

THE MEASURE OF EXCELLENCE CANADIAN EARLY CHILDHOOD DEVELOPMENT RESEARCH IN 2001

By Richard E. Tremblay

Health Canada created the Centres of Excellence for Children's Well-Being to promote excellence in the services provided to all Canadians. The Centre of Excellence for Early Childhood Development (CEECD) is proud to be one of the five centres founded through this visionary federal initiative.

Since the CEECD's mission is to disseminate leading-edge scientific knowledge on children's social and emotional development, we take scrupulous care in selecting the very best in current research available from around the world on a range of related topics. However, once a year we will highlight the best work published by investigators working in Canadian institutions.

But how can we reliably select excellent work - the *crème de la crème* - among the tens of thousands of articles that are published each year? The Institute for Scientific Information (ISI) has developed an exhaustive database index to tackle this daunting task. The ISI system evaluates most of the world's social science and science journals by calculating their respective impact factors. It takes the number of current citations of articles published in a given journal during a two-year period and divides it by the total number of articles published in that journal during the same period.

The resulting impact factor for a journal can range from less than 0.1 to over 30.0. For example, in the ISI's 2000 ratings of social science journals, the impact factor for the journal *Infant Child Development* was 0.14, whereas *Child Development* was rated at 2.77. Since knowledge in a given field advances by

building on previous knowledge, it stands to reason that articles published in high-impact journals have a better chance of contributing to the advancement of knowledge. Indeed, because researchers want their work to have an impact, high-impact journals attract more submissions and can apply more rigorous criteria in choosing which articles to publish.

Of course the system is not perfect - it was created by humans after all. Indeed, the ISI impact factor index might best be compared to ratings by judges in Olympic disciplines: judges can be biased. That said, if you were looking for the best gymnasts and skaters in the world, you would likely start by looking at Olympic results rather than relying on results from regional competitions.


Canadian research on early child-

hood is thriving. In 2001 there were 411 articles published in journals with impact factors of at least 2.00 by authors from Canadian institutions. That number decreases sharply if we apply more stringent citation criteria (see Figure). By setting the bar at 3.00, the number of articles falls by more than half (to 202); by increasing the bar to 4.00, the number of high-impact articles from Canadian institutions is reduced by another two-thirds (to 71).

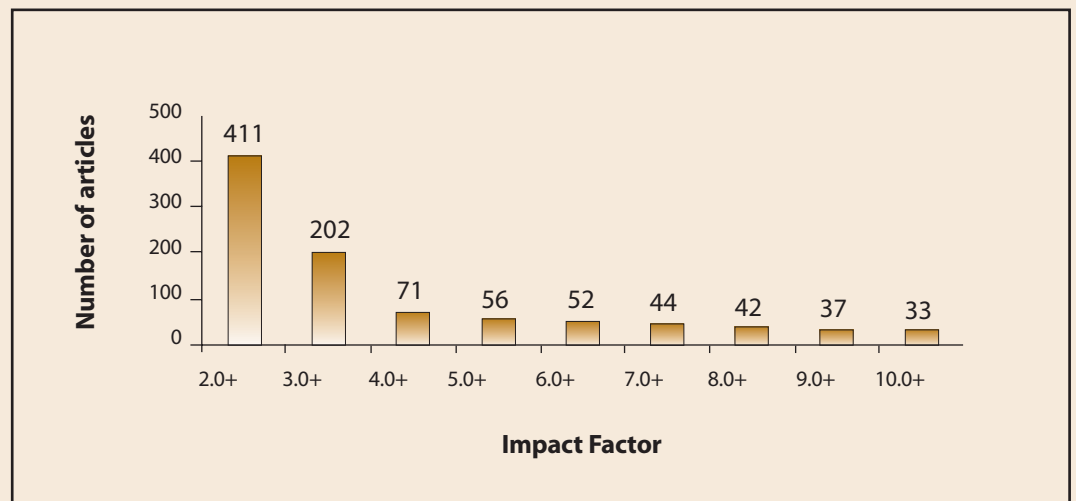
To provide enough bulletin space for each of the articles, we opted to restrict our selection to ten articles: the Top Ten. In our selection process, abstracts of 33 articles with impact factors of at least 10.00 were submitted to a panel of judges (members of the CEECD Board of Directors). The judges were then asked to rank the articles according to their potential for

helping to foster social and emotional development in early childhood. The names of the authors and the journals in which they had been published were withheld to ensure impartiality in the final selection process.

