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Searching for Effective Canadian Early Childhood Learning Programs

by **Ray Peters**, Professor of Psychology at Queen's University, and **Carl Corter**, Professor of Human Development and Applied Psychology at the University of Toronto

Policy makers, practitioners and civic leaders increasingly look for accountability in the expenditure of public funds on interventions designed to promote health and well-being. During the past decade, this trend is seen in the growing demand that social programs be based on firm evidence of effectiveness, referred to by labels such as "evidence-based practices/programs".

A recent report by the Society for Prevention Research (SPR) lays out three levels of research evidence required before a program (or policy) warrants broad implementation.[1] These three levels of evidence are ***efficacy***, ***effectiveness***, and ***dissemination***. According to the SPR report, most interventions are first evaluated in *efficacy* studies under optimal conditions with ample resources, well-trained and carefully supervised intervention personnel, and often with small samples. Yet, programs must also be effective under real-world conditions. This evidence comes from *effectiveness* studies. Even programs with demonstrated efficacy and effectiveness may not be ready for widespread dissemination. *Dissemination* entails evidence that the program is ready to "go to scale", information on costs, and monitoring and evaluation tools so that adopting agencies can take on the job of monitoring success across settings.

Unfortunately, there have been relatively few well-designed evaluation studies of early childhood learning and development programs, particularly in Canada. The thinness of the evidence base is reported in a recent review for the Canadian Council on Learning (CCL) across a variety of program

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types, ranging from family support to childcare to kindergarten.[2] Another review of reports on psychosocial prevention and early intervention in children from birth to six years found that only 34 reports out of more than 4,000 included evaluations with a control or comparison group of high enough quality to allow for meaningful conclusions.[3] Only two of these were Canadian programs: the Montreal Prevention Study[4] (carried out with highly aggressive boys between 7 and 9 years of age), and the Community Parent Education Program (COPE) featured in this Bulletin. Similarly, a meta-analysis of longitudinal research on prevention programs for young children before school entry reported on only one Canadian study, the Better Beginnings, Better Futures project in Ontario, out of a total of 70 studies reviewed.[5]

The Early Childhood Learning Knowledge Centre reviewed Canadian programs for improving early childhood learning and development that have been or are being well evaluated in efficacy, effectiveness or dissemination studies. This Bulletin highlights four such programs and some of their strengths and limitations. The first two assess the effectiveness of nurse home visitation on young mothers, and the next two evaluate the effects of short-term parent training programs on the behaviour and attitudes of parents as well as their young children.

Although nurse home-visiting programs are common throughout Canada, there has been little evaluation research concerning program efficacy or effectiveness.[6] The first article describes a pilot study being planned in Hamilton, Ontario, to determine the feasibility of implementing the Nurse-Family Partnership (NFP) program and its acceptability to mothers and public health nurse home visitors. If successful in this new context, the intent is to more fully evaluate the effectiveness of the NFP, including child outcomes, in a randomized controlled trial (RCT) with a larger number of families.

The second article describes the Calgary Community Perinatal Care Study that employed an RCT comparing the efficacy of different models of prenatal support. The program encouraged use of additional prenatal services and resources to improve outcomes for underserved parents. The study has elements of an effectiveness trial since it sampled from a relatively large community population and it also analyzed costs and potential savings of the different prenatal support models. The findings illustrate that negative evidence from well-designed research can be useful; in this intervention, adding home visits to other supports was not worth the cost.

The study of the COPE parent training program contains a number of strengths. It is an RCT that combines elements of efficacy and effectiveness studies, and includes evidence relating to dissemination, such as cost information. "Real world" issues are examined in the comparison of community vs. clinical settings for program delivery. The study also directly addresses the issue of program outreach, a crucial issue for effectiveness and dissemination, i.e. does the program reach intended beneficiaries? The study shows that the delivery setting makes a difference in the success of outreach to some families at higher risk.

The fourth article describes a large-scale dissemination evaluation being carried out in Manitoba of the Positive Parenting Program (Triple P) that has been well evaluated in efficacy and effectiveness trials in Australia and in the USA. The ambitious Manitoba evaluation is designed to see how successfully it can be implemented on a province-wide basis for all families with young children.

Although there are a wide variety of parent training/education/support programs offered across Canada, few have been well evaluated. The COPE and Triple P evaluations are good examples of how such evaluations can be carried out. The Manitoba project has the potential to add substantially to our understanding of how effective parent programs developed in other countries can be disseminated broadly to all parents of young children.

