



JUSTICE INSTITUTE
of BRITISH COLUMBIA

**ECONOMIC ASPECTS OF THE DEVELOPMENT AND
PREVENTION OF CRIMINALITY AMONG CHILDREN AND YOUTH**

A Sequel to the *Kids 'N Crime* Report

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The original *Kids 'N Crime* report was prepared by Alasdair Maughan, B.A. (Psychology), LL.B., who at that time was a candidate for the degree of Master of Business Administration, University of British Columbia. That work was carried out under the direction of David E. Park, then Assistant Managing Director and Chief Economist, The Vancouver Board of Trade.

The findings and opinions expressed in the current report are those of the author and the expert sources that have been accessed during the work, and do not necessarily represent the views and opinions of the Justice Institute of British Columbia or other parties involved.

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ECONOMIC ASPECTS OF THE DEVELOPMENT AND PREVENTION OF CRIMINALITY AMONG CHILDREN AND YOUTH

ABSTRACT

Adverse factors impacting children from before birth to adulthood can have serious psychological effects leading to criminal behaviour in later life. In this report twelve of those factors are described, and their humanitarian impacts and prevalence are noted. Financial and other quantitative impacts and the cost of remedial measures are cited to the extent that information has been found through the literature search carried out in this study.

During pregnancy and the ages from birth to five years, the long term future probabilities are established with respect to children developing into adults who live positive lives, or conversely into youths and adults who may become involved in criminal activity. The criminal tendency can be avoided to a substantial extent if children in their early years are involved in developmental activity that leads to positive personal growth or if developmental difficulties are recognized and remedial efforts applied.

Thus, efforts to avoid the adverse impact on children that is caused by consuming alcohol and illicit drugs during pregnancy are one of the keys to a positive life. Early home visitations by specially trained nurses are important to identify new mothers and children where healthy child development is at risk. Centre-based programs coupled with home visitations are particularly effective. Preschool and other programs for disadvantaged children provide large social and economic benefits, particularly with respect to avoidance of long-term criminal behaviour. Remedial actions to assist children who do not outgrow aggressive tendencies are another crucial requirement. Treatment for Attention Deficit Hyperactivity Disorder and learning disabilities can substantially improve the prospects for older children. For youths that do become involved with the criminal justice system, many can be helped by proven programs to achieve a more positive life course.

In this report twelve different facets of the development and prevention of criminality among children and youth are reviewed. The general conclusion is that the humanitarian and economic consequences of these problems are very large, and that actions to prevent them or provide remedies can have even larger benefits for individuals, families and society as a whole.

Investing in these actions is good public policy. “- research has provided evidence that investment in our children’s early development before they go to school can prevent many social problems and that the economic payback is spectacular.”¹ Remedying these problems among school age children has similar benefits. In particular, diverting children and youth from a life of crime achieves outstanding positive results in terms of both social and economic dimensions, including costs borne by government.

¹ The Vancouver Board of Trade, report of Task Force on Early Child Development and Child Care, July 1999, http://www.boardoftrade.com/vbot_page.asp?pageid=162, p. 1.

1. SUMMARY OF ECONOMIC INDICATORS RELATED TO THE DEVELOPMENT AND PREVENTION OF CRIMINALITY AMONG CHILDREN AND YOUTH

In 2006, The Vancouver Board of Trade issued a report titled *The Development and Prevention of Criminality Among Children and Youth*, or "Kids 'N Crime" for short. That document is based on the idea that factors impacting children from before birth to adulthood can have serious psychological effects leading to criminal behaviour in later life.

In the current project the "Kids 'N Crime" report has been revisited. For salient parts, through literature search information has been gathered concerning the negative costs of related criminal activity. Information also has been sought concerning the costs of corresponding efforts to prevent or correct that activity.

This addition provides more quantitative indicators of the economic importance of efforts to avert adverse developments leading youth to engage in crime. Thus, this work endeavours to sketch indicators illuminating the potential magnitude of economic benefits of positive development of children and youth. This information is intended to complement the humanitarian benefits that are a principal focus of the "Kids 'N Crime" report.

Following are extracts that highlight key aspects of the findings of this project. In part two of this document, summary information is presented that elaborates on the more concise points below.

1. For a youth at age 18 the benefits of preventing the costs of dropping out of high school, avoiding the costs of heavy drug use and particularly avoiding the costs resulting to the individual and society from becoming a career criminal amount to a discounted present value of between \$2.6 and \$5.3 million (U.S.).
2. There are some programs for juvenile offenders that produce especially attractive long-run economic returns. "For example, in a Functional Family Therapy program the average cost per juvenile participant was \$2,325 (U.S.), versus \$34,146 in --- benefits --- measured in terms of the taxpayer and crime victim costs that are avoided because of the reduced long-run level of criminal activity of the youth."²
3. "--- research-based early intervention programs are effective at impacting the criminological risk factors associated with crime and thus, they prevent or reduce criminality while also producing collateral benefits for individuals, families, schools, communities and society as a whole."³
4. "--- investing in disadvantaged young children has a high economic return. Early interventions for disadvantaged children promote schooling,

² AOS S. Miller M. Drake, E. *Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs, and Crime Rates*. Olympia: Washington State Institute for Public Policy, 2006
<http://www.wsipp.wa.gov/rptfiles/06-10-1201.pdf>

³ Turpel-Lafond M.E. Kendall P. *Kids, Crime and Care, Health and well-being of children in care: youth justice experiences and outcomes*, joint report of the representative for children and youth and the provincial health officer, Province of British Columbia. February, 2009. p.55.
<http://www.rcybc.ca/Images/PDFs/Reports/Youth%20Justice%20Joint%20Rpt%20FINAL%20.pdf>

raise the quality of the work force, enhance the productivity of schools, and reduce crime,⁴ teenage pregnancy and welfare dependency. They raise earnings and promote social attachment. Focusing solely on earnings gains, returns to dollars invested are as high as 15% to 17%.⁵

5. The timing of investment is critical. Efforts to influence development are far more effective in early life than in later years. "A dollar invested in early childhood yields three times as much as for school-aged children and eight times as much for adult education."⁶
6. Improved early childhood development will improve school readiness and in turn improve the performance of children in the school system. The factors involved include "--- all the key domains of children's early development that have life-long impacts: physical well-being, social competence, emotional maturity, language and cognitive development, and communications and general knowledge in the majority language and culture."⁷
7. A country with moderately higher cognitive skills in its school age population as measured by international standards is likely to have a superior growth rate of Gross Domestic Product. In essence, this country would enjoy significantly higher productivity.

In addition to the economic improvement outlined above, this achievement likely would substantially reduce the incidence of crime. Analysis of early childhood development studies as discussed in this report shows that the development induced would contribute significantly to lower incidence of crime in later life.

8. A key landmark in early childhood development efforts is the High/Scope Perry Preschool Study carried out in a Michigan community. A high quality preschool program was established at ages 3 and 4 for a group of low-income African-American children who were assessed to be at high risk of school failure.

Benefit-cost analysis when these children reached the age of 40 showed the economic return to society of the Perry Preschool program was \$16.14 per dollar invested. Of that return, \$12.90 or 80 per cent went to the general public. Of the public return, \$11.30 or 88 per cent came from reduced incarceration and other crime savings. [Underlining added for emphasis].

9. Other similar studies such as the Abecedarian [North Carolina] and Chicago [Longitudinal Study] also have shown significant benefits, including a lower probability of involvement in criminal activity. In general, these types of early interventions if properly designed, staffed and executed can produce quite beneficial results.

⁴ Underlining added for emphasis.

⁵ Heckman J. [winner of 2000 Nobel Prize in economics] "Catch 'em Young", *Wall Street Journal*, January 10, 2006.

⁶ McCain M. Mustard J. Shanker S. *Early Years Study 2: Putting Science Into Action*, Council for Early Child Development, Toronto 2007.

⁷ Kershaw P. Anderson L. Warburton B. Hertzman C. *15 by 15: A comprehensive policy framework for early human capital investment in BC*. Human Early Learning Partnership, University of British Columbia. August 2009.

