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Creating Mentally Healthy Communities, Starting With Children

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Introduction

In keeping with current definitions used by the World Health Organization (WHO), mental health is a state of social and emotional well-being, not merely the absence of disorder.[1] As such, mental health is a resource for living, essential for all children to thrive and essential for optimal human development and functioning across the lifespan. Addressing the determinants of mental health and disorder in childhood may be the most effective way to improve the mental health of the population. Here, we consider what is needed to create mentally healthy communities in Canada, starting with children.

We begin by describing the current state of children's mental health in Canada, including the high prevalence of disorders, the current public policy response and the need for a new integrated population health strategy. This strategy suggests several complementary approaches to creating mentally healthy communities. We then consider each of these approaches in turn: promoting healthy development for all children; preventing disorders in children at risk; providing treatment for children with disorders; and monitoring outcomes for all children. We conclude by discussing the implications for new investments to create mentally healthier communities in Canada.

The Current State of Children's Mental Health in Canada

Prevalence and Impact of Mental Disorders in Children

Mental health is fundamental to human development. Yet at any given time an estimated 14% of children in Canada (or more than 800,000) experience mental disorders causing significant symptoms and impaired functioning at home, at school and in the community.[2] Approximately 50% of affected children experience more than one disorder, adding greatly to their burden.[2] Table 1 depicts disorder-specific prevalence in children, together with estimates of the population affected in Canada.[2]

Mental disorders are important, first and foremost, because they cause distress for children and prevent them from thriving and reaching their potential. The impact of these disorders is often underappreciated. For example, children who experience maltreatment (such as overt abuse or neglect) suffer immediate consequences, including

the lack of positive adult supports that every child needs. These children are then less able to participate socially and academically compared to other children.[3] Without intervention, they frequently go on to experience mental disorders such as conduct disorder, anxiety and depression.[4] These disorders compound their distress and further impede their social and academic development. Such children are then at high risk of not being able to fully participate in school, work, family and community life over the long term. Mental disorders are also important for more utilitarian reasons. They frequently persist into adulthood and are now a leading cause of disability in the population, with estimated costs to Canadians exceeding $14 billion annually.[5, 6] Given the high prevalence and the high costs for individual children over the life course, mental disorders are arguably the leading health problems that Canadian children face after infancy.

Table 1

Prevalence of Children's Mental Disorders and Population Affected

Disorder	Estimated Prevalence (Percent)	Age Range (Years)	Estimated Population*	Estimated Population Affected†
Any Anxiety Disorder	6.4	5–17	5,286,900	338,400
Attention-Deficit/ Hyperactivity Disorder	4.8	4–17	5,642,600	270,800
Conduct Disorder	4.2	4–17	5,642,600	237,000
Any Depressive Disorder	3.5	5–17	5,286,900	185,000
Substance Abuse	0.8	9–17	3,777,700	30,200
Autism Spectrum Disorders	0.3	5–15	4,454,500	13,400
Obsessive-Compulsive Disorder	0.2	5–15	4,454,500	8,900
Any Eating Disorder	0.1	5–15	4,454,500	4,500
Schizophrenia	0.1	9–13	2,088,200	2,100
Bipolar Disorder	<0.1	9–13	2,088,200	<2,100
Any Disorder	14.3	4–17	5,642,600	806,900

Notes

* Population estimates for children in each age range drawn from Statistics Canada, 2005.

† Estimated prevalence multiplied by estimated population.

Source

C. Waddell et al., "A Public Health Strategy to Improve the Mental Health of Canadian Children," *Canadian Journal of Psychiatry* 50, 4 (2005): pp. 226–233. Reproduced with permission.

The Current Public Policy Response

In children's mental health, Canadian public policy-making has emphasized "downstream" investments such as specialized treatment services for children after disorders have developed.[2] This emphasis is consistent with Canada's approach to health investments overall. Collective health expenditures exceeded $141 billion in 2005, but only 6% went toward public health programs, including prevention.[7] Yet despite the

large treatment investments, an estimated 75% of children with mental disorders do not receive specialized treatment services, according to well-designed epidemiological surveys.[2] The Senate of Canada recently acknowledged that "greater investment in children's mental health is required if it is to shed its label as the 'orphan's orphan' within the health care system."[8]