Improving practice and policy for young children in Canada requires better evidence. Relying entirely on evidence generated elsewhere is not a sufficient strategy. Potentially valuable Canadian programs remain unevaluated or under-evaluated. Effective programs developed elsewhere in the world need to be evaluated in Canadian effectiveness and dissemination research, since the "real world" differs across country and context. Improving the evidence will not come from university-based research alone. Governments must also contribute and lead, as Manitoba is doing. And of course the evidence that matters most is whether individual children benefit once a program is disseminated. To this end, organizations and practitioners need evaluation tools and resources to monitor ongoing effects.

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The Nurse-Family Partnership Pilot Study in Canada

by Stefanie Salazar and Alison Palkhivala

In Canada, prenatal and infancy home-visiting programs are common but evaluations are rare, making it difficult to judge if interventions are really making a difference in parents' and children's lives. Moreover, a meta-analysis on home-visiting programs applied mostly in the U.S. shows mixed results.[1] The Nurse-Family Partnership (NFP) developed by Dr. David Olds and colleagues is one of the only evaluated home-visiting programs that has demonstrated wide-ranging benefits. These include improved health for mothers and children as well as improved school and cognitive skills for children. The NFP has also been shown to help families become more economically independent and foster safer communities.[2] It is currently in use across the U.S. and is being piloted in England, Holland, and Germany.

For these reasons, Dr. Harriet L. MacMillan and her research team at McMaster University have chosen this program and will pilot it in Hamilton, Ontario. Evaluating this program in the Canadian context is important considering social differences such as the smaller economic disparities and the greater accessibility to medical care that exist in Canada compared to the U.S., where the original studies were performed. To begin with, Dr. MacMillan and her colleagues will test the feasibility and acceptability of the NFP with public health nurses (PHNs). If the pilot study is successful, a randomized controlled trial (RCT) will follow.

"Before looking for program effects, we must ensure that appropriate conditions are in place."

In general, the NFP aims to:

1. Improve pregnancy outcomes by promoting healthy prenatal behaviours.
2. Improve child health and development by promoting parents' competent care of their children.
3. Enhance parents' life-course development by encouraging pregnancy planning and parents' education and work.

Recruitment for the pilot study will be done through the City of Hamilton Public Health Services programs. The pilot study will include first-time mothers referred before 29 weeks of gestation and who had a low income (as indicated by their receiving income assistance from Ontario Works or Employment Insurance, prior to their pregnancy).

The NFP in Ontario includes the essential elements of the original program. The NFP will be administered by five PHNs who will visit the mothers-to-be in their homes, starting before the second trimester of pregnancy and continuing until the child is one year old. PHNs visit women once a week for the first month after enrolment and during the six weeks after the baby is born, otherwise visits are once every two weeks. Each PHN will serve 10 to 15 families, for a maximum of 50 to 75 families.

During the visits, PHNs will help families make use of health and human services and involve other family members and friends in the pregnancy, birth, and early care of the child. PHNs will: assess, provide information and advice concerning specific stages of pregnancy and the first two years of the child's life; teach women to identify symptoms of pregnancy complications and advise them on how to react; promote healthy parent-child interaction once the child is born; and help women clarify their goals and solve problems concerning planning future pregnancies, their education and work.[2]

Considering this is the first NFP study done in Canada, feasibility and acceptability evaluations will be performed before a RCT is attempted. Feasibility (whether conditions permit the program to be

implemented successfully) will be measured by: the success of recruitment, the consent rate and the retention rate of participants, the number of visits completed by nurses, nurses' evaluation of whether mothers found the materials easy to understand and useful, and the efficacy of data collecting methods (on mother's health and health behaviours, and child's health and development, including child protection and hospital records).

Acceptability (whether all actors involved find the program suitable and satisfactory) will be measured qualitatively, via interviews and focus groups both with participating mothers and nurses. The information gathered will be analyzed in a panel discussion with several experts, including Dr. MacMillan and Dr. Olds.

This study is a good example of an attempt to replicate an original program already evaluated with a different population. The NFP pilot study is also an example of feasibility and acceptability evaluations as a first step in the implementation of a new program. Before looking for program effects, we must ensure that appropriate conditions are in place. Starting off with a pilot study before moving on to a RCT is a sensible way to use resources, and ensuring adequate program implementation will make future evaluation results more valid.