10. A comprehensive analysis undertaken of crime prevention programs in Washington state has shown that “Early childhood education for low income 3- and 4-year-olds --- provide[s] very attractive returns on [public] investment.”⁸ A subsequent study by the same authority re-iterated this conclusion and showed total benefits minus costs per participant of \$12,196 compared with marginal program costs of \$593 per participant.
11. Education of parents and potential parents so that they are better able to perform that role is a key to helping their children avoid growing into a life of crime. In the United Kingdom, research has demonstrated that a parenting program for parents of children at risk of developing conduct disorder involves modest costs, demonstrates strong clinical effect, and thus is cost effective.
12. Some of the most successful early childhood development initiatives have included home visits as an integral part of their design. Numerous examples have shown a significant positive ratio of benefits to costs.
13. A 2002 report prepared for the Learning Disabilities Association of Canada gauges the costs of learning disabilities. The study estimates that the total cost differential from birth to retirement at age 65 between a person with learning disability and a person with no cognitive difficulty would be almost \$2 million. The average total cumulative cost of criminal justice services per person with learning disabilities from age 12 to age 65 is estimated to be nearly \$110,000 more than the average for the population as a whole.
14. Diagnosis of children for learning disabilities or for risk of learning disabilities can be carried out at quite low cost, in the range of \$25 to \$50 per child. Good classroom teaching at no incremental cost can remedy the situation for children that have the problem, except for 1 to 2 per cent. The cost of additional remediation varies substantially, but one special education teacher at a cost of approximately \$75,000 per annum can deal with 25 to 30 children.
15. Attention Deficit Hyperactivity Disorder (ADHD) involves impulsive or poorly inhibited behaviour, where an individual tends to act before thinking or has difficulty waiting. ADHD in childhood is a significant risk factor for criminal activity later in life, although most individuals with ADHD do not engage in criminal activity. The approximate economic cost in the U.S. of the increased incidence of crime attributable to persons who appear to have symptoms of ADHD during childhood is reported to be roughly \$2 to \$4 billion annually.

In most cases, ADHD can be treated effectively with medication, with psychosocial accommodations, or a combination of both. Early interventions to reduce the effects of ADHD can have substantial economic benefits.
16. “Conduct Disorder (CD) is a pattern of behaviour that persistently violates the basic rights of others or society’s rules,”⁹ and tends to be characterized by

⁸ AOS S. Lieb R. Mayfield J Miller M. Pennucci A. *Benefits and costs of prevention and early intervention programs for youth*. Olympia: Washington State Institute for Public Policy, 2004.

<http://www.wsipp.wa.gov/rptfiles/04-07-3901.pdf>

⁹ Fowler, M. *ADD/ADHD NICHCY: Attention Deficit/Hyperactivity Disorder*, National Information Center for Children and Youth with Disabilities (NICHCY) briefing paper. LD Online. <http://www.ldonline.org/article/5970> Accessed January 5, 2010.

aggression. Research carried out in the United Kingdom has estimated that for persons who had conduct disorder in childhood, the costs of government funded services for these individuals at age 28 were 10 times more than for persons with no behavioural problems. The comparison in terms of U.S. funds is cited as \$137,450 versus \$14,571.

“Intervention programs for at-risk families as well as intensive, high-quality pre-school programs where children receive good stimulation from qualified early childhood workers reduce the risks for persistent preschool aggression, and violent and non-violent delinquency in adolescence and adulthood.”¹⁰

17. Fetal Alcohol Spectrum Disorder (FASD) is estimated to affect 1 in 100 live births in Canada, and is cited as “---the leading cause of developmental and cognitive disabilities in Canada.”¹¹ FASD is caused only by maternal alcohol use during pregnancy. The average annual cost of FASD in Canada has been estimated to be approximately \$21,600 per individual patient, expressed in 2007 dollars. For Canada as a whole, the total cost of FASD on this basis is estimated to be \$5.3 billion annually. Not included in the total are costs incurred from the involvement of individuals with FASD in the criminal justice system, an involvement that is much more common than for the population at large.
18. Trauma in various forms is a significant factor in precipitating and continuing addiction. In turn, addiction is a motivating force in criminal activity undertaken to secure money for the purchase of illicit drugs. The huge cost of crime associated with drug addiction warrants an analysis of the cost of treatment for addiction and the cost of treatment for trauma as a key preventative measure. That analysis is largely beyond the current project.

However, the magnitude of the challenge and the importance of it are implicit by the information that each year in the United States approximately five million children experience some form of traumatic experience. “The cost of unresolved trauma to society is incalculable. Trauma has been correlated to physical and mental illness; learning disabilities; addictions; deviant or aggressive behaviour; - -- violence in individuals; ---.”¹²

19. Directly or indirectly, high school non-completion has enormous fiscal implications in terms of expenditures on health, social services and programs, education, employment, criminality and lower economic productivity. “Currently, approximately 20% of Canadians aged 20 years and over have never completed high school.”¹³ For Canada as a whole, the aggregate tangible and intangible

¹⁰ Tremblay, RE. Gervais, J. Petitclerc, A., *Early learning prevents youth violence*, Montreal, Quebec. Centre of Excellence for Early Childhood Development.: 2008; 32 pages. http://www.excellence-earlychildhood.ca/documents/Tremblay_AggressionReport_ANG.pdf Accessed January 11, 2010.

¹¹ Stade B, Ali A, Bennett D, Campbell D, Johnston M, Lens C, Tran S, Koren G. *The burden of prenatal exposure to alcohol: revised measurement of cost*. Can J Clin Pharmacol Vol 16(1) Winter 2009:e91-e102; January 23, 2009.

¹² *What is Trauma*, The International Trauma-Healing Institute, <http://www.traumainstitute.org/trauma.php> Accessed November 11, 2009.

¹³ Statistics Canada, *2006 Census of Population*, (Ottawa 2006), Catalogue no. 97-560XCB2006007, cited in “No ‘drop’ in the bucket: the high costs of dropping out”. *Lessons in Learning*, Canadian Council on Learning. February 4, 2009. <http://www.ccl-cca.ca/CCL/Reports/LessonsInLearning/LinL20090204CostofDroppingout.htm> Accessed August 12, 2009.

losses are calculated to be \$24,400 per annum per dropout, or \$43 billion for the country as a whole.

20. The relationship between education and crime is most obvious when considering rates of incarceration. High school leavers are disproportionately represented among prison populations. For example, in British Columbia, non-graduates represent 34% of the overall population, but they make up 74% of the prison population.
21. Aboriginal youth are significantly less likely than the population of youth as a whole to achieve high school graduation. In turn, for the population as a whole there is a correlation between lack of academic achievement and involvement in the criminal justice system. As demonstrated elsewhere in this report, both the lack of academic achievement and criminal justice system involvement carry with them large costs to the individual and society.

A study has shown that based on the 2001 census, of the total population of Canada, 31 per cent had less than secondary school graduation. For the Aboriginal population of Canada, 48 per cent had less than secondary school graduation. Low education has been identified as the key factor in explaining the relatively weak performance of Aboriginal Canadians in the labour market.

About three-quarters of Aboriginal adults involved in correctional services had not completed their secondary school education, compared to one-third of non-Aboriginal adults (involved). [Underlining added for emphasis.]

Conclusion

From the information presented in this report, it is clear that there are very large costs involved with the numerous different factors that can contribute to the development of criminality among children and youth. Conversely, there are great benefits that can be achieved by averting that development.

While the analysis of the cost of preventative or remedial efforts generally is a work in progress involving the efforts of numerous researchers, there is already enough credible data to indicate that for many interventions the cost is significantly less or greatly less than the benefits that can be achieved. These are in addition to the humanitarian benefits that are the principal focus of the original *Kids 'N Crime* report.

Investing in these interventions is good public policy. Diverting children and youth from a life of crime achieves outstanding positive results in terms of both social and economic dimensions, including costs borne by government.

2. ECONOMIC ASPECTS OF THE DEVELOPMENT AND PREVENTION OF CRIMINALITY AMONG CHILDREN AND YOUTH

SUMMARY REPORT

Introduction

In 2006, The Vancouver Board of Trade issued a report titled *The Development and Prevention of Criminality Among Children and Youth*, or "Kids 'N Crime" for short. That document is based on the idea that factors impacting children from before birth to adulthood can have serious psychological effects. In the report, numerous impacts are charted in relation to their potential influence on youth and how those impacts can contribute to adverse development leading to criminal behaviour.¹⁴

Although the report makes a valuable contribution to understanding and potentially dealing with the subject in a systematic way, generally the document does not deal with the economic aspect of the subject. A few examples are provided of costs associated with the impacts of particular negative factors or the positive impacts of specific remedial efforts.

The report is a useful guide to the causes and effects of factors contributing to the development of criminality among children and youth. However, the impact of the document would be significantly greater if the costs resulting from criminal behaviour were included and contrasted with the costs of corresponding preventative or remedial measures.

Accordingly, in the current project the "Kids 'N Crime" report has been revisited. For salient parts, information has been gathered concerning the negative costs of related criminal activity and where information is available, the costs of corresponding efforts to prevent or correct that activity. This addition provides more quantitative indicators of the economic benefits of efforts to avert adverse developments leading youth to engage in crime. Conversely, this work endeavours to sketch the economic benefits of positive development of children and youth in addition to the humanitarian benefits that are a principal focus of the "Kids 'N Crime" report.