The results of this effort to find the best work on early childhood development by investigators in Canadian institutions reveal the exceptional strength of research on the very early childhood period. It also led to the identification of an outstanding researcher. Michael Kramer collaborated in three of our Top Ten articles and was the first author for two of these articles. Kramer is a clear role model for the new generation of Canadian investigators.

Note: The keyword searches and journals used for identifying the top 411 articles may be obtained from cedje-ceecd@umontreal.ca 

IMPACT FACTORS OF ARTICLES PUBLISHED BY CANADIANS IN 2001



DR. MICHAEL KRAMER: AN EPIDEMIOLOGIST WITH A PASSION FOR THE HEALTH OF MOTHERS AND THEIR NEWBORNS

Babies and children bring out people's protective instincts. Parents, doctors, health care workers and policy-maker all work hard to provide the best care based on solid research and evidence. All of them have reasons to be grateful for the work of Dr. Michael Kramer, a professor of Pediatrics and of Epidemiology and Biostatistics at McGill University.

For thirty years, Dr. Kramer has studied and evaluated health care practices for pregnant women and their newborns. He has gained international recognition as an expert on the effects of infant feeding (breast milk versus formula) as well as the problem of preterm birth, particularly among poor women. One of only six researchers to be named a Distinguished Scientist by

francophone and they have three children aged fifteen, thirteen and seven).

Dr. Kramer became interested in issues surrounding infant feeding at the start of his career. Breastfeeding was making a comeback, and researchers had published studies alleging several health benefits from breast milk. "I found many of these studies were not very methodologically sound, and yet the topic was so important. I felt that I had something to contribute," he says.

Dr. Kramer's most recent work on this issue is a study called the *Promotion of Breastfeeding Intervention Trial* or PROBIT, evaluating the effectiveness of breastfeeding promotion programs as well as the health benefits often accorded to breast milk, particularly in



Dr. Michael Kramer

monly held assumptions about babies, pacifiers and breastfeeding. In a randomized, controlled study performed at a Montreal hospital, Dr. Kramer and his colleagues found that pacifiers do not contribute to early weaning. Rather, pacifier use serves as a marker or warning light that a mother is experiencing breastfeeding problems or a declining interest in breastfeeding.

Given his research interests, it is not surprising that Dr. Kramer is the Chair of the advisory board for the Institute of Human Development, Child and Youth Health. The Institute supports research that improves the health of women and children. It also examines causes and ways of preventing many health issues in reproduction, early development, childhood and adolescence. He also trains and supervises young researchers, a task he calls "one of my principal responsibilities and one of my most time-consuming ones."

The need for such researchers is great. There is still a tremendous amount researchers do not know about the best practices for pregnant women, newborns and young babies. One issue that alarms Dr. Kramer is preterm delivery, what he calls "one of the most important public health problems in pediatrics." He notes that despite intensive interventions on the part of health care authorities, preterm birth rates in Canada have not declined. "Preterm birth is the major cause of infant mortality and

those who survive are often left with major handicaps," he explains. So there is an urgent need to understand why women give birth early.

Until recently, many health care professionals focused their efforts for reducing preterm birth on nutrition and good prenatal care. However, Dr. Kramer's research has shown that nutrition has little or no effect on preterm births. As a result of his research, the World Health Organization (WHO) is redesigning and refocusing its policies for pregnant women.

Now Dr. Kramer is completing the fourth year of a six-year study examining why poor women are at higher risk for preterm delivery. The study also attempts to uncover the deeper reasons some women give birth too early. "There has been an assumption that poor women have more preterm births because they don't eat well, they smoke, take drugs or receive poor prenatal care. All of these assumptions are probably wrong. We're not clear what the answer is, but it may be related to stress." The study, which Dr. Kramer notes is "very large and complex and involves studying the development of the placenta, the organ that provides nourishment and blood flow to the fetus, and how placental irregularities may contribute to preterm birth."

"It's a frustration that we haven't made any progress in reducing preterm births," Dr. Kramer adds. "We need to do a better job of understanding the basic factors that lead to preterm birth. It will probably require more collaboration between basic scientists and epidemiologists."

And Dr. Kramer is ready to lead those collaborative efforts and direct the research that will give everyone with an interest in and commitment to children's well-being the information needed to make the best possible decisions, practices and policies. 🦋



the Medical Research Council of Canada, Dr. Kramer has brought rigour, insight and passion to the field of maternal and neonatal care as well as providing much needed answers to pressing health topics.