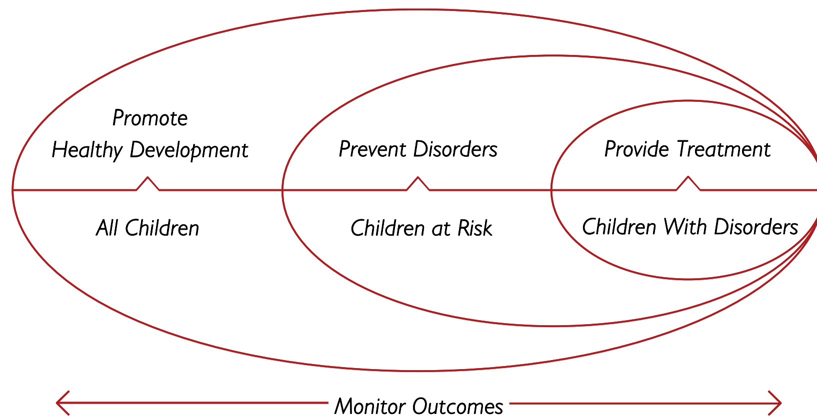
Another possible response is to make new investments in "upstream" programs before disorders can develop. Upstream investments have the potential to address the causal determinants of mental health and disorder, thereby reaching more children in the population than specialized treatment services.[1, 9] As awareness of the determinants of health has grown, early child development (ECD) has risen on the Canadian public policy agenda. However, few established ECD programs have a concerted focus on mental health.[10] Other upstream investments include prevention programs such as parent training for behavioural disorders or cognitive–behavioural programs for emotional disorders. Such programs hold considerable potential to prevent new cases of mental disorders by reducing risk and enhancing resilience, thereby alleviating the impact of disorders across the lifespan.[1, 11] Yet prevention programs have not been implemented in Canada, with few exceptions.[10] Underlying these issues, there is no systematic monitoring of indicators of children's mental health outcomes in the population as a whole.[12] There is, therefore, no means of evaluating the impact of public policy investments for children, or of balancing these investments over time.

A New Population Health Strategy for Children's Mental Health

A new *integrated* population health strategy may improve children's mental health by promoting healthy development for all children, preventing disorders in children at risk and monitoring outcomes for all children, in addition to providing effective treatment to children with disorders, as depicted in Figure 1.[2, 13, 14] The strategy encompasses upstream and downstream interventions, recognizing that both are essential. This strategy suggests several complementary approaches to creating mentally healthy communities. We now consider each of these approaches in turn.

Figure 1

A Population Health Strategy for Children's Mental Health



Source
C. Waddell et al., "A Public Health Strategy to Improve the Mental Health of Canadian Children," *Canadian Journal of Psychiatry* 50, 4 (2005): pp. 226–233. Reproduced with permission.

Promoting Healthy Development for All Children

Thinking about child development from a mental health perspective requires an understanding of causal pathways. In the children's mental health field, most research has focused on understanding disorders (psychopathology) rather than well-being. Research on causal pathways has articulated the interplay between genes and environment, with mental disorders likely arising in individuals when adverse experiences influence genetic expression over time.[15] Much remains to be elucidated about the role of genetics. Genes may be important in the causation of less-common disorders such as autism and schizophrenia, but the social environment may be more important for common problems such as conduct, anxiety and depressive disorders.[15–17] However, aside from the impact of the social environment on individual disorders, research in children's mental health has yet to incorporate emerging evidence on the social determinants of health in populations.

In multiple longitudinal studies over the past 20 years, health outcomes such as child and adult mortality have been associated with socio-economic factors such as income, education and occupation.[18–20] In particular, socio-economic disadvantage relative to others in the population—being at the lower end of a social gradient—is associated with an array of poor health outcomes for children and adults, independent of factors such as lifestyle or health care services.[18, 21, 22] In Canada, socio-economic gradients have now been established for child development in terms of emotional and behavioural vulnerability and readiness to learn.[23, 24] Socio-economic adversity in childhood has also been demonstrated to predict mental health problems in adulthood.[25] Socio-economic adversity is postulated to "get inside the body" through the cumulative effects of biological stress responses, consistent with hypotheses on the causation of mental

disorders through gene–environment interactions.[25, 26] The available research suggests that childhood is the optimal time to intervene to reduce social gradients in order to have maximum impact on health outcomes in the population.[23, 26]