Scope of Work

The work carried out in this project was planned to be limited to the following ten specific parts of the *Kids 'N Crime* report:

- Parenting education
- Monitoring/home visits
- Fetal alcohol spectrum disorders
- Early childhood development (general)
- Child care/preschool
- Learning disabilities

¹⁴ Maughan A. Park D. (ed.) *Kids 'N Crime: Report on the development and prevention of criminality among children and youth*. The Vancouver Board of Trade, October 2006. May be accessed at: <http://www.boardoftrade.com/policy/CrimeTaskForceReport-FINAL-OCT24-06.pdf>

- Attention deficit hyperactivity disorder
- Youth at risk
- High school graduation
- Aboriginal youth

In addition, as the work progressed it became apparent that two additional subject areas needed to be included. Accordingly, a section has been added on the impact of trauma on children in the context of this report, and another section has been drafted dealing with aggression in relation to conduct disorder and oppositional defiant disorder.

Work Carried Out

This project began with a review of the “Kids ‘N Crime” report, and identification of potential sources of information on quantitative analysis of costs and/or benefits or other economic perspectives pertinent to the study.

For some of the subject areas being pursued, substantial relevant data was found. In other cases, data appears to be sparse. However, one or more quantitative economic indicators have been found for each of the subject areas examined in this analysis.

Some of these indicators appear to have been more robustly derived than others. However, each provides a significant perspective on the economic rationale for action to reduce the impetus towards children and adolescents becoming involved in criminal activity.

In some cases, full benefit/cost analyses were retrieved. In others, elements of data or partial analyses were identified as useful measures. In some subject areas, strong data were available concerning costs or benefits, and in others less robust information illuminating benefits or costs was retrieved.

As an example of the more impressive measures, a relatively recent report by a leading U.S. researcher has outlined the very substantial benefits that can be achieved by saving a high risk youth from a life of crime. This work shows that for a youth at age 18 the benefits of preventing the costs of dropping out of high school, avoiding the costs of heavy drug use and particularly avoiding the costs resulting to the individual and society from becoming a career criminal amount to a discounted present value of between \$2.6 and \$5.3 million (U.S.).¹⁵

Summary of Work Carried Out

The work carried out included a literature search with respect to all of the ten subject areas included in the study, and the added subjects of trauma and aggression. Summary report sections that have been prepared for each of these subjects form the body of this document.

In addition to the summary report sections, for each of the subjects extended documentation has been prepared that is included in the Appendix. This includes key resource material captured as verbatim extracts from reports prepared by others.

¹⁵ Cohen M. and Piquero A., *New evidence on the monetary value of saving a high risk youth*. J Quant Criminology (2009) 25:25-49. Published online: 7 August 2008. Available at: <http://www.springerlink.com/content/ahn381645901514n/fulltext.pdf> Accessed August 24, 2009.

KEY SUBJECT AREAS RELEVANT TO *KIDS 'N CRIME*:

Early Childhood Development

The importance of investment in early childhood development is increasingly apparent, in part based on the work of eminent economists analyzing the significant findings outlined in the following section on child care/pre-school.

Nobel prize-winning economist James Heckman together with others has found that early childhood is the most important period for influencing the lives of children, youths and adults:

There are many reasons why investing in disadvantaged young children has a high economic return. Early interventions for disadvantaged children promote schooling, raise the quality of the work force, enhance the productivity of schools, and reduce crime,¹⁶ teenage pregnancy and welfare dependency. They raise earnings and promote social attachment. Focusing solely on earnings gains, returns to dollars invested are as high as 15% to 17%.¹⁷

The timing of investment is critical. Efforts to influence development are far more effective in early life than in later years. "A dollar invested in early childhood yields three times as much as for school-aged children and eight times as much for adult education."¹⁸ This statement is illustrated in the graph on the following page, from a paper by James Heckman.

The Human Early Learning Partnership based at the University of British Columbia, Vancouver, in August, 2009 released a report advocating "A Comprehensive Policy Framework for Early Human Capital Investment in BC."¹⁹ In that document, the argument is made that improved early childhood development will improve school readiness and in turn improve the performance of children in the school system. The factors involved include "--- all the key domains of children's early development that have life-long impacts: physical well-being, social competence, emotional maturity, language and cognitive development, and communications and general knowledge in the majority language and culture."²⁰

This document also includes reference to research showing that cognitive skills in a country significantly influence economic growth rates in that nation. Research carried out at Stanford University indicates that a country with moderately higher cognitive skills in its school age population as measured by international standards is likely to have a superior growth rate of Gross Domestic Product.²¹

¹⁶ Underlining added for emphasis.

¹⁷ Heckman J. "Catch 'em Young", *Wall Street Journal*, January 10, 2006.

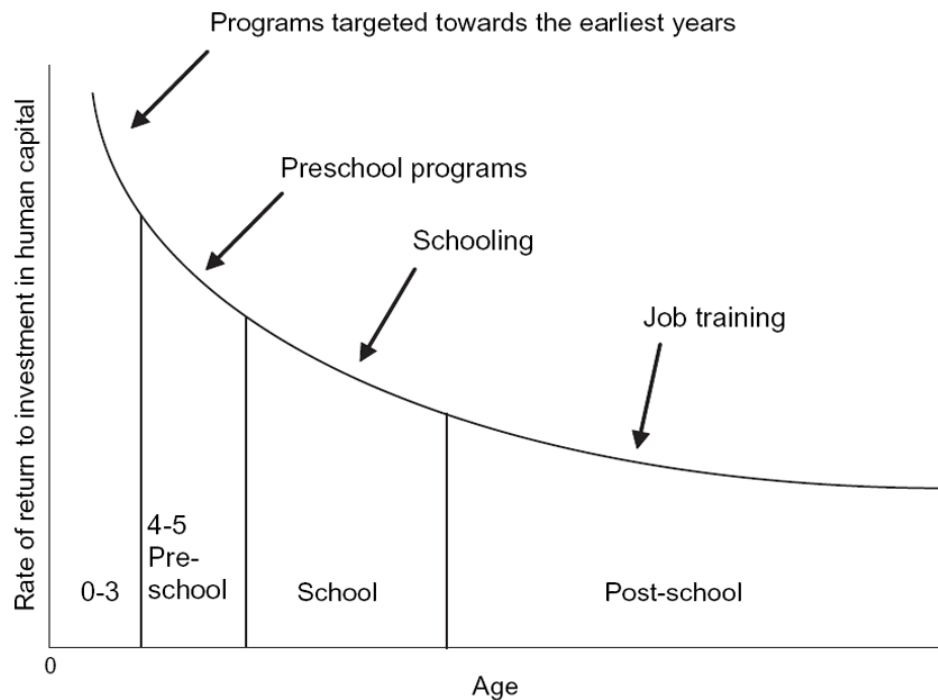
¹⁸ McCain M. Mustard J. Shanker S. *Early Years Study 2: Putting Science Into Action*, Council for Early Child Development, Toronto 2007.

¹⁹ Kershaw P. Anderson L. Warburton B. Hertzman C. *15 by 15: A comprehensive policy framework for early human capital investment in BC*. Human Early Learning Partnership, University of British Columbia. August 2009.

²⁰ Kershaw et al, *supra*, n.19

²¹ Hanushek E. Woessman L. The role of cognitive skills in economic development, published in *Journal of Economic Literature*, September 2008, retrieved from http://edpro.stanford.edu/hanushek/admin/pages/files/uploads/cognitive_skills.pdf Accessed November 23, 2009.

Returns to a Unit Dollar Invested



Source: Heckman J. *Schools, Skills, and Synapses*, Institute for the Study of Labour, Bonn, IZA discussion paper No. 3515, May, 2008, http://jenni.uchicago.edu/papers/Heckman_2008_EI_v46_n3.pdf, Accessed November 22, 2009.

If that growth rate differential over a period of 40 years averaged 0.63 per cent per annum more than another country lacking that skills advantage, then over a period of 60 years the result of that compound growth would amount to an advantage of 20 percent in the economic growth of the higher performing country.²² In essence, the latter country enjoys much higher productivity.

Coupling the impact of superior early childhood development with the corresponding impact of superior cognitive performance in the school aged population indicates a convincing link between early childhood and economic growth. The Human Early Learning Partnership report referred to above claims that over a 40 year period the achievements enabled by improved early childhood development applied to the situation in British Columbia have the potential to impact the provincial economy equivalent to an amount of just over \$400 billion invested at a rate of 3.5 per cent annual interest.²³

A key part of the mechanism that could be used to facilitate this enormous growth is the Early Development Instrument (EDI), “--- a population-based tool used to measure the state of children’s development.” “With its proven reliability, the EDI has now been used in jurisdictions across Canada, the United States, Australia, Chile and several other countries.” Using this tool, data for British Columbia are collected by kindergarten teachers and interpreted by the Human Early Learning Partnership. The results show

²² Kershaw et al, *supra*, n.19

²³ Kershaw et al, *supra*, n.19

that there is potential for and a need for substantial improvement in the school-readiness of kindergarten children in this province.²⁴

In addition to the economic improvement outlined above, this initiative likely would substantially reduce the incidence of crime. Analysis of early childhood development studies as discussed elsewhere in this report shows that the development induced would contribute significantly to lower incidence of crime in later life.

