

Offender employment: A research summary

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Introduction

This article is an abstract of the original Research Report 90 and presents a summary of the research conducted by Paul Gendreau, Claire Goggin and Glen Gray. For a detailed description of their research methods and instruments, see the original report posted on the Correctional Service of Canada website.

Background

Of all the predictors of offender recidivism, the employment/education domain (hereafter known as employment) is probably the most prosaic. Indeed, it has engendered little debate compared to other predictors such as social class of origin, personal distress and personality (e.g., psychopathy).² It has been taken for granted that the employment domain is a moderately good predictor of recidivism. Meta-analyses of the juvenile offender literature have confirmed this. In these reviews, however, it should be noted that the employment domain was made up almost entirely of educational achievement items. A meta-analysis of the general adult offender prediction literature has essentially corroborated the juvenile results. This meta-analysis had a social achievement domain in which a majority of the effect sizes were employment/education predictors. The social achievement domain ranked in the top third of predictors behind companions, criminal history, criminogenic need, and anti-social personality. Furthermore, surveys of adult male and female offenders have also revealed that employment/vocational/financial needs are pre-eminent.³ Additionally, Zamble found that financial gain was a primary motive for a quarter of his offender sample.⁴

Almost all adult offender risk instruments include an employment item. However, to our knowledge, only two risk measures, the Level of Service Inventory-Revised⁵ and the Case Needs Identification and Analysis (CNIA) protocol⁶ have explored the area in any depth. The LSI-R has 10 items in this regard, the CNIA has 35. Given that the Gendreau et al.,⁷ meta-analysis did not examine separately the employment domain predictors and the fact that one of the major risk/need assessment protocols in corrections (the CNIA) is currently

undergoing significant revisions, to that end, a reassessment of the predictive validity of the employment domain is timely. Thus, the purpose of the present study is as follows:

1. To update the Gendreau, et al., meta-analysis vis-à-vis the education/employment items of that study's social achievement domain.
2. To review the psychological test literature for recent psychometric instruments that measure the employment construct.

Method

Sample of studies

A literature search for relevant studies published between January 1994 and December 1997 was conducted using the ancestry approach and library abstracting services. These studies were added to the existing database reported in the Gendreau, et al.,⁸ meta-analysis. As well, studies from two recent meta-analyses of the predictors of recidivism for mentally disordered and sexual offenders were added.⁹ For a study to be included, the following criteria applied:

1. Data on the offender was collected prior to the recording of the criterion measure. A minimum follow-up period of six months was required. If a study reported more than one follow-up period, data from the longest interval was used.
2. Treatment studies that directly attempted to change offender attitudes or behaviour were not included.
3. Recidivism had to be recorded when the offender was an adult (18 years or older).
4. The criterion had to have a no-recidivism category. Studies that used "more" vs. "less" crime categorizations were not used. The criterion measures were arrest, conviction, incarceration, or probation/parole violation.
5. Each study was also required to report statistical information that could be converted into a common metric or effect size (i.e., Pearson r).

Design and procedure

Coding the studies

For each study the following information was recorded:

1. Study characteristics: published document and decade of publication.
2. Study sample characteristics: age, gender, race, type of offender, intake risk level, and history of violent offence.
3. Study methodology: sample size, type of outcome criterion, length of follow-up, extreme groups design, subject attrition, adequate description of subjects, assessment/reporting of multiple recidivism outcomes, and recidivism data assessed by raters blind to assessment of predictors.

Predictor categories

The employment predictor domain was first divided into 7 categories, which were comprised of the following constituents:

1. Employment history — frequently unemployed, ever fired, unstable work history.
2. Employment needs at discharge — no employment plans after release, poor job motivation, employment need.
3. Employment status at intake — unemployed at intake, not employed prior to incarceration.
4. Financial — poor financial management, major financial problems, low income.
5. Education/employment — LSI-R education/employment domain, academic/vocational.
6. School achievement — fewer years of education, less than grade 12, poor school achievement.
7. School maladjustment — ever suspended/expelled, school discipline problems.