For children's mental health, socio-economic adversity has yet to be firmly established as a causal factor at the family, school and community levels.[27, 28] However, relevant research evidence is emerging from prospective epidemiological studies. For example, improving socio-economic status for the most disadvantaged families in a community is associated with reducing the incidence of behavioural disorders for children from those families.[17] Adversities such as child maltreatment and parental mental disorder are also associated with socio-economic disadvantage.[23] Reducing child maltreatment or reducing the impact of parental mental disorder can reduce the incidence of child behavioural *and* emotional disorders.[11]

Important health benefits for children and for the population may derive from addressing socio-economic disparities.[29, 30] Policy-makers are aware of emerging research evidence on social gradients.[31] However, policy-makers also require the articulation of effective options for reducing gradients that they can implement and that the public can debate and potentially support. Such options have yet to be articulated, as the case of ECD illustrates.[29] Canadians recently invested in an array of new (universal and targeted) ECD programs, based on the research evidence around early *learning* disparities and determined advocacy around the economic consequences of these disparities.[32] These new ECD investments constitute an important social experiment. Canadians now have a crucial opportunity to carefully evaluate the impact of these investments on social gradients. Ideally, this experiment will help articulate the options for policy-makers and the implications for the public.

Regardless, the ECD emphasis on early learning means that little is known about the potential impact of these programs on children's social and emotional well-being.[10] New research is therefore needed to specifically inform policy options and public conversations pertaining to social gradients and children's mental health. Such research could take the form of instituting public programs and carefully evaluating these, as with ECD. Researchers could make useful contributions by working in partnership with policy-makers to design and evaluate such programs and to raise public awareness of the issues and options.

Preventing Disorders in Children at Risk

Considerable research evidence has accumulated on risk factors that specifically predispose children to develop mental disorders and that may be the focus of prevention programs. These factors appear to interact and to be common across the spectrum of behavioural and emotional disorders.[33] Risk factors at the child, family, school and community levels include negative temperament; learning difficulties; exposure to parental conflict; harsh or inconsistent parenting; child maltreatment; negative school

experiences; lack of positive, ongoing adult supports; and lack of a sense of personal purpose or efficacy.[15, 27, 33] In keeping with the hypothesis that disorders arise through gene–environment interactions over time, longitudinal studies are showing that emotional and behavioural disorders are significantly more likely to develop when children with genetic vulnerability *also* experience risk factors such as child maltreatment.[34, 35]

A related body of research evidence has developed on the topic of *resilience*, or the ability to overcome adversity. Longitudinal studies have shown that there is considerable individual variation in how children respond to adversities such as child maltreatment. In particular, these studies have demonstrated that not all children who experience significant adversity experience negative mental health outcomes.[36] The factors that appear to be protective are the converse of risk factors, including positive temperament; good learning abilities; warm and consistent parenting; safety and stability; positive school experiences; positive, ongoing adult supports; and sense of personal purpose and efficacy.[36] Resilience is now being further characterized as a dynamic process, not merely a set of traits or conditions, enabling children to overcome adversity and to thrive differently in different contexts.[37] For some children, the experience of overcoming adversity may actually be beneficial, implying the goal would not be to eliminate all adversity but rather to prevent or mitigate extremes of adversity.[26, 37]

The research on risk and resilience has now informed well-designed randomized controlled trials to evaluate prevention initiatives. For some of the most common mental disorders in children, these trials have demonstrated significant reductions in incidence or in early symptoms, in some cases over 20 years or more of follow-up. Most of these programs have been targeted towards *at-risk* groups starting early in life. For preventing conduct disorder, the most noteworthy programs include parent training (such as *Prenatal Nurse Home Visitation*); early child education combined with parent training (for example, *Perry Preschool*); and child social skills training (for example, *Fast Track*, *Johns Hopkins*).[11] For preventing anxiety and depression, school-based cognitive-behavioural programs (such as *Friends* and *Coping With Stress*) show similar results for older children.[11] Most programs reported modest effect sizes of approximately 10% reductions in incidence (in addition to reductions in symptoms). These effects are not inconsequential, given the number of children affected by mental disorders. If these programs were widely implemented in Canada, preventing 10% of new cases could significantly reduce the burden of conduct disorder, anxiety and depression.[11]