Child Care/Pre-School

A key landmark in early childhood development efforts is the High/Scope Perry Preschool Study carried out in a Michigan community. A high quality preschool program was established at ages 3 and 4 for a group of low-income African-American children who were assessed to be at high risk of school failure.

The results have been compared at intervals with a similar control group that received no pre-school program. Remarkable differences have been noted between these two groups. With the children having reached the age of 40, results included:

- “The program group significantly outperformed the no-program group on highest level of schooling completed.”
- The program group had a significantly higher performance in terms of employment; earnings; more stable and superior dwelling arrangements; car ownership; lower use of social services.
- “--- the Perry Preschool program played a significant role in reducing overall arrests and arrests for violent crime as well as property and drug crimes and subsequent prison or jail sentences ---.”²⁵

Benefit–cost analysis of the age 40 results shows the economic return to society of the Perry Preschool program was \$16.14 per dollar invested. Of that return, \$12.90 or 80 per cent went to the general public. Of the public return, \$11.30 or 88 per cent came from reduced incarceration and other crime savings.²⁶ [Underlining added for emphasis].

Other similar studies such as the Abecedarian [North Carolina] and Chicago [Longitudinal Study] also have shown significant benefits, including a lower probability of involvement in criminal activity.^{27 28} “The most basic implication of this [Perry Preschool] study is that all young children living in low-income families should have access to preschool programs that have features that are reasonably similar to those of the High/Scope Perry Preschool program.”²⁹ In general, these types of early interventions if properly designed, staffed and executed can produce quite beneficial results.^{30 31 32}

²⁴ Kershaw et al, *supra*, n.19

²⁵ Schweinhart, L. *The High/Scope Perry Preschool Study Through Age 40: summary, conclusions and frequently asked questions*. High/Scope Educational Research Foundation. Ypsilanti, MI.

http://www.highscope.org/file/Research/PerryProject/3_specialsummary%20col%2006%2007.pdf

Accessed November 19, 2009

²⁶ Schweinhart, L. *supra* n.25

²⁷ Heckman J. *Schools, Skills, and Synapses*, Institute for the Study of Labour, Bonn, IZA discussion paper No. 3515, May, 2008, http://jenni.uchicago.edu/papers/Heckman_2008_EI_v46_n3.pdf

Accessed November 22, 2009. <http://ftp.iza.org/dp3515.pdf>

²⁸ Welsh, B. *Evidence-Based Crime Prevention: Scientific Basis, Trends, Results and Implications for Canada*. Research Report: 2007-1. Public Safety Canada, National Crime Prevention Centre.

<http://www.publicsafety.gc.ca/prg/cp/fl/evidenced-based-cp-e.pdf>

²⁹ Schweinhart, L. *supra*, n.25

³⁰ Heckman J. *supra*, n.27

A comprehensive analysis undertaken of crime prevention programs in Washington state has showed that “Early childhood education for low income 3- and 4-year-olds --- provide[s] very attractive returns on [public] investment.”³³ A more recent study by the same authority re-iterated this conclusion and showed total benefits minus costs per participant of \$12,196 compared with marginal program costs of \$593 per participant.³⁴

In each of these studies it is emphasized that the quality of the intervention in terms of program design and quality of staff involved is key to whether significant improvements are achieved.

Parenting Education

“Sensitive, responsive parenting is the single most important benefit children can receive during their early years.”³⁵

Parents and their capabilities with respect to caring for and nurturing young children are important to early childhood development. In turn, as children grow into youths and adults, their lives are vitally affected by their childhood experiences. Education of parents and potential parents so that they are better able to perform that role is a key to helping their children avoid growing into a life of crime.

Fetal Alcohol Spectrum Disorders (FASD) affects up to 9 in 1,000 births in Canada, affecting 300,000 in our country. On average, FASD costs \$1-2 million through the lifetime of a person affected.³⁶ FASD is caused only by maternal alcohol use during pregnancy. Education of potential parents concerning this risk is a key aspect of dealing with this major societal problem, which leads to an increased risk of involvement with the criminal justice system.

Socio-economic status and maternal mental health are particularly salient factors in determining the effectiveness of parent training. Low socio-economic status has been correlated with a negative response to parent training, and a consequent parental inability to deal with externalizing behaviour problems in the child.³⁷

³¹ Welsh, B. *supra*, n.28

³² Galinsky E. *The Economic Benefits of Early-Childhood Education: What Makes the Difference?* Families and Work Institute, Committee for Economic Development (2006).
http://www.ced.org/images/library/reports/education/early_education/report_prek_galinsky.pdf
Accessed February 19, 2010.

³³ Aos S. Lieb R. Mayfield J Miller M. Pennucci A. *Benefits and costs of prevention and early intervention programs for youth*. Olympia: Washington State Institute for Public Policy, 2004.

<http://www.wsipp.wa.gov/rptfiles/04-07-3901.pdf>

³⁴ Aos S. Miller M. Drake, E. *Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs, and Crime Rates*. Olympia: Washington State Institute for Public Policy, 2006.

<http://www.wsipp.wa.gov/rptfiles/06-10-1201.pdf>

³⁵ Wilms, D. (ed.) *Vulnerable Children* (2002) cited in Invest in Kids website,
<http://www.investinkids.ca/parents/about-us/articletype/articleview/articleid/1773/why-parenting-is-important.aspx> Accessed October 27, 2009.

³⁶ Public Health Agency of Canada. *Fetal Alcohol Spectrum Disorder: a framework for action*. Retrieved July 30, 2006: http://www.phac-aspc.gc.ca/publicat/fasd-fw-etcaf-ca/pdf/fasd-fw_e.pdf

³⁷ Dishion & Andrews, 1995, in Sandra M. Reyno and Patrick J. McGrath, *Predictors of parent training efficacy for child externalizing behaviour problems – a meta-analytic review*. *Journal of Child Psychology and Psychiatry* 47:1 (2006)

“Five types of family-based programs have been found to be effective in preventing Crime: home visitation; day care/preschool; parent training (with younger children); home/community parent training (with older children); and multisystemic [MST] therapy.”³⁸ “MST is a multiple component treatment program conducted in families, schools and communities to address serious antisocial behaviour in youths.” “The particular type of treatment is chosen according to the particular needs of the young person.”³⁹

The research cited above found that “--- parent training with younger children and MST are more effective in preventing delinquency or later criminal behavior.” It should be noted that home visitation, day care/preschool and MST all include parent education.

In the United Kingdom, research has demonstrated that a parenting program for parents of children at risk of developing conduct disorder involves modest costs, demonstrates strong clinical effect, and thus is cost effective.⁴⁰

The several examples cited above together with the considered opinions of leading researchers indicate that parenting education offers substantial potential to reduce the risk of children growing into a life of crime.

Monitoring and Home Visits During Pregnancy and After Birth

Some communities in the U.S. and Canada have committed to providing mothers with continued support after birth through monitoring/home visits, typically by qualified nurses. For example, for the past 20 years, every child in Hawaii has been assessed for proper development for the first three years. During this time, support is also provided to the family.⁴¹ Similarly, programs of this type have been active in Oregon, the state of Washington and in British Columbia. As well as monitoring child health, this type of initiative inherently has a significant component of parent education.

Some of the most successful early childhood development initiatives have included home visits as an integral part of their design.

“A 2005 analysis by the Rand Corp. found that for every dollar spent providing nurse visitors to high-risk families, the government could save nearly \$6 in welfare, juvenile-justice and health-care costs.”⁴² Studies published in the Journal of the American Medical Association in 1997⁴³ and 1998⁴⁴ found that when new mothers were visited by nurses during pregnancy and two years after birth, compared with control groups:

³⁸ Welsh, B. *supra*, n.28

³⁹ Welsh, B. *supra*, n.28

⁴⁰ Edwards, R. Ceilleachair, A. Bywater, T. Hughes, D. Hutchings, J. *Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis*. BMJ 2007;334:682-;originally published online 9 Mar 2007; doi:10.1136/bmj.39126.699421.55

⁴¹ Cooke, Sandy (retired director – Covenant House Vancouver), personal communication, June 27, 2006. cited in Maughan, A. Park D. (ed.) *Kids 'N Crime: Report on the Development and Prevention of Criminality Among Children and Youth*, The Vancouver Board of Trade, October 2006. May be accessed at: <http://www.boardoftrade.com/policy/CrimeTaskForceReport-FINAL-OCT24-06.pdf>

⁴² Szalavitz M. Nurse home visits: a boost for low-income parents. *Time* magazine, March 2, 2009. <http://www.time.com/time/printout/0,8816,1881950,00.html#>

⁴³ Olds D. Eckenrode J. Henderson C. Kitzman H. Powers J. Cole R. Sidora K. Morris P. Pettitt L. Luckey D. Long-term effects of home visitation on maternal life course and child abuse and neglect. *JAMA*. 1997 Aug 27;278(8):637-43. Abstract accessed February 17, 2010.