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The Community Perinatal Care Study

by Stefanie Salazar and Alison Palkhivala

Certain needs of women during pregnancy can be addressed with non-medical services such as prenatal classes, parenting classes, and nutrition counseling, which promote healthy behaviours and improve birth outcomes. In Canada, standard pregnancy care includes visits to physicians which are generally of a short duration, leaving physicians with little time to address these non-medical needs. As a result, women have to seek additional pregnancy care resources. However, women most in need are less likely to do so and even when they do, are more likely to discontinue these services. Inspired by the work of David Olds and colleagues, described in the previous article, a research team led by Suzanne Tough hypothesized that supplementary prenatal support (in the form of home visits and additional nursing support) in addition to standard pregnancy care would increase women's use of pregnancy care resources.

The Community Perinatal Care Study (CPC) addressed this hypothesis, using a randomized controlled trial (RCT). A sample of 1,737 pregnant women aged 18 or over from three large maternity clinics within the Calgary Health Region agreed

"Women at high-risk continued to use resources less than women at low-risk."

to participate. Having one of the highest rates of low-birth weight in Canada, a growing multi-ethnic population and a shortage of physicians, Calgary seemed to be a good candidate to benefit from this type of intervention. Women were randomly assigned to one of the following three conditions:

Standard care (control group)	Includes 11 to 14 visits to the family physician. Visits last between 6 and 10 minutes on average.
Standard care plus nurse consultation	Experienced community public health nurses with training in prenatal care and postnatal follow-up provided consultations primarily at the maternity clinic, or off-site if preferred. Consultations began before or on the day of women's first appointment and continued up to the time of delivery. Nurses were trained to discuss nutrition, lifestyle, food security, psychosocial health and abuse, potential medical complications, and exercise.
Standard care plus nurse consultation and a home visitor	Included nurse consultations and a non-professional home visitor. Home visitors provided non-medical, peer-like practical support and aimed at connecting the client with community resources.

The primary goals of the intervention were to improve women's use of resources, increase the amount and quality of the information they receive and to encourage healthy behaviours. In order to determine whether these goals were met, the participants completed interviews at baseline, mid-pregnancy and at eight weeks postpartum. Overall, 78% of

participants completed the study and participated fully in the condition they were randomly assigned to.

Compared to controls, women in conditions 2 and 3 were more likely to use community-based pregnancy-related resources and also received information on more pregnancy-related topics. Nevertheless, women at high-risk continued to use resources less than women at low-risk. In addition, the intervention groups did not differ from controls in smoking, alcohol abuse, prenatal or postpartum depression or anxiety, or pregnancy outcomes.

Among those who received nurse consultations, 81% felt they benefited from them, and 43% felt they needed them. In contrast, these percentages decreased almost by half when women were asked about home visitor support, questioning the value of this added service. Women who reported needing the nurse consultations or home visitor support were more likely to: be expecting their first child, be smokers, have a household income under $40,000 a year, be under 25, be non-Caucasian, have a history of abuse, low self-esteem and/or a difficulty maintaining and nurturing a social network. Women who dropped out of the intervention had very similar risk factors. This evaluation shows that women who are very difficult to reach and who drop out, tend to be the same as those who perceive the most need for support. Therefore, additional and creative outreach and retention strategies should be devised for them.

In a cost-benefit analysis, it was found that adding prenatal supplementary services increased costs by 9% (for nurse consultations) and 15% (for nurse plus home visitors). Researchers had hypothesized that increasing prenatal support would reduce health service utilization and costs after childbirth. Results showed that the costs of maternal or child health services remained the same during the first year of the child's life for all three groups. The fact that mothers' at-risk behaviours did not change could explain why postnatal health-care costs were not reduced. Overall, this questions whether the content of the intervention is adequate and sufficient in order to change behaviours like smoking or alcohol abuse during pregnancy and reduce the need for health services. Finally, this evaluation is a good example of the advantages of an RCT. By randomly assigning women to one of the three conditions, all other factors that could influence results such as resource use and prenatal behaviours should be present equally in the three groups. Therefore, the differences found between the groups should be due only to the different prenatal services received.

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Community Parent Education Program (COPE)

by Amélie Petitclerc and Sandra Braun

Studies show that parent training programs can help families of children with disruptive behaviour disorders, by improving parents' child management skills, increasing children's prosocial behaviour, and reducing their behaviour problems. The problem, however, is that families at greatest risk—those who are economically disadvantaged, socially isolated, with single or depressed parents—are least likely to participate in or benefit from parent training programs.