Effect size calculation

The procedures for calculating effect sizes in predictor studies have been detailed elsewhere.¹⁰ Briefly, Pearson product-moment correlation (r) coefficients were produced for all predictors in each study that reported a numerical relationship with a criterion. When statistics other than Pearson r were presented, their conversion to r was undertaken using the appropriate statistical formula. Where a p value of greater than .05 was the only reported statistic, an r of .0 was assigned.

Next, the obtained correlations were transformed using Fisher's table. Then, according to the

procedures outlined by Hedges and Olkin,¹¹ the statistic z^{\pm} , representing the weighted estimation of Pearson r , was calculated for each predictor category by dividing the sum of the weighted z_r s per predictor category by the sum of each predictor's sample size minus three across that category.

In order to determine the practical utility of various predictors relative to each other, the common language (CL) effect size indicator was also employed.¹² The CL statistic converts an effect size into the probability that the value of a predictor-criterion relationship sampled at random from the distribution of one predictor category (e.g., education/employment) will be greater than that sampled from another distribution (e.g., offender SES). The CL statistic requires mean and standard deviation values for calculation; thus it is not applicable to the z^{\pm} statistic which lacks variance.

Significance testing

To determine which of the predictor categories predicted criterion significantly different from zero, the mean z^{\pm} values for each group were multiplied by the value of $(\frac{N-3k}{2})^{1/2}$, where N = the number of subjects per predictor category and k = the number of predictors per category.

A one-way analysis of variance (ANOVA) and the Student Newman Keuls (SNK) test using Pearson r were also employed to assess differences in the relationship of moderator variables (i.e., length of follow-up, study characteristics, etc.) with outcome criteria. The CL statistic does not involve significance testing.

Results

Study characteristics

We identified 67 studies as suitable for the meta-analysis which generated 200 effect sizes. For those variables where at least 50% of the studies reported information on sample and study characteristics, the results were as follows: (a) 82% of effect sizes came from studies which assessed males only or mixed gender samples, (b) 76% of effect sizes were associated with adult or mixed adult/juvenile samples, (c) 69% of studies came from the 1980s or 1990's, (d) 62% of effect sizes were associated with subjects of mixed risk levels, (e) 16% of effect sizes were associated with offenders with a violent or sexual offence history, (f) 91% of effect sizes came from studies with a 1 year or greater follow-up period, (g) 75% of outcomes included conviction, incarceration, or a combination thereof, and (h) 82% of effect sizes were associated with non-violent recidivism.

Table 1

Mean effect sizes for predictor domains: First categorization

Predictor (k)	N	M r	CI	M z ⁺	CI
1. Employment history (34)	23,415	.14(.10)	.11 to .17	.18*	.17 to .19
2. Employment needs at discharge (16)	4,961	.15(.12)	.09 to .21	.19*	.16 to .22
3. Employment status at intake (28)	12,990	.11(.13)	.06 to .16	.10*	.08 to .12
4. Financial (27)	14,457	.13(.10)	.09 to .17	.10*	.08 to .12
5. Education/employment (20)	9,142	.26(.18)	.18 to .34	.10*	.08 to .12
6. School achievement (60)	37,245	.10(.10)	.07 to .12	.10*	.09 to .11
7. School maladjustment (15)	11,822	.14(.08)	.10 to .19	.11*	.09 to .13
Total (200)	114,032	.13(.12)	.12 to .15	.12*	.11 to .13

Note: k = effect sizes per predictor domain; N = subjects per predictor domain; M r = mean Pearson r (SD); M z⁺ = [(z) × (n - 3)] ÷ (n - 3)^{1/2} where n = number of subjects per effect size; CI = confidence interval about the mean Pearson r and mean z⁺.

* p < .05.

Meta-analysis: predictive validities

The sixty-seven studies generated 200 effect sizes or individual correlations between an employment or education predictor and a criterion (i.e., recidivism). There were seven predictor categories (see Table 1). The results in Table 1 are interpreted in the following manner. Reading from the left of row 1, the employment history category produced 34 effect sizes involving 23,415 offenders. The mean correlation (r) was .14 and the confidence interval (CI) about mean r ranged from .11 to .17. The weighted r (z⁺) for the same category was .18 and its CI ranged from .17 to .19. Each of the seven predictor categories predicted recidivism significantly greater than 0.