- There was a nearly 50% drop in rates of substantiated child abuse or neglect;
- Mothers spent less time on welfare and worked more; and
- The children were 59% less likely to have been arrested in their first 15 years.⁴⁵

Each of the following examples has shown a positive ratio of benefits to costs. The proportion of the program accounted for by home visits is not specified. Some of these programs are discussed in greater detail elsewhere in this report.

- The Perry Preschool Research Project, described earlier.
- The Elmira (New York) Prenatal/Early Intervention Project (PEIP) is one home visitation program that has shown particularly impressive results in reducing delinquency and improving other life course outcomes.⁴⁶
- Nurse-Family Partnership has grown from the Elmira project. This program for low income, disadvantaged women provides intensive visitation by specially trained nurses during a woman's first pregnancy and for two years after that birth.⁴⁷
- Home Visiting Programs for At-risk Mothers and Children (Washington state) focus on mothers considered to be at risk for parenting problems.⁴⁸
- HIPPPY (Home Instruction Program for Preschool Youngsters) is designed for families whose parents have a limited education.⁴⁹
- Parents as Teachers (Washington State) is a home visiting program for parents and children with a main goal of having healthy children ready to learn by the time they go to school.⁵⁰

It appears that home visits with the monitoring and coaching involved may play a significant role in the success of early childhood development programs for disadvantaged children.

Learning Disabilities

A 2002 report prepared for the Learning Disabilities Association of Canada estimates the difference in costs between persons in the population who have learning disabilities versus those without cognitive difficulties.⁵¹ The costs included those incurred by the

⁴⁴ Olds D. Henderson C. Cole R. Eckenrode J. Kitzman H. Luckey D. Pettitt L. Sidora K. Morris P. Powers J. Long-term effects of nurse home visitation on children's criminal and antisocial behavior *JAMA*. 1998; 280:1238-1244. <http://jama.ama-assn.org/cgi/content/full/280/14/1238> Accessed February 17, 2010.

⁴⁵ Szalavitz M. *supra*, n.42

⁴⁶ Welsh, B. *supra*, n.28

⁴⁷ Goodman A. *The story of David Olds and the nurse home visiting program* Robert Wood Johnson Foundation, July, 2006 <http://www.rwjf.org/pr/product.jsp?id=15872>

⁴⁸ Aos et al., *supra*, n.33

⁴⁹ Aos et al., *supra*, n.33

⁵⁰ Aos et al., *supra*, n.33

⁵¹ Cameron C. The Roeher Institute, *Learning Disabilities in Canada: Economic Costs to Individuals, Families and Society*, prepared for the Learning Disabilities Association of Canada, <http://www.pacfold.ca/download/Supplementary/Economic.pdf> Accessed October 26, 2009.

families of these individuals with respect to the learning disabilities of their family members, and costs to society in general.

The types of costs included those with respect to health care; education; criminal justice; income transfers through the Canada Pension Plan; employment insurance; workers compensation and provincial welfare programs. Also included are services provided to persons with disabilities to assist them with everyday activities.

In addition, indirect costs borne by persons with learning disabilities were included, particularly reductions in earnings and reductions in household incomes.

The study estimated that the total cost differential from birth to retirement at age 65 between a person with learning disability and a person with no cognitive difficulty would be almost \$2 million. Discounting the annual cost stream to the year 2008 yields a total of \$544,000 in 2008 dollars.

The analysis is based on a rate of learning disabilities of 5 per cent in the Canadian population, and cites this as a widely accepted prevalence rate. On that basis, the total cost in terms of 2008 dollars and in terms of the 2008 population would be \$907 billion.

Fortunately, "Available evidence suggests that these costs could be contained through policy and funding measures to prevent significant disruptions to the education of people with (learning disabilities) and to improve educational attainment."⁵² "For instance, other research has already shown that educational attainment is a key factor that fosters the paid employment of people with disabilities"⁵³

--- while significant economic costs are likely to remain for all concerned parties living with and working to address issues of (learning disabilities), the available evidence suggests that measures can be implemented to address the issue. It does appear that public policy and investments to further the education of people with learning disabilities, and to prevent major delays and disruptions to their learning, hold promise for improving economic outcomes for people with [learning disabilities] later in life, and for reducing long-term public costs through income support programs.⁵⁴

The Learning Disabilities Association of America notes that "Typical learning difficulties include dyslexia, dyscalculia and dysgraphia – often complicated by associated disorders such as attention deficit/hyperactivity disorder."⁵⁵

Diagnosis of children for learning disabilities or for risk of learning disabilities can be carried out at quite low cost, in the range of \$25 to \$50 per child. Good classroom teaching at no incremental cost can remedy the situation for children that have the problem, except for 1 to 2 per cent. The cost of additional

⁵² Cameron C. *supra* n.51

⁵³ Fawcett G. (1996) *Living with disability in Canada: an economic portrait*, Ottawa: Canadian Council on Social Development; Cameron C. (1993) *On target? Canada's employment-related programs for persons with disabilities*, North York, The Roeher Institute.

⁵⁴ Cameron C. *supra* n.51

⁵⁵ Learning Disabilities Association of America, <http://www.ldanatl.org/> Accessed October 27, 2009

remediation varies substantially, but one special education teacher at a cost of approximately \$75,000 per annum can deal with 25 to 30 children.⁵⁶

Attention Deficit Hyperactivity Disorder (ADHD)

Attention Deficit Hyperactivity Disorder involves impulsive or poorly inhibited behaviour, where an individual tends to act before thinking or has difficulty waiting.⁵⁷

Results announced recently by the National Institute of Mental Health (US) from a study funded in part by the Institute indicates that in the United States, 8.6 per cent of children and adolescents ages 8 to 15 have ADHD.⁵⁸ Earlier estimates were that between 3 and 5 percent of children in the U.S. have ADHD, which would be equivalent to a total of 2 million children in the country. Two estimates for Canada place the prevalence rate for ADHD at 6.6 per cent for children aged 2 to 5 years.⁵⁹ And 4.8 per cent among children 4 to 17 years of age,⁶⁰ The condition continues into adulthood for many persons, with an estimate of 5 per cent of the U.S. adult population or 11 million persons being affected.⁶¹

Other research has reported that “--- adult ADHD leads to 120 million days of annual work lost in the US labor force.”⁶²

ADHD in childhood is a significant risk factor for criminal activity later in life, although most individuals with ADHD do not engage in criminal activity.^{63 64}

The approximate economic cost of the increased incidence of crime attributable to persons who appear to have symptoms of ADHD during childhood is reported to be

⁵⁶ Siegel, L. Professor, Educational and Counselling Psychology, and Special Education, University of British Columbia, Vancouver. Personal communication, December 30, 2009.

⁵⁷ Fowler, M. *ADD/ADHD NICHCY: Attention Deficit/Hyperactivity Disorder*, National Information Center for Children and Youth with Disabilities (NICHCY) briefing paper. LD Online. <http://www.ldonline.org/article/5970> Accessed January 5, 2010.

⁵⁸ *National Survey Tracks Rates of Common Mental Disorders Among American Youth*, National Institute of Mental Health, press release, December 14, 2009. <http://www.nimh.nih.gov/science-news/2009/national-survey-tracks-rates-of-common-mental-disorders-among-american-youth.shtml> Accessed January 3, 2010. The study referred to was published online ahead of print December 14, 2009, in the journal of Pediatrics; Merikangas, Kathleen, lead author.

⁵⁹ Butler-Jones, David. *The Chief Public Health Officer's Report on the State of Public Health in Canada, 2009: Growing Up Well – Priorities for a Healthy Future*. <http://www.phac-aspc.gc.ca/publicat/2009/cphorsphc-respacsp/pdf/cphorsphc-respacsp-eng.pdf> Accessed January 8, 2010.

⁶⁰ Waddell, C. McEwan, DR. Shepherd, CA. Offord, DR. Hua, JM. (2005) A Public Health Strategy to Improve the Mental Health of Canadian Children, *Canadian Journal of Psychiatry*, 50(4), 226-233., cited in Butler-Jones, David, *supra*, n.59.

