# Case need domain: "Substance abuse"

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*This article presents the findings of a meta-analytic review of substance abuse factors and criminal recidivism. We examined 45 studies that produced 116 effect sizes with recidivism. Overall, the meta-analysis generated a weighted mean effect size of .10. The predictor category of combined alcohol and/or drug problem yielded the highest mean effect size, followed by the predictor categories of drug abuse problem, parental substance abuse and alcohol abuse problem. Based on this review, we provide recommendations for streamlining the substance abuse domain of the Case Needs Identification and Analysis (CNIA) component of the Offender Intake Assessment (OIA) process*

American and Canadian survey findings show that approximately 70% of incarcerated offenders have substance abuse problems. Further, more than 50% of offenders have acknowledged a link between substance use and their most recent offence.[2] A meta-analysis involving 60 effect sizes reported a moderate correlation between a recent history of alcohol or drug abuse and recidivism (average $r = .14$).[3] Clearly, the inclusion of substance abuse in the Service's needs assessment protocol, the CNIA, is justified.

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The Service's Task Force on Reintegration recently recommended that "the design and application of the CNIA instrument be reviewed to ensure it identifies and prioritizes only those offender needs related to criminal behaviour."[4] As a result, this article examines the relationship between the substance abuse domain of the CNIA and adult criminal recidivism (see "The Case Needs Review Project: Background and research strategy" in this volume for a description of the CNIA and its various domains).

## Methodology

The relationship between substance abuse and the ability to predict recidivism was evaluated through a quantitative meta-analysis. A meta-analysis is a statistical technique that aggregates the findings of several studies. The results of each study are converted into a common statistic known as an effect size (e.g., a Pearson *r* correlation coefficient). Although both a weighted and an unweighted effect size can be used, the weighted effect size is considered more accurate since the size of the correlation is adjusted according to sample size. Studies used in the 1996 meta-analysis of the predictors of criminal recidivism[5] were considered for this meta-analysis. A search for additional studies published between January 1994 and December 1997 was conducted using two computerized databases: PsycLIT and the National Criminal Justice Reference Service. The key search terms included prediction, recidivism, crime, criminal behaviour, substance abuse, drug abuse and alcohol abuse. The search identified more than 200 studies that we considered for inclusion.

Studies were selected using the following criteria:

- substance abuse factors were assessed before recidivism;
- sufficient statistical information was provided for effect size calculations;
- offender samples were used; and
- offenders had not received substance abuse treatment. We included this criterion to ensure that treatment effects would not influence the relationship between a given substance abuse risk factor and recidivism.

If multiple follow-up periods were reported, data from the longest interval were used. Recidivism included technical violations of conditional release, arrests, charges, convictions and reincarceration. If several outcome criteria

were reported in a particular study, the correlation corresponding to the most serious type of recidivism was used.

## Results

*Study descriptives.* In this meta-analysis, 45 studies produced 116 effect sizes with recidivism. Most effect sizes came from predominantly adult samples (85%), primarily male offenders (65%). Further, 55% of the effect sizes were based on Canadian samples and were published in peer review journals or scholarly books. Lastly, almost 60% of the effect sizes were based on follow-up periods of two years or more.

*Assessment methodologies.* Almost 25% of the effect sizes were based on a combination of assessment techniques, including file review, offender self-reports and interviews. However, the most popular assessment technique used in isolation was the file review (66%). Further, approximately 15% of effect sizes were derived from risk and need assessment protocols such as the Level of Supervision Inventory (LSI),[6] the Level of Service Inventory—Revised (LSI-R),[7] the Community Risk Needs Management Scale,[8] or the community version of the CNIA.[9] Interestingly, almost 85% of the effect sizes came from dichotomous predictor variables.