Not all mental disorders may ultimately be preventable. However, the efficacy of these programs suggests that emotional and behavioural problems can often be prevented. It is important to note that prevention programs have the added benefit of addressing both the causal risk factors (for example, significantly reducing child maltreatment in the case of *Prenatal Nurse Home Visitation*) and the ensuing mental disorders (such as conduct disorder). These programs therefore have potential to address what may be considered a

double disadvantage—experiencing the causes *and* the consequences—that many children face. It is also useful to consider the cost savings associated with prevention. For example, programs such as *Prenatal Nurse Home Visitation* and *Perry Preschool* have been estimated to pay for themselves.[11, 30] Preventing just one case of conduct disorder may save an estimated $1.5 million (U.S.) in cumulative lifetime costs.[38]

Canadians currently make almost no investments in programs specifically aimed at preventing the most common mental disorders in children.[10] New investments in these interventions would therefore appear to be warranted. Researchers could make a valuable contribution here, too, by working in partnership with policy-makers in designing and evaluating prevention programs and in raising public awareness of the importance of prevention.

Providing Treatment for Children With Disorders

Treatment is one component of an integrated population health strategy for children's mental health, essential when disorders cannot be prevented. An estimated 75% of children with mental disorders do not receive specialized treatment services (although as many as 50% receive limited services through primary care or schools).[2] It is unlikely that Canadians would tolerate shortfalls of this magnitude for physical disorders requiring specialized treatment, such as childhood cancer or adult cardiovascular disease. However, there may be factors unique to children's mental health that explain the persistent shortfall: the stigma still associated with mental disorders, making it less likely that children and families seek help; the relative "invisibility" of these disorders, making it less likely that these children are detected; and the lack of widespread appreciation that clinically significant mental disorders indeed exist in childhood.[8]

Treatment shortfalls are exacerbated by inefficiencies in the systems serving children. Perhaps most importantly, effective and relatively inexpensive approaches remain unavailable (such as parent training for conduct disorder or cognitive–behavioural therapy for anxiety and depression), while potentially harmful and relatively expensive approaches persist (such as incarceration for conduct disorder and inappropriate psychotropic medication use for anxiety and depression).[39, 40] As well, many practitioners still emphasize seeing children in one-to-one encounters, limiting their reach compared to other approaches such as seeing children in groups or consulting to primary care and schools.[41, 42] Compounding the situation, children's services are uncoordinated and fragmented across multiple sectors (including health, education and children's ministries) and multiple jurisdictions (including federal, provincial and municipal).[43]

Given the inefficiencies it is highly unlikely that increasing investments in services as currently configured—simply doing more of the same—will appreciably increase children's access to *effective* treatments.[9] Addressing existing inefficiencies in children's services would be the most expedient way to increase access to effective treatments for children with disorders.[41] The WHO and others have also contended that simply

expanding treatment services will never suffice given the large number of children affected.[1, 9] Instead, these public health proponents advocate new investments in the prevention of disorders, starting in childhood, as the only viable means of significantly reducing the impact of mental disorders worldwide.[1, 9]

Treatment for children with disorders is an essential component of an integrated strategy to improve the mental health of Canadian children. Expanded treatment investments would appear to be warranted, conditional on these increasing children's access to *effective* treatments, and conditional on these being balanced by simultaneous investments in upstream efforts to promote healthy development and prevent disorders.

Monitoring Outcomes for All Children

Underlying the current state of children's mental health, there has been no systematic monitoring and reporting of indicators of children's mental health outcomes in the population.[12] As a result, there has been no means of systematically evaluating the impact of public policy investments, and therefore no means of balancing investments over time.

The Canadian Institute for Health Information (CIHI) has developed a comprehensive population health indicators framework that includes health determinants, health status and health care service system outputs.[44] Such a framework could potentially be populated with child outcome measures derived from the secondary analysis of publicly available data that are collected on an ongoing basis.[12] Such data may be available, for example, through Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY) and through myriad provincial and territorial ministries of health, education and children's services.[12]