⁶¹ Barkley, Russell A. *ADHD in Adults: History, Diagnosis, and Impairments*. (2007) course content. [ContinuingEdCourses.Net. http://www.continuingeducation.net/active/courses/course034.php](http://www.continuingeducation.net/active/courses/course034.php) Accessed January 3, 2010.

⁶² Kesler, RC. Adler, L. Ames, M. Barkley, RA. Bimbaum, H. Greenber, P. Johnston, JA. Spenser, T. Ustun, TB. The prevalence and effects of adult attention deficit/hyperactivity disorder on work performance in a nationally representative sample of workers. *J Occup Environ Med* 2005;47(6): 565-572, cited in: Fletcher, J. Wolfe, B. *Long-term Consequences of Childhood ADHD on Criminal Activities*. *J Ment Health Policy Econ* 12, 119-138 (2009). <http://publichealth.yale.edu/news/october09/pdf/ADHD-Fletcher.pdf> Accessed January 2, 2010.

⁶³ Fletcher, J. Wolfe, B. *Long-term Consequences of Childhood ADHD on Criminal Activities*. *J Ment Health Policy Econ* 12, 119-138 (2009). <http://publichealth.yale.edu/news/october09/pdf/ADHD-Fletcher.pdf> Accessed January 2, 2010.

⁶⁴ *Research identifies link between childhood ADHD and adult crime*. Yale School of Public Health, Yale University, New Haven, Connecticut. News Release Posted 10-22-09 <http://publichealth.yale.edu/news/october09/adhd-fletcher.html> Accessed January 2, 2010.

roughly \$2 to \$4 billion annually in the U.S., borne by these persons, their families and society as a whole.⁶⁵

A fairly comprehensive analysis of the cost of ADHD has been carried out, but based on a limited number of studies and with some rough approximations used to arrive at a total cost.⁶⁶ It is estimated that the annual cost of illness for a child/adolescent with ADHD is in the range of \$12,005 to \$17,458 (US), with a mean estimate of \$14,576, expressed in terms of 2005 dollars.

Combining the cost estimate for children with that for adults, yields a preliminary and incomplete estimate of at least \$74.1 billion annually as the cost of ADHD in the United States for all age groups. This is comparable to the costs of several other major health care conditions such as stroke and asthma.⁶⁷

In most cases, ADHD can be treated effectively with medication, with psychosocial accommodations, or a combination of both.⁶⁸ A recent posting by a leading authority on the subject states that “--- among the treatments that result in the greatest degree of improvement in the symptoms of the disorder, research overwhelmingly supports the use of stimulant medication for this disorder ---.”⁶⁹ Early interventions to reduce the effects of ADHD can have substantial economic benefits.⁷⁰

Aggression: Conduct Disorder and Oppositional Defiant Disorder

“Conduct Disorder (CD) is a pattern of behaviour that persistently violates the basic rights of others or society’s rules.” “Oppositional Defiant Disorder (ODD) is a pattern of negative, hostile, and defiant behaviour.”⁷¹ “Aggression is often the primary characteristic of oppositional defiant disorder and conduct disorder.”⁷²

“--- aggressive-disruptive behaviour problems are the most common reason for mental health service referral in childhood. [These problems] disproportionately affect children living under conditions of socio-economic disadvantage, compounding the educational and social deprivation experienced by these children.”⁷³

“--- without prevention, early risk factors tend to accumulate and escalate over time, so that children who complete the preschool years without learning to control their aggression enter grade school at high risk for continuing and escalating adjustment problems. Negative consequences include peer rejection and victimization, as well as

⁶⁵ Fletcher, J. Wolfe, B. *supra*, n.63

⁶⁶ Pelham, EP. Foster, EM. Robb, JA. The Economic Impact of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents, *Journal of Pediatric Psychology* 2007 32(6):711-727; doi:10.1093/jpepsy/jsm022. <http://jpepsy.oxfordjournals.org/cgi/reprint/32/6/711.pdf> Accessed January 7, 2010.

⁶⁷ Pelham et al, *supra*, n.66

⁶⁸ Barkley, RA. *Attention Deficit-Hyperactivity Disorder, Third Edition: A Handbook for Diagnosis and Treatment*. Guilford Publications, 2006. Excerpt: Part I, The Nature of ADHD, chapter 1: History. Posted online: <http://www.russellbarkley.org/images/BarkleyCh01.pdf> Accessed January 8, 2010.

⁶⁹ Barkley RA. *supra*, n.68

⁷⁰ Fletcher, J. Wolfe, B. *supra*, n.63

⁷¹ Fowler, M. *ADD/ADHD NICHCY: Attention Deficit/Hyperactivity Disorder*, National Information Center for Children and Youth with Disabilities (NICHCY) briefing paper. LD Online. <http://www.ldonline.org/article/5970> Accessed January 5, 2010.

⁷² Tremblay RE. et al., *supra*, n.10

⁷³ Bierman, KL. Programs and services proven to be effective in reducing aggression in young children. Comments on Webster-Stratton, Domitrovich and Greenberg, and Lochman. *Encyclopedia on Early Childhood Development*. Centre of Excellence for Early Childhood Development. Published online May 20, 2003; <http://www.child-encyclopedia.com/documents/BiermanANGxp.pdf> Accessed January 11, 2010.

academic discouragement, and escalating frustration, setting the stage for adolescent disengagement, school failure, alcohol and substance use, and criminal activity.”⁷⁴ These problems can continue into adulthood.

Aggressive behaviour is exhibited at an early age by most children. They tend to grow out of this within a few years, but 5 to 10 per cent do not. This small minority are at risk for the consequences outlined above.⁷⁵

Several factors affect the aggressive tendencies of an individual, including gender (boys tend to be more aggressive than girls), family heritage, abuse and neglect, use of alcohol or tobacco or drug abuse during pregnancy, and temperament.⁷⁶

There are a variety of factors that can help children to develop without abnormal aggression. These include an optimal prenatal environment, a healthy diet for the child, and a stimulating environment.⁷⁷

Aggression is best addressed when children are young. “Intervention programs for at-risk families as well as intensive, high-quality pre-school programs where children receive good stimulation from qualified early childhood workers reduce the risks for persistent preschool aggression, and violent and non-violent delinquency in adolescence and adulthood.”⁷⁸

Adults play a key role in discouraging aggression in the early years of a child's life and encouraging peaceful behaviour. Parents and other caregivers need to help children to reduce aggressive behaviour, learn to have empathy towards others, and engage in problem solving as an alternative to aggression. The development of social skills in children tends to decrease their use of physical aggression.⁷⁹

If a child does not respond to adult discipline, learn to control aggressive behaviour and create positive ties with adults and children around them, it is important to seek professional help without delay.⁸⁰

“Parenting training programmes are effective in helping families with children at risk of developing conduct disorders.”⁸¹ An analysis in the United Kingdom of a parenting program for parents of children at risk of developing conduct disorder found that the program had strong clinical effect at modest costs, “---suggesting it would represent good value for money for public spending.”⁸²

⁷⁴ Bierman, KL., *supra*, n.73

⁷⁵ Tremblay et al., *supra*, n.10

⁷⁶ Tremblay et al., *supra*, n.10

⁷⁷ Tremblay et al., *supra*, n.10

⁷⁸ Tremblay et al., *supra*, n.10

⁷⁹ Tremblay et al., *supra*, n.10

⁸⁰ Tremblay et al., *supra*, n.10

⁸¹ Edwards R, Ceilleachiar A, Bywater T, Hughes D, Hutchings J, Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis, *BMJ* 2007;334:682-; originally published online 9 Mar 2007; doi:10.1136/bmj.39126.699421.55, downloaded from bmj.com 2 August 2007, citing Webster-Stratton C, Hancock L. Training for parents of young children with conduct problems: content, methods, and therapeutic processes. In: Schaefer CE, Friesmeister JM, eds. *Handbook of parent training*. New York: John Wiley, 1998.

⁸² Edwards R, Ceilleachiar A, Bywater T, Hughes D, Hutchings J, Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis, *BMJ* 2007; 334; 682-; originally published online 9 Mar 2007; doi:10.1136/bmj.39126.699421.55, downloaded from bmj.com 2 August 2007.

Research carried out in the United Kingdom has estimated that for persons who had conduct disorder in childhood, the costs of government funded services for these individuals at age 28 were 10 times more than for persons with no behavioural problems. The comparison in terms of U.S. funds is cited as \$137,450 versus \$14,571.⁸³

It is clear that aggression rooted in childhood can be extremely costly not only in humanitarian terms, but also in terms of economic costs. Conversely, there appear to be approaches to preventing conduct disorder that can have good effects if utilized while the child is at an early age.