**Overall, the meta-analysis generated a statistically significant weighted mean effect size of .10 between substance abuse and recidivism.**

*Meta-analytic findings.* Table 1 displays the meta-analytic findings. Overall, the meta-analysis generated a statistically significant weighted mean effect size of .10 between substance abuse and recidivism. Although the mean effect sizes for each individual predictor category were significantly different from zero, the combined alcohol and drug problem predictor category yielded the highest weighted mean effect size ($Mz^{+}$ = .22), followed by drug abuse problem ($Mz^{+}$ = .19), parental substance abuse ($Mz^{+}$ = .13) and alcohol abuse problem ($Mz^{+}$ = .12).

The substance abuse domain of the CNIA is composed of 29 yes-and-no indicators. The indicators are grouped according to one of three principal components: alcohol abuse, drug abuse or interventions. The alcohol and drug abuse components are further broken down into three subcomponents — pattern, situations or interference — while the interventions principal component consists of one subcomponent, called history. An attempt was made to organize the meta-analytic findings around the principal components, subcomponents and indicators of the CNIA's substance abuse domain. Unfortunately, this strategy proved difficult. As Table 2 demonstrates, effect sizes were available for only eight indicators. However, most of the mean effect sizes for each individual predictor category were significantly different from zero. It should be noted that "early-age drinking" yielded the highest mean effect size ($Mz^{+}$ = .27), with corresponding confidence intervals that did not overlap with any of the other predictor categories.

Additional statistical analyses examined whether the results were influenced by variables such as age, gender, risk level and whether the study was published. No significant relationship was found between these variables and the observed effect sizes.

## Conclusions and recommendations

Overall, the findings of this meta-analysis support the inclusion of the substance abuse domain in the CNIA. Moderate support was found for the alcohol and drug abuse principal components, the alcohol and drug pattern subcomponents, and the drug and alcohol interference subcomponents. However, we did not locate any studies that examined the situations subcomponents. Among the indicators, "abuses drugs," "early-age drinking," and "drug use has resulted in law violations" rendered strong support, while "abuses alcohol," and "drinking has resulted in law violations" showed moderate support. Further, weak support was found for "history of drinking binges," "early drug use," and "has gone on drug-taking sprees." However, these results should be interpreted cautiously because of the small number of effect sizes. We were unable to locate any predictive studies that examined the remaining indicators. Lastly, we chose to exclude the interventions principal component from the review for reasons already noted.

Table 1

**Unweighted *(Mr)* and Weighted Mean Effect Sizes ($Mz^{+}$) for Substance Abuse Predictor Categories**

| Predictor (*k*) | N | *Mr* | $Mz^{+a}$ | CI |
|---|---|---|---|---|
| Alcohol abuse problem (36) | 23,922 | .11 | .12* | .11–.13 |
| Drug abuse problem (38) | 25,409 | .18 | .19* | .18–.20 |
| Alcohol and/or drug problem (11) | 3,214 | .22 | .22* | .19–.26 |
| Substance abuse related to past/current charge (19) | 28,600 | -.03 | -.02 | -.03– -.01 |
| Parents were substance abusers (12) | 3,433 | .13 | .13* | .09–.16 |
| Total (116) | 84,578 | .12 | .10* | .09–.10 |

*Note.* *p < .01; k = *number of effect sizes per predictor; N = number of subjects per predictor;* Mr = *unweighted mean effect size;* $Mz^{+}$ = *weighted mean effect size; CI = confidence intervals about* $Mz^{+}$.

[a] $Mz^{+}$ *values are weighted according to sample size.*

Table 2

**Unweighted (Mr) and Weighted Mean Effect Sizes (Mz+) for the Principal Components, Subcomponents and Indicators of the CNIA Substance Abuse Domain**