There have been efforts that partially meet the needs. The NLSCY has included measures of health determinants and health status pertinent to children's social and emotional well-being.[23] While not used for systematic monitoring by any province or territory as yet, these data have nevertheless enabled researchers to evaluate the impact of ECD programs such as the federal government's *Community Action Program for Children* and Ontario's *Better Beginnings, Better Futures*.[10] Similar uses could apply for mental health interventions. The Early Development Instrument (EDI) also includes measures of social and emotional well-being, in addition to measures of readiness to learn in kindergarten children.[45] The EDI is now being used in preschool populations across Canada, making it possible to map and compare social gradients and school readiness across communities.[24, 45] The EDI has unrealized potential for use in mental health monitoring and evaluation.[12] As well, two provinces (Ontario and Quebec) have conducted epidemiological surveys in representative samples of children, establishing the prevalence of mental disorders as well as the utilization of treatment services by children with disorders.[2] These surveys provided highly informative cross-sectional data, although they have yet to be repeated. Regarding the treatment service system itself,

some provinces (Ontario and British Columbia) are attempting to systematically collect data on outcomes for all children receiving mental health treatment services, using instruments such as the Brief Child and Family Phone Interview.[46, 47] When analyzed together with health care data (such as on the use of psychotropic medications), it should be possible to assess outcomes for those children who do receive treatment.[12] Finally, econometric data are collected and reported by CIHI on federal and provincial/territorial health expenditures.[7] To complete the monitoring picture, it would be useful to include more specific analyses and reporting of children's health spending.[12]

It appears that requisite public data may exist for comprehensively monitoring and reporting on children's mental health outcomes in the population and, potentially, for evaluating the impact of public policy investments over time. However, there is still no systematic use of these data to track Canadians' collective progress towards improving children's mental health outcomes over time. Developing an outcome monitoring system would support other efforts to create mentally healthy communities.[12, 41]

Implications for New Investments and Interventions

What is needed to create mentally healthy communities, starting with children? An integrated population health strategy suggests several complementary approaches: promoting healthy development for all children; preventing disorders in children at risk; providing effective treatment to children with disorders; and monitoring outcomes for all children over time. Given the unmet need in children's mental health, researchers and policy-makers in Canada could still make progress with all of these approaches.

Our review suggests several possible avenues of progress. One way to proceed is to consider the expansion of current ECD programs to include concerted attention on children's social and emotional well-being in addition to early learning. Another way to proceed is to encourage careful evaluations of public investments, particularly those that address social gradients. Researchers and policy-makers could work in partnership on such evaluations and on raising public awareness about social gradients. A third way to proceed is through investment in interventions that have been shown to prevent common mental disorders. Expanded treatment investments may also be warranted—provided these actually improve children's access to *effective* treatments and do not preclude new investments in upstream interventions such as prevention programs. Finally, comprehensive monitoring would track our collective progress towards improving the mental health of all children. Such monitoring could have added benefits, not only of placing the state of children's mental health on the public agenda, but also of permitting more careful consideration of the impact of public investments on children's lives.

Ideally, researchers and policy-makers would work closely together to create mentally healthy communities, starting with children. All children have the right to thrive and meet their potential, yet many children unnecessarily experience the consequences of mental disorders. Researchers and policy-makers in Canada could work towards

mentally healthier communities for all children by addressing social gradients; by attending to avoidable adversities and preventable mental disorders; by ensuring effective treatment services; and by tracking collective progress on behalf of all children. Investments in children's mental health are among the most important investments that any community and any society could make.

The views expressed in this paper do not necessarily reflect the views of the authors' affiliated organizations, the Canadian Population Health Initiative or the Canadian Institute for Health Information.

Reference List

1. World Health Organization, *Prevention of Mental Disorders: Effective Interventions and Policy Options* (Geneva, Switzerland: WHO, 2001).

2. C. Waddell et al., "A Public Health Strategy to Improve the Mental Health of Canadian Children," *Canadian Journal of Psychiatry* 50, 4 (2005): pp. 226–233.

3. N. Trocme et al., *Canadian Incidence Study of Reported Child Abuse and Neglect 2003: Major Findings* (Ottawa, Ont.: Ministry of Public Works and Government Services Canada, 2005).

4. H. L. MacMillan et al., "Childhood Abuse and Lifetime Psychopathology in a Community Sample," *American Journal of Psychiatry* 158, 11 (2001): pp. 1878–1883.

5. R. C. Kessler et al., "Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in The National Co-Morbidity Survey Replication," *Archives of General Psychiatry* 62, 6 (2005): pp. 593–602.

6. T. Stephens and N. Joubert, "The Economic Burden of Mental Health Problems in Canada," *Chronic Diseases in Canada* 22, 1 (2001): pp. 18–23.