Fetal Alcohol Spectrum Disorders (FASD)

Fetal Alcohol Spectrum Disorder (FASD) is estimated to affect 1 in 100 live births in Canada, and is cited as “---the leading cause of developmental and cognitive disabilities in Canada.”⁸⁴

FASD is caused only by maternal alcohol use during pregnancy. The disorder can result in a constellation of manifestations at different stages in life, including: delayed development in infancy, attention and language problems in childhood, later learning problems, poor impulse control, and problems with judgment. This leads to an increased risk of involvement with the criminal justice system.⁸⁵

The average annual cost of FASD in Canada has been estimated to be approximately \$21,600 per individual patient, expressed in 2007 dollars.⁸⁶ The components of these costs include medical, education, social services and direct out-of-pocket costs such as for transportation and losses from acts of violence and stealing by individuals diagnosed with FASD. Also included are productivity costs from lost work time on the part of parents or other caregivers. Of the total costs, 25 per cent are “--- paid by the caregivers caring for their child or family members with FAS.” Not included in the total are costs incurred from the involvement of individuals with FASD in the criminal justice system, an involvement that is more common than for the population at large.⁸⁷

For Canada as a whole, the total cost of FASD on this basis is estimated to be \$5.3 billion annually. The largest single components of costs (are) education and medical costs accounting for 28% and 35% respectively.⁸⁸

“As many as one percent of children in the U.S. are born with FASD. Perhaps half of these children may be incarcerated sometime during their lives ---.”⁸⁹

⁸³ Scott S, Knapp M, Henderson J, Maughm B, Financial cost of social exclusion: follow up study of anti-social children into adulthood. *BMJ* 2001;323:191, cited in Edwards R, Ceilleachiar A, Bywater T, Hughes D, Hutchings J, Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis, *BMJ* 2007;334:682-; originally published online 9 Mar 2007; doi:10.1136/bmj.39126.699421.55, downloaded from bmj.com 2 August 2007.

⁸⁴ Stade B, Ali A, Bennett D, Campbell D, Johnston M, Lens C, Tran S, Koren G. *The burden of prenatal exposure to alcohol: revised measurement of cost.* *Can J Clin Pharmacol* Vol 16(1) Winter 2009:e91-e102; January 23, 2009. <http://www.cjcp.ca/pubmed.php?articleId=181>

⁸⁵ Maughan A. *Kids 'N Crime: Report on the development and prevention of criminality among children and youth.* Park D ed. Vancouver, British Columbia: The Vancouver Board of Trade; 2006. May be accessed at: <http://www.boardoftrade.com/policy/CrimeTaskForceReport-FINAL-OCT24-06.pdf>

⁸⁶ Based on calculations re the ages from birth to 53 years.

⁸⁷ Stade et al, *supra*, n.84

⁸⁸ Stade et al, *supra*, n.84

Trauma

In the original *Kids 'N Crime* document there was no explicit discussion of childhood trauma as a determinant of youth or adult criminal activity. However, it is clear that trauma in various forms is a significant factor in precipitating and continuing addiction. In turn, addiction is a motivating force in criminal activity undertaken to secure money for the purchase of illicit drugs. Accordingly, this discussion of trauma has been drafted for addition to the current document.

“Trauma is a prevailing antecedent to substance use, and is also related to current psychopathology and patterns of substance use.”⁹⁰ “Common personal and behavioural effects of emotional trauma include substance abuse.”⁹¹

In turn, addiction to illicit drugs is a major factor driving crime committed to pay for those drugs.

The huge cost of crime associated with drug addiction warrants an analysis of the cost of treatment for addiction and the cost of treatment for trauma as a key preventative measure. That analysis is largely beyond the current project. However, the magnitude of the challenge and the importance of it are implicit by the information that each year in the United States approximately five million children experience some form of traumatic experience. By the time a child reaches the age of eighteen, the probability that any child will have been touched directly by interpersonal or community violence is approximately one in four.

Traumatic events in childhood increase risk for a host of social (e.g., teenage pregnancy, adolescent drug abuse, school failure, victimization, anti-social behavior), neuropsychiatric (e.g., post-traumatic stress disorder, dissociative disorders, conduct disorders) and other medical problems (e.g., heart disease, asthma).⁹²

“The cost of unresolved trauma to society is incalculable. Trauma has been correlated to physical and mental illness; learning disabilities; addictions; deviant or aggressive behaviour; --- violence in individuals; ---.”⁹³

“--- potential sources of psychological trauma (that) are often overlooked (include): ---

- surgery, particularly emergency, and especially in the first 3 years of life
- serious illness, especially when accompanied by very high fever
- birth trauma⁹⁴

⁸⁹ Streissguth, A. et al, quoted in “Youth with FASD and the law: Helping them stay straight. *CHDD Outlook* Summer 2006 Vol 17(2) Center on Human Development and Disability at the University of Washington Health Sciences Center http://depts.washington.edu/chdd/outlook/outlook06_17.2.pdf#zoom=95 Accessed October 16, 2009.

⁹⁰ Krausz M. in introductory overview of conference: *Wounded Souls and the Vulnerable Self, Trauma and Addiction: Causes, Consequences and Treatment*, Vancouver, October 27-29, 2009.

⁹¹ Krausz M. *supra* n.90

⁹² Krausz M. *supra* n.90

⁹³ *What is Trauma*, The International Trauma-Healing Institute, <http://www.traumainstitute.org/trauma.php> Accessed November 11, 2009.

2010.

⁹⁴ *What is Trauma*, *supra* n.93

In addition, a form of traumatic stress in childhood that influences the brain is poor or inadequate relationship with a primary caretaker. Sources of this developmental or relationship trauma include the following:

- forced separation very early in life from the primary caregiver;
- chronic mis-attunement of caregiver to child's attachment signals ("mal-attachment") or reasons such as physical or mental illness, depression or grief.⁹⁵

The impact of trauma in many cases underlies the types of problems dealt with in other sections of this report.

Youth at Risk

In a comprehensive, penetrating analysis, leading U.S. researchers have estimated the monetary value of saving a high risk youth from a life of crime. Taking into account the costs of crimes to victims, criminal justice costs and costs incurred by the criminal (e.g. foregone wages), the costs of drug use and the cost of dropping out of high school, they estimated that the present value at age 18 of diversion from a life of crime is in the range of \$2.6 to \$5.3 million (2007 U.S. dollars).⁹⁶

--- research-based early intervention programs are effective at impacting the criminological risk factors associated with crime and thus, they prevent or reduce criminality while also producing collateral benefits for individuals, families, schools, communities and society as a whole.⁹⁷

Research by the Washington State Public Policy Institute previously cited concludes that "--- there are some programs for juvenile offenders that produce especially attractive long-run economic returns." For a Functional Family Therapy program, the average cost per juvenile participant was \$2,325 (U.S.), versus \$34,146 in life cycle benefits, "--- measured in terms of the taxpayer and crime victim costs that are avoided because of the reduced long-run level of criminal activity of the youth."⁹⁸

High School Graduation

"Currently, approximately 20% of Canadians aged 20 years and over have never completed high school."⁹⁹ The most recent figures for British Columbia indicate that

⁹⁵ Healing emotional and psychological trauma: symptoms, treatment and recovery, Helpguide.org, http://www.helpguide.org/mental/emotional_psychological_trauma.htm Accessed January 27, 2010.

⁹⁶ Cohen M. Piquero A., *supra*, n.15

⁹⁷ Turpel-Lafond M.E. Kendall P. *Kids, Crime and Care, Health and well-being of children in care: youth justice experiences and outcomes*, joint report of the representative for children and youth and the provincial health officer, Province of British Columbia. February, 2009. p.55.

<http://www.rcybc.ca/Images/PDFs/Reports/Youth%20Justice%20Joint%20Rpt%20FINAL%20.pdf>

⁹⁸ Aos, *supra*, n.34.

⁹⁹ Statistics Canada, *2006 Census of Population*, (Ottawa 2006), Catalogue no. 97-560XCB2006007, cited in "No 'drop' in the bucket: the high costs of dropping out". *Lessons in Learning*, Canadian Council on Learning. February 4, 2009. <http://www.ccl-cca.ca/CCL/Reports/LessonsInLearning/LinL20090204CostofDroppingout.htm>. Accessed August 12, 2009.

presently 79 to 80 percent of students are completing high school.¹⁰⁰ ¹⁰¹ More than 11,000 British Columbia students annually do not graduate from high school.¹⁰²

Directly or indirectly, high school non-completion has enormous fiscal implications in terms of expenditures on health, social services and programs, education, employment, criminality and lower economic productivity.¹⁰³

School dropouts are more likely to be involved in criminal activity, have physical and mental health problems, and be affected by substance abuse.¹⁰⁴

Work by a Canadian researcher has estimated the magnitude of several factors that contribute to the cost of dropping out of high school. These include private health care costs, the public cost of increased social assistance received by drop-outs, the additional cost of crime committed by dropouts, as well as labour and employment costs. The latter two factors entail private earnings losses, tax revenue losses, and public costs of employment insurance. Altogether, the aggregate tangible losses are calculated to be \$19,000 per annum per dropout, or \$37 billion for Canada as a whole. Intangible losses are projected to be a further \$5,400 annually per dropout, or \$6.4 billion in aggregate for Canada, for a total of \$43.4 billion.¹⁰⁵

Of this, crime is estimated to account for only \$224 per high school dropout for a total of \$350 million annually in Canada. That is very much less than appears to be implied by a related estimate from U.S. experts noted under the Youth at Risk section of this report.

