

CORRECTIONAL SERVICE CANADA

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High-resolution Characterization of Impulsivity and Risk Sensitivity Deficits in Canadian Adult Federal Offenders

This pilot study supports the feasibility and utility of using technology-based assessments of impulsive behaviour and risky decision-making in a sample of adult offenders recruited from two Canadian federal correctional institutions.

Why we did the study

Substance use disorders (SUD) are common among offenders in the Canadian criminal justice system, with estimates as high as 70-80%. Deficits in impulse control (e.g., difficulties with inhibiting inappropriate behaviours, inability to delay gratification, or taking risks) contribute to SUD and criminal behaviour. Recent technology advances have led to the development of computerized assessments of impulse control that provide objective measures of impulsive behaviour and decision-making. This study evaluated the feasibility of using technology-based assessments of impulsivity and risk-taking among offenders in Canadian federal correctional institutions in comparison to sex- and age-matched adult controls from the general community.

What we did

Participants in the offender group were recruited from minimum/medium security units at two federal correctional institutions from February 2018 – December 2019. Male offenders ($N = 68$, mean age = 38.6) were recruited from Warkworth Institution and female offenders ($N = 35$, mean age = 39.8) were recruited from Grand Valley Institution for Women. Participants in the control group ($N = 90$; 55 males, 35 females; mean age = 36.8) were recruited from Hamilton, ON. Participants completed five computerized tasks: 1) Go/No-Go task (response inhibition); 2) Balloon Analogue Risk Task (BART, risk-taking); 3) Iowa Gambling Task (IGT, risky decision-making); 4) Stroop Colour-Word Test (response inhibition); and 5) Delay and Probability Discounting Tasks (impulsive and risky decision-making). Participants also completed a self-report questionnaire assessing impulsive personality traits. Archival data from CSC records and intake assessments were also extracted.

What we found

Offenders and control participants were well-matched by sex and age, but offenders had significantly lower education (~1.4 fewer years) and higher percentage of non-White offenders (42%) compared to controls (17%). Fifty-two percent of offences were categorized as a Schedule 1 offence, and thirty-four participants (33%) were serving indeterminate (life) sentences.

Participants had minimal issues with performing the tasks in the time allotted. Verbal feedback from participants indicated generally positive experiences. In a small subset of offenders, potentially important barriers were also observed, including computer literacy issues, difficulty understanding task instructions, and concerns about privacy/confidentiality.

On the impulsivity tasks, offenders showed significantly more impulsive preferences for smaller-immediate rewards compared to larger-later rewards, but did not differ in their ability to inhibit unwanted behavioural responses. For the risk-taking measures, offenders exhibited a risk-averse pattern of preference for smaller-certain rewards over larger-uncertain rewards and also did not demonstrate reward related learning in a test of adaptive decision making. There were no differences found between male and female offenders.

What it means

The results support the feasibility and utility of collecting technology-based assessments of impulsivity and risk orientation in a correctional setting. Across both impulsivity and risk-taking domains, offenders showed specific deficits in certain aspects of impulsivity and risk-taking. These were not global deficits, but selective for overvaluing immediate rewards and certain rewards, and exhibiting insensitivity to unfavorable contingencies in terms of reward/punishment learning. These domains have promise for improving prediction models of recidivism and rehabilitation.

For more information

Amlung, M., Vedelago, L., Balodis, I., Mamak, M., McLachlan, K., Moulden, H., Chaimowitz, G., & MacKillop, J. (2020). *High-resolution Characterization of Impulsivity and Risk Sensitivity Deficits in Canadian Adult Federal Offenders* (Research Report R-456). Ottawa, Ontario: Correctional Service of Canada.

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