7. Canadian Institute for Health Information, *National Health Expenditure Trends, 1975–2007* (Ottawa, Ont.: CIHI, 2007), from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=AR_31_E&cw_topic=31>.

8. The Standing Senate Committee on Social Affairs, Science and Technology, *Out of the Shadows at Last: Transforming Mental Health, Mental Illness and Addiction Services in Canada* (Ottawa, Ont.: Senate of Canada, 2006).

9. D. R. Offord et al., "Lowering the Burden of Suffering From Child Psychiatric Disorder: Trade-Offs Among Clinical, Targeted and Universal Interventions," *Journal of the American Academy of Child & Adolescent Psychiatry* 37, 7 (1998): pp. 686–694.

10. C. Waddell et al., "Preventing Mental Disorders In Children: A Public Health Priority," *Canadian Journal of Public Health* 98, 3 (2007): pp. 174–178.

11. C. Waddell et al., "Preventing Mental Disorders in Children: A Systematic Review to Inform Policy-Making," *Canadian Journal of Public Health* 98, 3 (2007): pp. 166–173.

12. C. Waddell, K. McEwan and M. Boyle, *Monitoring Children's Mental Health in the Population: Report on a British Columbia Pilot Project* (Vancouver, B.C.: Children's Health Policy Centre, Simon Fraser University, in press).

13. R. D. Peters, *Child and Youth Mental Health Snapshot: Environmental Scan and Gaps Analysis* (Kingston, Ont.: Canadian Mental Health Association, 2001).

14. I. Prilleltensky, G. Nelson and L. Peirson, eds., *Promoting Family Wellness and Preventing Child Maltreatment: Fundamentals for Thinking and Action* (Toronto, Ont.: University of Toronto Press, 2001).

15. M. Rutter, T. E. Moffitt and A. Caspi, "Gene–Environment Interplay and Psychopathology: Multiple Varieties but Real Effects," *Journal of Child Psychology & Psychiatry* 47, 3–4 (2006): pp. 226–261.

16. M. Rutter, "Environmentally Mediated Risks for Psychopathology: Research Strategies and Findings," *Journal of the American Academy of Child & Adolescent Psychiatry* 44, 1 (2005): pp. 3–18.

17. E. J. Costello et al., "Relationships Between Poverty and Psychopathology: A Natural Experiment," *Journal of the American Medical Association* 290, 15 (2003): pp. 2023–2029.

18. M. G. Marmot, "Status Syndrome: A Challenge to Medicine," *Journal of the American Medical Association* 295, 11 (2006): pp. 1304–1307.

19. G. K. Singh and M. D. Kogan, "Widening Socioeconomic Disparities in US Childhood Mortality, 1969–2000," *American Journal of Public Health* 97, 9 (2007): pp. 1658–1665.

20. J. P. Mackenbach et al., "Widening Socioeconomic Inequalities in Mortality in Six Western European Countries," *International Journal of Epidemiology* 32, 5 (2003): pp. 830–837.

21. J. C. Phelan, "'Fundamental Causes' of Social Inequalities in Mortality: A Test of the Theory," *Journal of Health and Social Behavior* 45, 3 (2004): pp. 265–285.

22. E. Chen, A. D. Martin and K. A. Matthews, "Socioeconomic Status and Health: Do Gradients Differ Within Childhood and Adolescence?" *Social Science & Medicine* 62, 9 (2006): pp. 2161–2170.

23. J. D. Willms, ed., *Vulnerable Children: Findings From Canada's National Longitudinal Survey of Children and Youth* (Edmonton, Alta.: University of Alberta Press, 2002).

24. P. Kershaw et al., *The British Columbia Atlas of Child Development* (Victoria, B.C.: Human Early Learning Partnership and Western Geographical Press, 2005).

25. C. Power et al., "Childhood and Adulthood Risk Factors for Socio-Economic Differentials in Psychological Distress: Evidence From the 1958 British Birth Cohort," *Social Science & Medicine* 55, 11 (2002): pp. 1989–2004.

26. W. T. Boyce and D. P. Keating, "Should We Intervene to Improve Childhood Circumstances?," in *A Life Course Approach to Chronic Disease Epidemiology*, ed. D. Kuh (Oxford, U.K.: Oxford University Press, 2004), pp. 415–445.

27. M. H. Boyle and E. L. Lipman, "Do Places Matter? Socioeconomic Disadvantage and Behavioral Problems of Children in Canada," *Journal of Consulting and Clinical Psychology* 70, 2 (2002): pp. 378–389.

