recidivism measure.

Finally, Table 1 provides the odds ratios for each of the 71 effect sizes (column 6) from the fifty studies included in the Davis et al. (2013) meta-analysis. These odds ratios can be interpreted as the odds of recidivating for ex-prisoners who studied as a percentage of the odds of recidivating for ex-prisoners who did not study in prison. Odds ratios less than one suggest that correctional education is beneficial to post-release reintegration and odds ratios greater than one suggest otherwise.

Figure 2 presents these odds ratios from the lowest value of 0.025 to the highest value of 1.25. Eight of the fifty studies had average odds ratios above 1.

Figure 2: Distribution of odds ratios for effect size estimates



Next steps

This framework is a starting point.

The next steps (Stanley et al. 2013) will include:

1. Coding information from each of the 71 estimations. A second coder and co-author will participate in this research. This information includes:
 - The effect sizes and their standard errors
 - Variables to denote the type of models used to generate the effect size estimations
 - Variables to denote year and location of study
 - Dummy variables to denote omitted variables
 - Dummy variables to denote type of publication and data, and multiple authorship
2. Testing for publication bias
3. Running and interpreting the meta-regression analysis

Table 1: Studies included in the Davis et al. (2013) meta-analysis

Study no.	Author	Year of Publication	Location	Definition of Recidivism	Odds Ratios for Effect Size Estimates (Davis et al. 2013 Figure 3.1 pg 30)
1	Adams, Kenneth, et al.	1994	Texas, US	Re-incarceration in the same state within 14-36 months of release.	.85-.96
2	Allen, Robert	2006	15 US States	Re-arrest, re-conviction or re-incarceration within 3 years of release	.91-1.17
3	Anderson, Dennis	1982	Illinois, US	Parole violation within 2 years	.37
4	Anderson, Dennis	1991	Midwestern States, US	Re-incarceration due to parole violation, commitment of new crime, or being absent without permission within 1 year of release	.69
5	Anderson, Stephen	1995	Ohio, US	Re-incarceration in the same state within 2 years of release	.92
6	Batiuk, Mary	2005	Ohio, US	Re-incarceration in the same state within 13.5 years of release	.38-.98
7	Blackburn, Fredrick	1981	Maryland, US	Parole violation or arrest for new crime within 8 years of release	.42
8	Blackhawk Technical College	1996	Wisconsin, US	Re-incarceration or revocation of parole within 3-36 months of release	1.05
9	Brewster & Sharp	2002	Oklahoma, US	Re-incarceration in the same state within 7 months; 7 months to 6 years; or 2 years of release	.73-1.24
10	Burke & Vivian	2001	Mass., US	Re-incarceration in the same facility within 1 year of release	.37
11	Castellano	1996	Illinois, US	Re-incarceration in the same state within 1 year of release	.28
12	Clark	1991	New York, US	Re-incarceration in the same state within 1 year of release	.45
13	Coffey	1983	Kentucky, US	Re-incarceration in the same state within 2 years of release	1.2
14	Cronin	2011	Missouri, US	Re-incarceration in the same state within 2 years of release	.69

15	Davis & Chown	1986	Oklahoma, US	Re-incarceration in the same state within 1-54 months of release	1.25
16	Dickman	1987	Michigan, US	Re-incarceration within 1 year of release	.66
17	Downes	1989	New Mexico, US	Successful completion of parole within 2 years of release	1.24
18	Gaither, C	1980	Texas, US	Re-incarceration in the same state within 7 years of release	0.18
19	Gordon	2003	West Virginia, US	Parole revocation within 2 years	.02-.03
20	Harer	1995	US	Revocation of parole or re-arrest within 3 years of release from federal prisons	.61
21	Holloway	1986	Ohio, US	Re-incarceration in the same state within 1 year of release	.72
22	Hull	2000	Virginia, US	Re-incarceration in the same state within 5-20 years of release	.4-.42
23	Johnson	1984	Florida, US	Re-arrest in the same state within 2 years of release	.75
24	Kansas Dept of Corrections	2003	Kansas, US	Re-incarceration in the same state within 10 years of release	.93
25	Kelso	1996	Wash., US	Re-incarceration in the same state within 5 years of release	.25-.42
26	Langenbach	1990	Oklahoma, US	Re-incarceration in the same state within 1 year of release	.4
27	Lattimore	1988	Wash., US	Re-incarceration or re-arrest within 4 years of release	.58
28	Lattimore	1990	North Carolina, US	Re-arrest in the same state within 2 years of release	.66
29	Lichtenberger	2007	Virginia, US	Re-incarceration in the same state within 1 year of release	.63
30	Lichtenberger	2009	Virginia, US	Re-incarceration in the same state within 3.5 years of release	.79
31	Lichtenberger	2011	Virginia, US	Re-incarceration in the same state within 3 years of release	.8
32	Lockwood	1991	New York, US	Re-incarceration in the same state within 2 years of release	.68
33	Markley	1983	Arizona, US	Re-incarceration in the same state	1
34	Maryland Department	1988	Maryland, US	Return to the state department of corrections for a new conviction within 3 years of release	.38
35	McGee	1997	Illinois, US	Re-incarceration in the same state within 79 months of release	.25

36	Nally	2012	Indiana, US	Parole, probation, commitment or re- incarceration in the same state within 3 years	.27
37	New York State	1992	New York, US	Re-incarceration within 1 year of release	.45-.8
38	Nuttall	2003	New York, US	Re-incarceration in the same state within 3 years of release	.8
39	O'Neil	1990	Alabama, US	Details about the measure were not reported	.31
40	Piehl	1994	Wisconsin, US	Re-incarceration in the same state within 1 to 60 months of release	.6-.66
41	Ryan	2000	Penn., US	Re-arrest or parole violation in the same state within 1-5 years of release	.48
42	Saylor & Gaes	1996	US	Revocation of parole or re-arrest for new offense within 1 year of release from federal prisons	.67
43	Schumacker et al.	1990	Midwestern States, US	Violations, arrests, and re-incarceration within 1 year	.63-.79
44	Smith	2005	Penn., US	Re-incarceration in the same state within 1 year of release	.84-1.64
45	Steurer, Smith & Tracy	2003	Maryland, Minnesota and Ohio, US	Re-incarceration in the same state within 3 years of release	.61-.74
46	Torre & Rine	2005	New York, US	Re-incarceration in the same state within 3 years of release	.2
47	Van Stelle, Lidbury & Moberg	1998	Wisconsin, US	Re-incarceration within 2 to 5 years after release	.41
48	Washington State	1998	Wash., US	Re-arrest in the same state within 6 months of release	1
49	Winterfield	2009	Indiana, Mass. and New Mexico, US	Re-incarceration in the same state within 1 year of release (Indiana), Re-arrest in the same state within 1 year of release (Mass. and New Mexico)	.44-.8

50	Zgoba, Haugebrook & Jenkins	2008	New Jersey, US	Re-arrest within 6-7 years of release	.59
					Pooled effect = 0.64

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