

Towards an International Neuro-Justice Consortium

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Global Neuro Justice Literature

- criminal justice system over-representation of those with congenital and acquired cognitive conditions across the globe (Seltzer & Bazelon, 2005)
- near universally, largest contingent of those over-representations: peoples with Indigenous heritage (Carino et al., 2009)

Alcohol/Substance Influence

Key links:

- criminal acts largely stem from *direct influence of alcohol and/or substance use at time of the index offence* (Pernanen et al., 2002)
- *addictions and trauma-related self-medication contribute as common part of the Indigenous post-colonial experience*

Early indicators of cognitive impairments are often recognized in school-aged children, under a variety of labels including:

- intellectual disabilities (ID)
- learning disabilities (LD)
- fetal alcohol spectrum disorder (FASD)
- parallel substance/nutrition related gestational disorders
- acquired traumatic brain injuries (TBI) including sports and altercation related concussive disorders.

Less recognized factors:

- Neurotoxic water/airborne pre/post-birth exposure including/not limited to:
 - Resource extraction
 - Industrial run offs
 - Pesticides
 - Home product off-gassing: furniture, carpet, stains, etc
- Zika, Westnile & other virus
- Congenital heart disease
- Type 1 diabetes

A Strategy for Comparing the Contributions of Environmental Chemicals and Other Risk Factors to Neurodevelopment of Children

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BACKGROUND: The impact of environmental chemicals on children's neurodevelopment is sometimes dismissed as unimportant because the magnitude of the impairments are considered to be clinically insignificant. Such a judgment reflects a failure to distinguish between individual and population risk. The population impact of a risk factor depends on both its effect size and its distribution (or incidence/prevalence).

OBJECTIVE: The objective was to develop a strategy for taking into account the distribution (or incidence/prevalence) of a risk factor, as well as its effect size, in order to estimate its population impact on neurodevelopment of children.

METHODS: The total numbers of Full-Scale IQ points lost among U.S. children 0–5 years of age were estimated for chemicals (methylmercury, organophosphate pesticides, lead) and a variety of medical conditions and events (e.g., preterm birth, traumatic brain injury, brain tumors, congenital heart disease).

DISCUSSION: Although the data required for the analysis were available for only three environmental chemicals (methylmercury, organophosphate pesticides, lead), the results suggest that their contributions to neurodevelopmental morbidity are substantial, exceeding those of many nonchemical risk factors.

CONCLUSION: A method for comparing the relative contributions of different risk factors provides a rational basis for establishing priorities for reducing neurodevelopmental morbidity in children.

KEY WORDS: chemicals, children, epidemiology, neurodevelopment. *Environ Health Perspect* 120:501–507 (2012). <http://dx.doi.org/10.1289/ehp.1104170> [Online 19 December 2011]

first reported (Ioannidis 2005), would be an invitation to controversy. An effect estimate derived from a meta-analysis or pooled analysis, conducted by subject matter experts applying a transparent protocol for study inclusion and weighting, reflects the weight of evidence available on a risk factor. Therefore, preference was given to effect estimates based on a meta-analysis or pooled analysis that provided evidence supporting a statistically significant association between a risk factor and FSIQ. In some cases, when such an analysis was not available, a single study was used, preferably one that was population based and with a large sample size. However, this was done in recognition that the effect size would likely differ, to an uncertain extent, if based on an analysis that integrated the findings of multiple studies.

Population to which to generalize findings. A population of 25.5 million 0- to 5-year-old children in the United States was assumed (Federal Interagency Forum on

Care, Education, Justice Impacts

- Children who are faced with these disorders often do not get the care they need, contributing to an intergenerational pattern of educational limitations, functional and economic dependency (Evans, 2004).

Justice system involved individuals often face complicating procedural complexities such as (Scheyett et al., 2009):

- limited understanding of their civil rights, legal terms/ processes
- difficulties cooperating with their attorney
- difficulties processing and recalling detailed information
- vulnerability to sacrificing self- to defence of others

Criminogenic factors driving Indigenous justice system overrepresentation

summarized well in:

Victims of Crime Research Digest No. 3 - Aboriginal Victimization in Canada: A Summary of the Literature:

(Scrim; Department of Justice Canada, 2017; [www.justice.gc.ca/eng/rp-pr/cj-
jp/victim/rd3-rr3/p3.html](http://www.justice.gc.ca/eng/rp-pr/cj-
jp/victim/rd3-rr3/p3.html))

- 40% of Indigenous Canadians self-reported as *victim of crime* in the prior year vs 28% of non-Indigenous Canadians (2004 General Social Survey on Victimization (GSS))
- *violent crime*: Indigenous 300% more likely victimized vs non-Indigenous people (319 incidents versus 101 incidents per 1,000 population) (Brzozowski et al. 2006).