28. T. Ford, R. Goodman and H. Meltzer, "The Relative Importance of Child, Family, School and Neighbourhood Correlates of Childhood Psychiatric Disorder," *Social Psychiatry and Psychiatric Epidemiology* 39, 6 (2004): pp. 487–496.

29. R. G. Evans and G. L. Stoddart, "Consuming Research, Producing Policy?," *American Journal of Public Health* 93, 3 (2003): pp. 371–379.

30. J. J. Heckman, "Skill Formation and the Economics of Investing in Disadvantaged Children," *Science* 312, 5782 (2006): pp. 1900–1902.

31. J. N. Lavis et al., "Do Canadian Civil Servants Care About the Health of Populations?," *American Journal of Public Health* 93 (2003): pp. 658–663.

32. M. McCain, F. J. Mustard and S. Shanker, *Early Years Study Two: Putting Science Into Action* (Toronto, Ont.: Council for Early Child Development, 2007).

33. M. J. Essex et al., "Exploring Risk Factors for the Emergence of Children's Mental Health Problems," *Archives of General Psychiatry* 63, 11 (2006): pp. 1246–1256.

34. J. Kim-Cohen et al., "MAOA, Maltreatment, and Gene–Environment Interaction Predicting Children's Mental Health: New Evidence and a Meta-Analysis," *Molecular Psychiatry* 11, 10 (2006): pp. 903–913.

35. D. Cicchetti, F. A. Rogosch and M. L. Sturge-Apple, "Interactions of Child Maltreatment and Serotonin Transporter and Monoamine Oxidase A Polymorphisms: Depressive Symptomatology Among Adolescents From Low Socioeconomic Status Backgrounds," *Development and Psychopathology* 19, 4 (2007): pp. 1161–1180.

36. E. E. Werner and R. S. Smith, *Journeys From Childhood to Midlife: Risk, Resilience, and Recovery* (Ithaca, New York: Cornell University Press, 2001).

37. M. Rutter, "Resilience Reconsidered: Conceptual Consideration, Empirical Findings and Policy Implications," in *Handbook of Early Childhood Intervention*, eds. J. P. Shonkoff and S. J. Meisels (Cambridge, U.K.: Cambridge University Press, 2000), pp. 651–682.

38. M. A. Cohen, "The Monetary Value of Saving a High-Risk Youth," *Journal of Quantitative Criminology* 14, 1 (1998): pp. 5–33.

39. V. R. Weersing and J. R. Weisz, "Community Clinic Treatment of Depressed Youth: Benchmarking Usual Care Against CBT Clinical Trials," *Journal of Consulting and Clinical Psychology* 70, 2 (2002): pp. 299–310.

40. B. F. Chorpita et al., "Toward Large-Scale Implementation of Empirically Supported Treatments for Children: A Review and Observations by The Hawaii Empirical Basis to Services Task Force," *Clinical Psychology: Science & Practice* 9 (2002): pp. 165–190.

41. E. L. Daleiden et al., "Getting Better at Getting Them Better: Health Outcomes and Evidence-Based Practice Within a System of Care," *Journal of the American Academy of Child & Adolescent Psychiatry* 45, 6 (2006): pp. 749–756.

42. C. Waddell and R. Godderis, "Rethinking Evidence-Based Practice for Children's Mental Health," *Evidence Based Mental Health* 8, 3 (2005): pp. 60–62.

43. C. Waddell et al., "Research Use in Children's Mental Health Policy in Canada: Maintaining Vigilance Amid Ambiguity," *Social Science & Medicine* 61, 8 (2005): pp. 1649–1657.

44. Canadian Institute for Health Information, *National Consensus Conference on Population Health Indicators Final Report* (Ottawa, Ont.: CIHI, 1999), from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_45_E>.

45. Offord Centre for Child Studies, *School Readiness to Learn: National Senior Kindergarten Cohort Results* (Hamilton, Ont.: Offord Centre for Child Studies, 2006).

46. C. E. Cunningham, P. Pettingill and M. Boyle, *The Brief Child and Family Phone Interview* (Hamilton, Ont.: McMaster University, 2006).

47. Government of British Columbia, *Child and Youth Mental Health Plan* (Victoria, B.C.: Government of British Columbia, 2003).