When examining mean r, the CIs for the education/employment predictor category (5) did not overlap with those of predictor categories 6 or 7, and overlapped only minimally with those of categories 1, 3, 4, and 6. In the case of weighted r (z⁺), the

employment needs at discharge predictor category did not overlap with predictor categories 3 to 5 and 6 to 7. The drop in value from a mean r of .26 to a mean z⁺ of .10 for the education/employment category reflects the fact that three effect sizes within that group had large sample sizes and produced weak correlations with the criterion (r < .12).

As outlined in Table 2, the common language effect size indicator (CL) demonstrated that the education/employment predictor category produced higher correlations with the criterion than did its counterparts, ranging from 66% of the time compared with employment needs at discharge to 83% of the time compared with offender SES. Employment needs at discharge produced higher correlations with the criterion than did seven other predictor categories 55% to 68% of the time. Of the two school-based predictors, school maladjustment outperformed school achievement 61% of the time.

Common language effect size indicators^a

	EN	SM	EH	F	ES	PP	SA	O
EE	66	73	71	73	74	78	81	83
EN		56	55	57	59	64	58	68
SM			51	52	54	61	61	63
EH				52	55	60	62	64
F					53	58	59	61
ES						55	56	58
PP							50	52
SA								52

^a Common language effect size indicators for mean r values. Predictor domains are listed on the left in rank order of number of favourable comparisons. EE = education/employment; EN = employment needs at discharge; SM = school maladjustment; EH = employment history; F = financial; ES = employment status at intake; PP = probation/parole schooling/training; SA = school achievement; O = offender SES.

Table 3

Mean effect sizes for predictor domains: Second categorization					
Predictor (k)	N	M r	CI	M z^+	CI
Education (75)	49,067	.11(.10)	.08 to .13	.11*	.10 to .11
Employment (105)	55,823	.13(.11)	.11 to .15	.14*	.14 to .16
Education/employment (20)	9,142	.26(.18)	.18 to .34	.10*	.08 to .12
Total (200)	114,032	.13(.12)	.12 to .15	.12*	.12 to .13

Note: k = effect sizes per predictor domain; N = subjects per predictor domain; M r = mean Pearson r (SD); M z^+ = $[(z) \times (\underline{n} - 3)] \div (\underline{n} - 3)^{1/2}$ where \underline{n} = number of subjects per effect size; CI = confidence interval about the mean Pearson r and mean z^+ .

* $p < .05$.

The predictors listed in Table 1 were then collapsed into three categories: education, employment, and education/employment combined. The results are described in Table 3.

For mean r , the CIs for the education/employment category do not overlap with the other two groups. Using weighted mean r values (z^+), however, the employment category CIs do not overlap with the education or combined education/employment categories.

The CL index indicated that the education/employment predictor category produced higher correlations with the criterion than employment and education 74% and 79% of the time, respectively.

Meta-analysis: moderators

An analysis of the relationship between mean effect size per predictor category ($k = 9$) by study moderators was also conducted, resulting in few meaningful comparisons. For example, mean effect sizes did not differ by any of the study descriptors (i.e., journal, report, or book, published or not, study decade) or offender demographic characteristics (i.e., age, race, or gender). For all comparisons, $F < 1$.

With regard to study characteristics, the use of high, low, or mixed risk samples resulted in no difference in mean effect size [$F(2, 190) \leq 1$]. Given the limited number of effect sizes associated with designated offender populations (i.e., sex offenders ($k = 30$) versus mentally disordered offenders ($k = 16$) versus all others ($k = 168$)), no comparison of average effect size was attempted. Skewing of the distribution of effect sizes associated with offenders with a history of violence ($k = 34$) versus those without ($k = 167$) also prevented further analysis.

Several methodological variables, including a composite index of quality, were also examined. None showed a significant relationship with effect size, with one exception. That is, effect sizes associated

with an adequate description of subjects (i.e., details on age, race, and gender) were significantly lower than those generated by studies where demographic data was not provided [$F(1, 206) = 7.63, p < .05$].