Dr. Charles Cunningham and his colleagues in Ontario conducted a randomized control trial (RCT) to test whether providing parent training in community-based, group settings increases the participation of higher-risk families, who are least likely to enrol in traditional programs that serve one parent or couple at a time in clinical settings. The effects and costs of the Community Parent Education Program (COPE), a community-based, group parent training program, were compared with those of a similar parent training program conducted in a clinic with individual parents or couples.

Both intervention programs included teaching parents problem-solving skills, strategies to attend to and reward their child's good behaviour, to disengage from coercive interaction, and to ignore minor disruptions and to use *time-out* when appropriate. Parents watched videotaped child management scenarios, identified the errors and discussed their consequences, suggested other solutions and formulated their own conclusions about the best course of action. Leaders then modeled the suggested solutions and

"... providing a parent-training program in a Community/Group setting can be more effective at enrolling higher-risk families ..."

parents role-played the new strategies before trying them at home with their child. Groups in the Community/Group setting included on average 27 participants (of approximately 18 families), but several activities were conducted in subgroups of 5 to 7 participants to encourage active participation.

Four cohorts of junior kindergarten (age four) students in Hamilton, Ontario, were screened for behaviour problems at home, using a checklist sent to their parents. A total of 3,564 families (about 50% of the school population) returned completed questionnaires. The 435 families who reported significant child behaviour problems (above the 90th percentile) were randomly divided into three conditions (145 families in each): 1) those who would be offered a 12-week parent training program in the traditional clinic-based, individual setting (Individual/Clinic condition), 2) those who would be offered a 12-week parent-training program in a community-based, group setting (Community/Group condition, i.e., the COPE program), or 3) those who would be offered to be placed on a waiting list. The waiting list served as a control for the two intervention conditions. After randomization, the parents were contacted, provided with details of the study and invited to participate in the condition they had been assigned to.

A total of 150 families accepted to participate in the study, including 56 families who accepted to be placed on the waiting list. While approximately the same number of families assigned to the Individual/Clinic program and the Community/Group program accepted to participate (48 and 46 families, respectively), there were some differences in their profiles. Parents who immigrated to Canada, used English as a second language, or reported more child behavioural problems, were more likely to enrol when they were offered the Community/Group format than when they were offered the Individual/Clinic format. This suggests that the Community/Group format was more acceptable to these higher-risk families.

The families in the three groups were compared after the intervention and at six-month follow-up. Of the 150 families who participated in the study, 114 (76%) completed the six-month follow-up (the completion rate was similar across all three groups). Parents in the Community/Group condition reported fewer child behaviour problems at home, at follow-up, compared to parents in the Individual/Clinic and control conditions. On other measures of child and parent behaviour, however,

no significant improvement was found as a result of the intervention. In fact, on most measures, parents and children improved over time, even in the control group, who received no intervention. This illustrates why it is important for evaluation studies to include a control group: even without intervention families may change over time. The limited effects of intervention may be due to the relatively small sample and the possibility that the families in this study may have been less motivated than families who seek help on their own.

Comparison of the costs for the program in the two types of settings revealed that, although it costs about three times more to hold a Community/Group session than a Clinic/Individual session, with on average 18 families served in a group, this means that the Community/Group setting costs six times less to serve one family. In addition, because of reduced travel time, the costs for participants were also lower in the Community/Group setting.

This study has several assets. As explained in the previous article, the randomized control design increases certainty about the differences observed between groups, that is, differences in child behaviour problems at home, at follow-up. A large number of measures were used to evaluate the program's outcomes for parents and their children, which minimizes the risks of missing important effects or overemphasizing results obtained with a single measure.

This study is a good illustration of research on how to improve participation of families most difficult to reach, and how to evaluate and reduce service costs. It showed that providing a parent-training program in a community/group setting can be more effective at enrolling higher-risk families, in addition to being cheaper for both organizations and participants. The promising, but limited improvements observed for families in the COPE intervention are also useful to show that future work will be necessary to improve the effectiveness of this program in changing parenting and child behaviour.