Demographic and social factors and elevated risk of offending and/or victimization:

- being young (Lochner 2004)
- living in a lone-parent family situation (Stevenson et al. 1998)
- living common-law (Mihorean 2005)
- high levels of unemployment (Raphael and Winter-Ebmer 2001)
- consumption of alcohol (Vanderburg et al. 1995)

All above reflect demographic and social conditions of Canadian Indigenous population

Canada Indigenous vs non demographics:

- *Younger:* mean age of 27 vs 40; 48% under the age 25 (Statistics Canada 2008a)
- *Family composition:* Indigenous women headed 86% of households (Statistics Canada 2001)

- *Educational achievement, gains but lagging: 62% vs 81% at least high school diploma* (Statistics Canada 2008c)
- *Unemployment: 15% compared to 6%* (Statistics Canada 2008b)
- *Annual income: 33% less income* (Statistics Canada 2008d)
- *Alcohol/drugs in **victim crimes**: 60% for both Indigenous and non-Indigenous victims* (2004 GSS; Brzozowski et al. 2006)

Literature consistent with our/ community partners, supporting need for:

- *Indigenous **culturally focused** healing, mental health and prevention to directly address alcohol/ substance abuse and dependence as core program aspects.*

Supreme Court of Canada “Gladue” Mandate

To end revolving door recidivism, judges **must** lean towards healing/rehabilitative sentences, *but also consider* community safety when sentencing Indigenous offenders to address prison overrepresentation—described as a “crisis” by SCC.

FASD sub-entity relative to Gladue decision: Aboriginal Legal Services of Toronto (ALS)/Anishnawbe Health Toronto (AHT)/our services provide FASD Gladue pre-sentencing pilot multi-disciplinary diagnostic and healing assessment aiding judges sentencing decisions:

- *MD, neuropsych, social work, Traditional Healer*

**Victimization, Criminal Justice System
Considerations & Call for Coordinated
FASD/Brain Disorder Service “Eco-System”**

Comprehensive/coordinated “eco-system” approach with following components:

Pilot ongoing and proposed expansion through:

- *Clinically and vocational integrated mental health/addictions program of care*
- *Clinical in-home family wrap-around model addressing social determinants of health as key elements*
- *FASD/brain disorder clinical, teaching and research hub*

- link to Gladue FASD protocol & Ontario Attorney General's pilot ALS intervention service for at-risk/criminally involved with confirmed/suspected FASD
- proposed urban/rural Indigenous land-based programs specializing in FASD/brain disorder & post-incarceration community reintegration; also to support research and professional/Indigenous training
- online cognitive screening pilot for assessment-triage of elementary students and inmates

Synergistic Eco-System impacts would guide FASD/brain disorder supports in spheres of: addictions, housing, community/family, education, justice and work.

Proposed International Consortium Activities

Interdisciplinary clinical-legal professional consortium to address social injustices through:

- *Regular webinar*. Round table format reviewing country-specific issues, strategies and programs to **cross-pollinate**
- Peer review, open source/traditional journal; initially special issues?
- Semi/annual conference
- Establish low resource intervention strategies & best practice methodologies addressing cognitive/behavioural disorders impacts in school system, independent living and work

- Establish common research outcomes data-base & sharing/co-development of clinical and legal tools/resources—offered:
 - functionally oriented ROMS outcome/data-base(with objective to further Indigenize its content)
 - BRAINScreen: an on-line cognitive assessment platform
 - Inclusion of an Indigenous methodologies mandate and knowledge transfer, and possibly a parallel to the common metrics approach
- Clinical/legal strategizing including parliamentary influence, advocacy, legal remedies against the state/industry re neuro/psychological injuries in post-colonial context (these may parallel the impetus behind, and inception of, the Canadian Truth and Reconciliation process)

Offered Methodologies for Consideration

Cognitive Screening. BRAINscreen: “an easily accessible Web-based automated screen for cognitive impairment with real-time interpretive results that persons of various age, education, racial, linguistic and ethnic groups can complete independently” (Zakzanis & Azarbeh, 2014, p. 84).

- *Cognitive measures including: orientation, working memory, learning, retrieval (memory), sustained/selective attention speed and accuracy, visual spatial skills, problem solving, reaction time, information processing speed.*

Offered Methodologies for Consideration

- To date, normed on 1,378 from age 10 to 84
- under funding review to validate as screening tool towards identification of cognitive disabilities in educational and correctional settings.
- seeks to assess the sensitivity, specificity, positive predictive validity and negative predictive validity related to disorders such as ID, LD, FASD and TBI.