Leading U.S. researchers have estimated that the lifetime costs of an individual student dropping out of high school discounted to a present value at age 18 are between \$420,000 and \$630,000, expressed in 2007 U.S. dollars. The amount includes estimates of lost wage productivity, fringe benefits and nonmarket losses.¹⁰⁶

The relationship between education and crime is most obvious when considering rates of incarceration.¹⁰⁷

High school leavers are disproportionately represented among prison populations. For example, in British Columbia, non-graduates represent 34% of the overall population, but they make up 74% of the prison population.¹⁰⁸

¹⁰⁰ Defined as percentage of students that graduate with a Dogwood Diploma within six years of entering Grade 8. Statistics cited in British Columbia Ministry of Education, *2008/09 Service Plan Report*, http://www.bcbudget.gov.bc.ca/Annual_Reports/2008_2009/educ/educ.pdf Accessed August 13, 2009.

¹⁰¹ BC Ministry of Education, Media Room. <http://www.bced.gov.bc.ca/news> Accessed August 13, 2009.

¹⁰² ReadNow BC. *Working Together for Literacy: British Columbia's Literacy Action Plan*. British Columbia Ministry of Education. <http://www.readnowbc.ca/pdfs/booklet.pdf> Accessed August 13, 2009.

¹⁰³ Olena H. *Cost estimates of dropping out of high school in Canada*. Prepared for Canadian Council on Learning. December 2008. <http://www.ccl-cca.ca/pdfs/OtherReports/CostofdroppingoutHankivskyFinalReport.pdf> Accessed August 12, 2009.

¹⁰⁴ Tremblay et al., *supra*, n.10

¹⁰⁵ Olena H. *supra*, n.103

¹⁰⁶ Cohen M. Piquero A., *supra*, n.15

¹⁰⁷ Levine J. Emery C. Pollack H. "The well-being of children born to teen mothers", *J Marriage Fam. Vol. 69(2007)*, pp. 105-122, cited in: *No "drop" in the bucket: the high costs of dropping out.* " *Lessons in Learning*, Canadian Council on Learning. February 4, 2009. <http://www.ccl-cca.ca/CCL/Reports/LessonsInLearning/LinL20090204CostofDroppingout.htm> Accessed August 12, 2009.

¹⁰⁸ Ungerleider C. and Burns, T. "The State and Quality of Canadian Public Elementary and Secondary Education", presented at the Social Determinants of Health across the Life-Span Conference, Toronto, November 2002, cited in "No 'drop' in the bucket: the high costs of dropping out". *Lessons in Learning*, Canadian Council on Learning. February 4, 2009. <http://www.ccl-cca.ca/CCL/Reports/LessonsInLearning/LinL20090204CostofDroppingout.htm>

The British Columbia Ministry of Education is committed to improved academic achievement for the overall student population in the province. The Ministry is pursuing two particular strategies to help enhance the high school completion rate.¹⁰⁹

One of these is to enhance the choice of courses and programs for secondary school students to keep them interested and attracted to complete high school. For example, apprenticeship training programs have been established in cooperation with colleges, providing a path for students to enter trades and to gain college credits.

Another approach is being undertaken by newly created Ministry of Education superintendents of achievement working in cooperation with school districts. Students whose performance indicates that they may not succeed in achieving high school graduation are identified. These students then may be actively helped in the school system, with positive results in terms of performance.

In addition, the Ministry is working cooperatively with others to improve the high school completion rate for Aboriginal students, which will also help to increase the overall completion rate. That aspect is covered in the following section of this report.

Aboriginal Youth

Aboriginal youth have a risk trajectory similar to that described throughout this report, but research indicates overrepresentation of Aboriginals in many of the risk categories. Similarly, statistics show an overrepresentation of Aboriginals in the prison population, which may be the outcome of greater exposure to risk factors.

Aboriginal youth are significantly less likely than the population of youth as a whole to achieve high school graduation. In turn, for the population as a whole there is a correlation between lack of academic achievement and involvement in the criminal justice system. As demonstrated elsewhere in this report, both the lack of academic achievement and criminal justice system involvement carry with them large costs to the individual and society.

Directly or indirectly, high school non-completion has enormous fiscal implications in terms of expenditures on health, social services and programs, education, employment, criminality and lower economic productivity.¹¹⁰

Low education has been identified as the key factor in explaining the relatively weak performance of Aboriginal Canadians in the labour market.¹¹¹

About three-quarters of Aboriginal adults involved in correctional services had not completed their secondary school education, compared to one-third of non-Aboriginal adults.¹¹² [Underlining added for emphasis.]

Accessed August 12, 2009.

¹⁰⁹ Personal communication, Public Affairs Bureau, British Columbia Ministry of Education, Victoria, August 14, 2009.

¹¹⁰ Olena H. *supra*, n.103

¹¹¹ Comfort D. Dejong M. Kozij J. *A portrait of the labour market outcomes of Aboriginal Canadians*. Human Resources and Skills Development Canada, Aboriginal Affairs Directorate Research Note, 2005, cited in Olena H. *Cost estimates of dropping out of high school in Canada*. Prepared for Canadian Council on Learning. December 2008. <http://www.ccl-cca.ca/pdfs/OtherReports/CostofdroppingoutHankivskyFinalReport.pdf> Accessed August 12, 2009.

A study has shown that based on the 2001 census, of the total population of Canada, 31 per cent had less than secondary school graduation. For the Aboriginal population of Canada, 48 per cent had less than secondary school graduation.¹¹³

In British Columbia, from the 2003/04 school year to the 2007/08 school year, the high school completion rate for aboriginal students varied between 46 and 48 per cent, with no clear trend. In comparison, the high school completion rate for non-Aboriginal students during this period varied between 72 and 76 per cent.¹¹⁴ Thus, there was a gap of approximately 27 per cent.

Taking into account additional graduation by way of BC Adult Graduation Diplomas and BC School Completion Certificates, on average there was a 21 to 22 per cent difference in the achievement of Aboriginal versus non-Aboriginal students.

Through the Canadian Rural Partnership, the Government of Canada is helping address the challenges of improving literacy skills in rural children ---. The federal government also funds Aboriginal Head Start to enhance the development and school-readiness of Indian, Métis, and Inuit children living in urban centres and large northern communities across Canada, as well as First Nations children living on reserve.¹¹⁵

The [British Columbia] Ministry of Education is working with school districts and Aboriginal communities across the province to sign Aboriginal education enhancement agreements. With over 40 district-wide agreements now coordinating local efforts to honour, engage and challenge Aboriginal students, communities around B.C. are already seeing significant benefits.¹¹⁶

Endnote

As noted earlier in this report, for most of the subject areas, more complete documentation has been assembled, including extracts or quotations from a wide variety of relevant key documents. That material is contained in the Appendix to this report.

¹¹² Statistics Canada, "Aboriginal people as victims and offenders", *The Daily*, June 6, 2006.

<http://www.statcan.gc.ca/daily-quotidien/060606/dq060606b-eng.htm> Accessed August 18, 2009.

¹¹³ Council of Ministers of Education, Canada. *The development of education reports for Canada. Report two: inclusive education in Canada: The way of the future*. October, 2008. Prepared by The Council of Ministers of Education, Canada, in Collaboration with The Canadian Commission for UNESCO.

¹¹⁴ British Columbia Ministry of Education, *Aboriginal Report 2003/04 – 2007/08: How are we doing?* <http://www.bced.gov.bc.ca/abed/perf2008.pdf> Accessed August 18, 2009. Data are for public schools only.

¹¹⁵ Council of Ministers of Education, Canada. *The development of education reports for Canada. Report two: inclusive education in Canada: The way of the future*. October, 2008. Prepared by The Council of Ministers of Education, Canada, in Collaboration with The Canadian Commission for UNESCO.

¹¹⁶ British Columbia Ministry of Education, *2009/10 – 2011/12 Service Plan*, Budget 2009. February 2009. <http://www.bcbudget.gov.bc.ca/2009/sp/pdf/ministry/educ.pdf> Accessed August 14, 2009.