A native of Miami, Florida, Dr. Kramer studied at the University of Chicago and Yale University before accepting a position at McGill University in 1978. One of his first tasks upon arriving in Montreal was to learn French. Now fluently bilingual, he moves easily between the two languages in both his work and his personal life (he married a

reducing infections and diseases. It is an important study, particularly for Canadian health workers. "The PROBIT study helps get across the message that breastfeeding matters even in developed countries," Kramer explains. "The health benefits of breastfeeding are clearly seen in developing countries, but there is emerging information that suggests there are health issues related to how babies are fed, regardless of where they live."

Dr. Kramer's interest in breastfeeding recently led him to develop a study whose results challenge com-

DECISION-MAKING SWAYED BY WORDS USED

Does the way in which information is framed shape people's perceptions and behaviour? Are we getting the same information when it is framed positively or negatively? A Canadian research team recently decided to test whether the framing effect would alter a pregnant woman's decision to use allergy-related drugs during her pregnancy.

The team recruited women callers from the Motherisk Program, a counseling service based in Toronto. Motherisk provides evidence-based information about the risks associated with drug, chemical, radiation and infectious exposures during pregnancy.

Callers were randomly assigned to one of two groups. In one group, women were told that by taking an allergy-related drug there was a 1% to 3% chance that a baby would be born with a major birth defect (negative framing). In the second group, women were told that there was a 97% to 99%

chance of having a healthy baby (positive framing). Both groups were told that the allergy-related drug did not significantly increase the risk of birth defects in the baby.

When contacted a few days later, women who had received the positively framed information perceived the drug as less risky and were more likely to say they would take it than were women who had been given the negatively framed information. The researchers point out that these results concur with the findings of previous studies on information framing.

"Framing is a very important issue, and here you have an important finding because it appears that negative and positive framing may have a significant impact on the decisions people make" says Robin Walker, Professor of Pediatrics at the University of Ottawa and Chief of Neonatology at the Children's Hospital of Eastern Ontario.

The study was well constructed,



according to Walker. "It's an elegant piece of work. Their methodology was carefully done. They have two well-matched groups and they came up with a significant result." However, John LeBlanc, Assistant Professor of Pediatrics, Psychiatry, Community Health and Epidemiology at Dalhousie University, points out that the groups were not representative of the general population. "Mothers who call Motherisk are already concerned. It would be interesting to try this same approach with women at doctors' offices or even women who don't get

prenatal care."

Both Walker and LeBlanc agreed that the study's conclusions constitute a significant contribution to study in this field. However, Walker stressed that more research is needed. "We need to look more carefully at how we present information and the impact of that presentation. This is a very broad issue and there is a need for more inquiry."

Ref.: J. D. Jasper, R. Goel, A. Einarson, M. Gallo and G. Koren. "Effects of Framing on Teratogenic Risk Perception in Pregnant Women." *The Lancet*. Vol. 358. October 2001. 🦋

PROBLEM PREGNANCIES AND INADEQUATE PARENTING

The links between low socio-economic background, inadequate parenting and criminal behaviour are now widely accepted and well-established in research.

However, links between problems with pregnancy, delivery and adult criminality have not been as easy to establish as, to date, findings have been contradictory. Now a team of Canadian and Swedish researchers has examined the role played by obstetric complications in the development of criminal and violent behaviour.

The researchers studied 15,117 individuals born in Stockholm, Sweden and monitored them until age 30. Information on obstetric complications (which included problems during pregnancy, labour-delivery and the neonatal period), criminal acts, the socioeconomic status of their

families and inadequate parenting was obtained from medical, health, social work and police records.

Obstetrical complications alone were not associated with adult criminality. However, obstetrical complications combined with inadequate parenting did slightly increase the risk of criminal offences among both men and women, and it more than doubled the risk of committing violent offences (i.e., crimes involving threatened or perpetrated physical violence such as rape, assault or robbery) among men.

A combination of obstetrical complications and inadequate parenting affected only a small portion of the study subjects (3.1 % of the men and 4.0% of the women). Inadequate parenting was experienced by 19.1% of the men and 18.1% of women and,

as is frequently the case, was associated with an increased risk of offending.

For Darren Lezubski, Managing Director of the Centre of Excellence for Child and Youth-Centered Prairie Communities in Winnipeg, the study "improves the methodology compared to previous studies. The researchers controlled for possible confounding factors, such as mental retardation and major psychiatric disorders known to increase the likelihood of offending." The authors of the study also analyzed the data by gender, "something that is too often neglected in this kind of research, despite recognized differences in the prevalence of criminal behaviour by gender."