Offered Methodologies for Consideration

Rehabilitation Outcome Measures (ROMS; www.rrees.com/roms): An open source online data base, housed in the University of Toronto-Scarborough's Mental Health and Psychology department (a major neuropsychology training facility):

- *provides universal clinical/functional/vocational protocol for any combination of disabling conditions stemming from one to combination of physical, cognitive and psychological impairments.*

Potential administrative base:

- Partnership of University of Exeter, University Toronto-Scarborough (Mental Health/Psychology)/Rehabilitation Sciences Institute (University of Toronto); and Rehabilitation Research, Education and Evaluation Services (www.rrees.com).

Relevant recommendations from Canadian Truth and Reconciliation Commission Call's to Action

- We call upon the federal government, in consultation with Aboriginal peoples, to establish measurable goals to identify and close the gaps in health outcomes Calls to Action| 3 between Aboriginal and non-Aboriginal communities, and to publish annual progress reports and assess long-term trends.
- Such efforts would focus on indicators such as: infant mortality, maternal health, suicide, mental health, addictions, life expectancy, birth rates, infant and child health issues, chronic diseases, illness and injury incidence, and the availability of appropriate health services

Relevant recommendations from Canadian Truth and Reconciliation Commission Call's to Action

- We call upon federal, provincial, and territorial governments to commit to eliminating the overrepresentation of Aboriginal people in custody over the next decade, and to issue detailed annual reports that monitor and evaluate progress in doing so
- We call upon the federal, provincial, and territorial governments to provide sufficient and stable funding to implement and evaluate community sanctions that will provide realistic alternatives to imprisonment for Aboriginal offenders and respond to the underlying causes of offending

Relevant recommendations from Canadian Truth and Reconciliation Commission Call's to Action

- We call upon the federal, provincial, and territorial governments to recognize as a high priority the need to address and prevent Fetal Alcohol Spectrum Disorder (FASD), and to develop, in collaboration with Aboriginal people, FASD preventive programs that can be delivered in a culturally appropriate manner

Relevant recommendations from Canadian Truth and Reconciliation Commission Call's to Action.

- We call upon the governments of Canada, the provinces, and territories to undertake reforms to the criminal justice system to better address the needs of offenders with Fetal Alcohol Spectrum Disorder (FASD), including:
 - i. Providing increased community resources and powers for courts to ensure that FASD is properly diagnosed, and that appropriate community supports are in place for those with FASD.
 - ii. Enacting statutory exemptions from mandatory minimum sentences of imprisonment for offenders affected by FASD.
 - iii. Providing community, correctional, and parole resources to maximize the ability of people with FASD to live in the community.
 - iv. Adopting appropriate evaluation mechanisms to measure the effectiveness of such programs and ensure community safety.

Relevant recommendations from Canadian Truth and Reconciliation Commission Call's to Action

- We call upon the federal, provincial, and territorial governments to work with Aboriginal communities to provide culturally relevant services to inmates on issues such as substance abuse, family and domestic violence, and overcoming the experience of having been sexually abused
- We call upon the federal, provincial, territorial, and Aboriginal governments to commit to eliminating the overrepresentation of Aboriginal youth in custody over the next decade.
- We call upon the federal government to develop a national plan to collect and publish data on the criminal victimization of Aboriginal people, including data related to homicide and family violence victimization.

Relevant recommendations from Canadian Truth and Reconciliation Commission Call's to Action

- We call upon all levels of government to provide annual reports or any current data requested by the National Council for Reconciliation so that it can report on the progress towards reconciliation. The reports or data would include, but not be limited to:
 - i. The number of Aboriginal children—including Métis and Inuit children—in care, compared with nonAboriginal children, the reasons for apprehension, and the total spending on preventive and care services by child-welfare agencies.
 - iv. Progress on closing the gaps between Aboriginal and non-Aboriginal communities in a number of health indicators such as: infant mortality, maternal health, suicide, mental health, addictions, life expectancy, birth rates, infant and child health issues, chronic diseases, illness and injury incidence, and the availability of appropriate health services.
 - v. Progress on eliminating the overrepresentation of Aboriginal children in youth custody over the next decade.

The reports or data would include, but not be limited to:

vi. Progress on reducing the rate of criminal victimization of Aboriginal people, including data related to homicide and family violence victimization and other crimes.

vii. Progress on reducing the overrepresentation of Aboriginal people

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