In addition, effect sizes generated by studies that used a follow-up period of less than or equal to 2 years ($r = .15$) or greater than 5 years ($r = .15$) were significantly higher than those from studies with an “in-between” length of follow-up ($r = .10$) [$F(2, 206) = 4.28, p < .05$]. Similarly, average effect sizes associated with probation/parole violation ($r = .19$) or incarceration ($r = .19$) were significantly greater than those of all other types of outcome criteria [$F(4, 189) = 5.63, p < .05$].

Assessment protocols

In addition to the LSI-R and the CNIA, nine potentially useful “employment” assessment protocols were identified. They are the Australia Work Ethic scale, the Awareness of Limited Opportunity, the Employment Checklist, the Intrinsic Job Motivation scale, the Maladaptive Behavior Record, the Occupational Self Efficacy Scale, the Value of Employment, the Work Beliefs scale, and the Work Involvement scale.

Discussion

This meta-analysis confirmed the utility of the employment predictor domain. The mean effect sizes for both the unweighted and weighted r values (.13 and .12 respectively) were almost identical to the social achievement predictor domain results reported in Gendreau, et al.¹³ In that study, 67% of the social achievement effect sizes ($k = 112$) were in the employment domain which, in turn, produced a mean r and z^+ value of .15 and .13, respectively. Given that the present database consists of 200 effect sizes and 114,032 offenders, the employment predictor domain is solidly established as a moderately strong predictor of recidivism.

Further research may establish that the results reported here have underestimated the predictive potential of the employment domain. Historically, the standard approach to enquiring about employment type questions in offender risk measures has been to limit questions to basic grade achieved/employment history items. Rather, more attention should be focused on assessing the offenders' values, beliefs, satisfactions, etc. with employment and related skill acquisition. In effect, we are advocating that this domain be considered in a much more dynamic fashion similar to what has been argued for the conceptualization of IQ with offenders. In support of this view, inspection of our database revealed that these few items that assessed "non-rewarding work", "poor job motivation", etc. sometimes produced r 's greater than .20. Indeed, in one large scale follow-up of offenders, a measure of work beliefs compared to a wide range of predictor domains, generated the strongest correlations with recidivism.

Finally, it should be noted that the present database contained very few studies on female and native samples. Our review of the studies on females indicated some inconsistencies. For example, in one study, the employment domain was a significant predictor of recidivism, with results similar to that of males. On the other hand, while Lambert and Madden¹⁴ reported sizeable correlations of employment with recidivism, Bonta et al.¹⁵ did not. There were two studies on natives,¹⁶ and for whatever reason, the mean r value obtained for non-natives was higher than for natives ($r = .26$ vs $.18$). Obviously, much more research is needed regarding gender and race.

Recommendations: CNIA

The employment domain of the CNIA consists of 6 principle components and 10 sub-components. The database in this meta-analysis substantiates

the continued use of the first three indicators in the education/skills sub-component, five of the indicators in the history sub-component, as well as all of the indicators in the dismissed/departure, economic gain, and the history (from the interventions principal component) sub-components. Unfortunately, this meta-analysis did not contain effect sizes that addressed the content of the other CNIA employment indicators.

Recommendations regarding possible revisions of the employment domain of the CNIA reflect, in part, clinical wisdom as well as the meta-analysis. They are:

1. Continue to use the above-noted indicators, although some judicious pairing (e.g., choose one of "less than grade 8" or "less than grade 10", etc.) would be helpful. Also, review the necessity of including 35 indicators in the employment domain.
2. Add an item or two on school maladjustment factors.
3. There is a wealth of useful items in some of the "employment" assessment protocols located in our review. Serious consideration should be given to adapting several items from the following scales: Australia Work Ethic, Intrinsic Job Motivation, Occupational Self Efficacy Work Beliefs, and Work Involvement.
4. The final recommendation is controversial. The logic, albeit tenuous, is as follows. The employment domain is a useful predictor of recidivism. Good employment skills are necessary for a successful pro-social re-integration into society. A huge amount of research has shown that the best predictor of job success, by far, is the General Aptitude Test Battery. Nevertheless, these measures would provide information that would assist the case management process considerably regarding offenders' rehabilitation. ■

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- ⁹ Bonta, J., Law, M., & Hanson, K. (1998). The prediction of criminal and violent recidivism among mentally disordered offenders: A meta-analysis. *Psychological Bulletin*, 123, 123–142.
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