Since the study suggests that obstetrical complications may influence the development of criminal

and violent behaviour, we can wonder "what services can be offered to pregnant women to reduce the incidence of complications at birth?" adds Lezubski. Additionally, it would be interesting to broaden the scope of environmental variables in order to better understand their role in developmental pathways that lead to criminality. Lezubski suggests "that future longitudinal studies should follow through by investigating with more scrutiny possible effects of environmental factors such as peer group pressure and the influence of the neighborhood on the likelihood of becoming a violent offender".

Ref.: S. Hodgins, L. Kratzer, and T. F. McNeil. Obstetric Complications, "Parenting and Risk of Criminal Behavior." *Archives of General Psychiatry*. Vol. 58. August 2001. 🦋

STUDY QUESTIONS CURRENT MODEL OF PRENATAL CARE

Prenatal care is one of the most common and least scrutinized forms of medical care. In standard practice, pregnant women are told to visit a health care provider once a month during the first six months of their pregnancy, then every two to three weeks for a period of two months and once a week during the month before their delivery date. This model has been in place for ages, but until now it had not been scientifically evaluated.

But recently, the World Health Organization (WHO) tested a new monitoring model for prenatal care that involved fewer, less frequent visits to health care providers. Conducted in

clinics across Argentina, Cuba, Saudi Arabia and Thailand, the WHO program model focused on three key elements: a) screening for health conditions likely to cause problems during pregnancy, birth or the immediate postpartum period; b) interventions shown to improve pregnancy outcomes such as providing iron and folate supplements; and c) information on handling and responding to emergency situations.

Over a two-year period, 24,678 women were enrolled in the study. For those who followed the new monitoring model, the median number of visits to health care providers was five compared with eight for the current, standard model. When researchers examined the

incidence of low birthweight, severe postpartum anemia and urinary track infections, they found no significant differences between the two groups. The women enrolled in the new program had marginally (but non-significantly) higher rates of pre-eclampsia and eclampsia, even though the new model group received better quality, more frequent detection tests (including urine protein tests at each visit), while women in the standard program were generally tested only during their first visit or if they showed signs of suffering from high blood pressure.

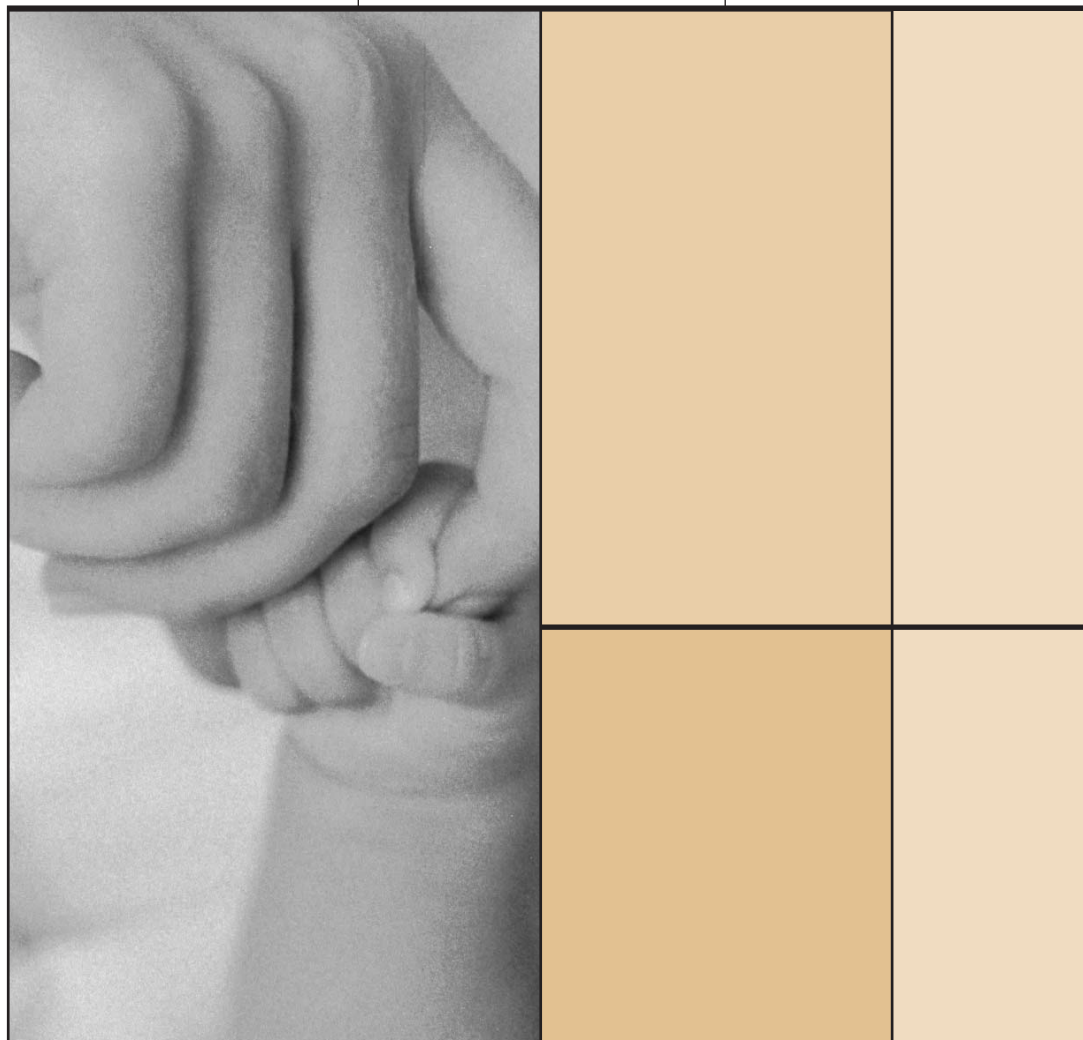
Women and health care providers in both groups were very satisfied with the care provided. In some clinics, the new