| Predictor (*k*) | N | *Mr* | $Mz^{+a}$ | CI |
|---|---|---|---|---|
| Principal component: Alcohol abuse (36) | 23,922 | .11 | .12* | .11–.13 |
| *Subcomponent: Pattern (28)* | 22,121 | .11 | .12* | .11–.14 |
| Abuses alcohol (25) | 21,231 | .10 | .12* | .11–.14 |
| Early-age drinking (2) | 380 | .26 | .27 | …[b] |
| History of drinking binges (1) | 510 | .01 | .01 | … |
| *Subcomponent: Interference with daily living (8)* | 1,801 | .11 | .10* | .06–.15 |
| Drinking has resulted in law violations (7) | 1,197 | .12 | .13* | .08–.19 |
| Principal component: Drug abuse (38) | 25,409 | .18 | .19* | .18–.20 |
| *Subcomponent: Pattern (33)* | 24,039 | .17 | .19* | .18–.20 |
| Abuses drugs (28) | 20,364 | .18 | .21* | .19–.22 |
| Early drug use (1) | 802 | .09 | .09 | … |
| Has gone on drug-taking sprees (3) | 2,681 | .09 | .18* | .04–.12 |
| *Subcomponent: Interference with daily living (5)* | 1,370 | .19 | .18* | .13–.23 |
| Drug use has resulted in law violations (4) | 766 | .22 | .24* | .17–.31 |

*Note* *p < .01; *k = number of effect sizes per predictor; N = number of subjects per predictor;* Mr = *unweighted mean effect size;* $Mz^{+}$ = *weighted mean effect size; CI = confidence intervals about* $Mz^{+}$.

[a] $Mz^{+}$ *values are weighted according to sample size.*

[b] *significance testing and confidence intervals could not be reliably calculated when* k < 3.

There are several possible strategies for streamlining the substance abuse domain. First, as noted by other reviewers of the CNIA, it is questionable whether 29 indicators are necessary when similar protocols based on fewer items produce equally impressive results.[10] Therefore, the removal of empirically weak indicators and the combining of highly similar items should be considered. As well, including detailed instructions with each indicator might be beneficial. These instructions should be clearly defined and have concrete scoring guidelines to guarantee consistent ratings. Regardless, the substance abuse domain of the CNIA and its various components have demonstrated a moderate to strong relationship with criminal recidivism. ■

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[2] U.S. Bureau of Justice Statistics, *Prisoners and Alcohol* (Washington, DC: U.S. Department of Justice, 1983). See also U.S. Bureau of Justice Statistics, *Prisoners and Drugs* (Washington, DC: U.S. Department of Justice, 1983). And see J. R. Weekes, E. Fabiano, F. J. Porporino, D. Robinson and W. A. Millson, "Assessment of substance abuse in offenders: The computerized lifestyle assessment inventory," paper presented at the annual meeting of the Canadian Psychological Association (Montreal, QC: 1993).

[3] P. Gendreau, T. Little and C. Goggin, "A meta-analysis of the predictors of adult offender recidivism: What works!" *Criminology*, 34 (1996): 575–607.

[4] Correctional Service of Canada, *Task Force on Reintegration: Final Report* (Ottawa, ON: Correctional Service of Canada, 1997): 30. Available from the Offender Reintegration Branch, Correctional Service of Canada, 340 Laurier Avenue West, Ottawa, ON K1A 0P9.

[5] Gendreau, Little and Goggin, "A meta-analysis of the predictors of adult offender recidivism."

[6] D. A. Andrews, *The Level of Supervision Inventory* (*LSI*) (Toronto, ON: Ministry of Correctional Services, 1982).

[7] D. A. Andrews and J. Bonta, *The Level of Service Inventory — Revised* (Toronto, ON: Multi-Health Systems, Inc., 1995).

[8] L. L. Motiuk and F. J. Porporino, *Offender Risk/Needs Assessment: A Study of Conditional Releases*, Report R01 (Ottawa, ON: Correctional Service of Canada, 1989).

[9] L. L. Motiuk and S. L. Brown, *The Validity of Offender Needs Identification and Analysis in Community Corrections*, Report R-34 (Ottawa, ON: Correctional Service of Canada, 1993).

[10] P. Gendreau, C. Goggin and G. Gray, "Case need: Employment domain," *Forum on Corrections Research*, 10, 3 (1998): 16–19.

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