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Triple P Positive Parenting Program

by Amélie Petitclerc and Sandra Braun

In Canada, one in four children between the ages of 0 and 11 experience behavioural problems or learning difficulties.[1] Although the proportion of vulnerable children is highest among families with low socio-economic status, in actual numbers, more vulnerable children come from middle-class families, because those make up the majority of Canadian families. Therefore, restricting programs to families with low socio-economic status would miss an important proportion of families who need services.[2] For that reason, Healthy Child Manitoba, the cross-departmental committee dedicated to children and youth in the Manitoba government, chose to implement a system of parenting and family interventions, the Triple P – Positive Parenting Program, that can reach a large number and range of families.

Like the Community Parent Education Program (COPE) and its clinic/individual counterpart reviewed previously, Triple P offers parent training for families with children who already show disruptive behaviour problems. However, it also aims to *prevent* serious behavioural and emotional problems and improve children's early development by increasing the confidence, skills and knowledge of parents in the task of raising children, at a *population* level.

Developed by Dr. Matthew Sanders and his colleagues in Australia, Triple P features five levels, each designed to offer different degrees of support to families, based on their varying needs (see box). All levels aim to help parents develop skills based on five parenting principles: ensuring a safe, engaging environment; creating a positive learning environment; using assertive discipline; having realistic expectations about the child's capacities; and taking care of oneself as a parent. The efficacy of the program in changing parental practices and improving child behaviour has been demonstrated in several high quality studies, especially for levels 4 and 5.

Triple P intervention levels

Level 1 – Universal
A media-based parenting information campaign.

Level 2 – Selected
Public education seminars providing information on a broad array of parenting strategies.

Level 3 – Primary Care
Approximately four sessions in a primary care setting, in which the practitioner provides practical advice and active skills training to parents who bring up specific developmental or behavioural issues about their child.

Level 4 – Standard
Parenting skills training in 8 to 10 sessions (individual, group, or self-administered). Variants include the Stepping Stones program, for families who have a child with a disability.

Level 5 – Enhanced
Intensive family intervention for families experiencing other sources of distress, such as the Pathways program, designed for parents at risk of child maltreatment.

Healthy Child Manitoba is implementing every level of this system, province-wide. The approach selected is to train existing practitioners to provide Triple P services, within the mandates of their current positions. Training and certification are being offered by trainers from Triple P International to all interested practitioners. Practitioners currently come from the social or community, child welfare, education, early childhood education, health care and mental health-care sectors.

To ensure that the program has every chance to reproduce the positive results obtained elsewhere with Triple P, Healthy Child Manitoba will collect information about training and implementation, and program reach. They will measure the proportion of workers from different sectors who receive training and become accredited, and the proportion of the population actually reached by the program. Practitioners will be interviewed to assess whether they use the Triple P program, how closely they follow it and what barriers they might face in delivering it.

The program's effects will be evaluated using data that have been collected over a long period of time in Manitoba and in Canada, including information about parenting behaviour, child behaviour, school readiness and, if feasible, official records of child maltreatment. Scores on these variables measured before and after implementation of Triple P will be compared, to see whether positive changes have occurred. To ensure that these changes are specific to Manitoba, and could be attributed to the program, they will be compared to changes observed during the same period in families elsewhere in Canada.

Healthy Child Manitoba's implementation of Triple P illustrates several important aspects of program selection and evaluation. Not only did the province select a program with demonstrated effectiveness to serve its families, but it also designed a comprehensive plan to evaluate how it was implemented and how well it reached its families. This is important because it will help assess whether the program is carried out with sufficient intensity and fidelity to the original program to impact Manitoba families. Some promising strategies are being considered to evaluate outcomes for parents and their children, on a province-wide scale. Finally, the open approach taken by the province, which intends to share the evaluation results with stakeholders, including practitioners and the public, is commendable.

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Early Childhood Learning Knowledge Centre
GRIP-Université de Montréal
P.O. Box 6128, Station Centre-ville
Montréal, Quebec H3C 3J7

Telephone: 514.343.6111, ext. 2541
Fax: 514.343.6962

childhoodlearning@ccl-cca.ca
www.ccl-cca.ca/childhoodlearning

Editors: Valérie Bell, Richard E. Tremblay
Writers: Sandra Braun, Alison Palkhivala, Amélie Petitclerc, Stefanie Salazar
Collaborators: Charles Cunningham, Steven Feldgaier, Harriet MacMillan, Suzanne Tough
Scientific Editors: Carl Corter, Ray DeV. Peters
Proofreader: Claire McLaughlin
Translation: ComTra Inc.
Design: Fairmont House Design
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