model reduced the cost of providing prenatal care. However, some women in the new model group expressed concern about the infrequency of visits.

Sharon Dore, an Advanced Practice Nurse in Women's Health at Hamilton Health Sciences and a Section Chair for the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN), praises the study for breaking important new ground. "We're socialized to the standard practice, and in this study the researchers are rightly trying to assess what we've been doing on a rote basis." While commending the study's methodology and scope, Dore notes, "They didn't stratify for women having their first baby and women having a second or subsequent baby. That information is important," she adds, "as multiparous women (who give birth more than once) often feel more comfortable with the pregnancy process and may be satisfied with fewer visits with health practitioners."

Dore says that the study also points to the need for further work with pregnant women to identify why they seem to prefer more frequent visits. "What was it that women needed that made them feel the gap between visits was too long? Did they want the reassurance of the fetal heart rate? Did they need other information? What kind of information?" Dore noted that practitioners are asked to provide pregnant women with physical assessments as well as education, support and anticipatory planning (dealing with issues such as pain relief in labour and breastfeeding, for example). She suggested that researchers begin to evaluate whether information and support might be available from other sources such as family or community resources.

Ref.: J. Villar et al. "WHO Antenatal Care Randomized Trial for the Evaluation of a New Model of Routine Antenatal Care." *The Lancet*. Vol. 58. April 2001. 🦋



DOES LOW BIRTHWEIGHT INCREASE THE RISK OF DEVELOPING CORONARY HEART DISEASE?

A fetus with restricted growth will weigh less at birth and may potentially face a daunting array of health and developmental problems. In the past decades, researchers thought that low birthweight increased the risk of developing coronary heart disease later in life. However, as a team of Swedish and Canadian researchers noted in an article published in *The Lancet*, these results may have been influenced by factors such as genetics and early environment.

Using data drawn from the Swedish Twin Registry, which includes information on twins born in Sweden between 1886 and 1958, the research team undertook a case-control study to investigate the association between birth characteristics (birth weight, birth length and head circumference) and acute myocardial infarction (AMI). The researchers selected 132 same-sexed co-twin pairs in which one twin had suffered from AMI while the other had not. AMI subjects were also compared with 118 individually matched external twins (the researchers were unable to match external twins for all 132 AMI subjects).

When twin subjects were compared with unrelated control twins, low birthweight, birth length and head circumference were associated with an increase in AMI, a result consistent with previous studies. However, when these subjects were compared with their healthy co-twins on the above-mentioned birth characteristics, no differences were found. The study's researchers concluded that, although there is an association between low birthweight and AMI, "our findings do not support a direct effect between fetal growth and AMI. The result suggests that genetic, maternal and environmental factors during childhood and adolescence associated with fetal growth may have influenced the

previously reported associations between birthweight and AMI."

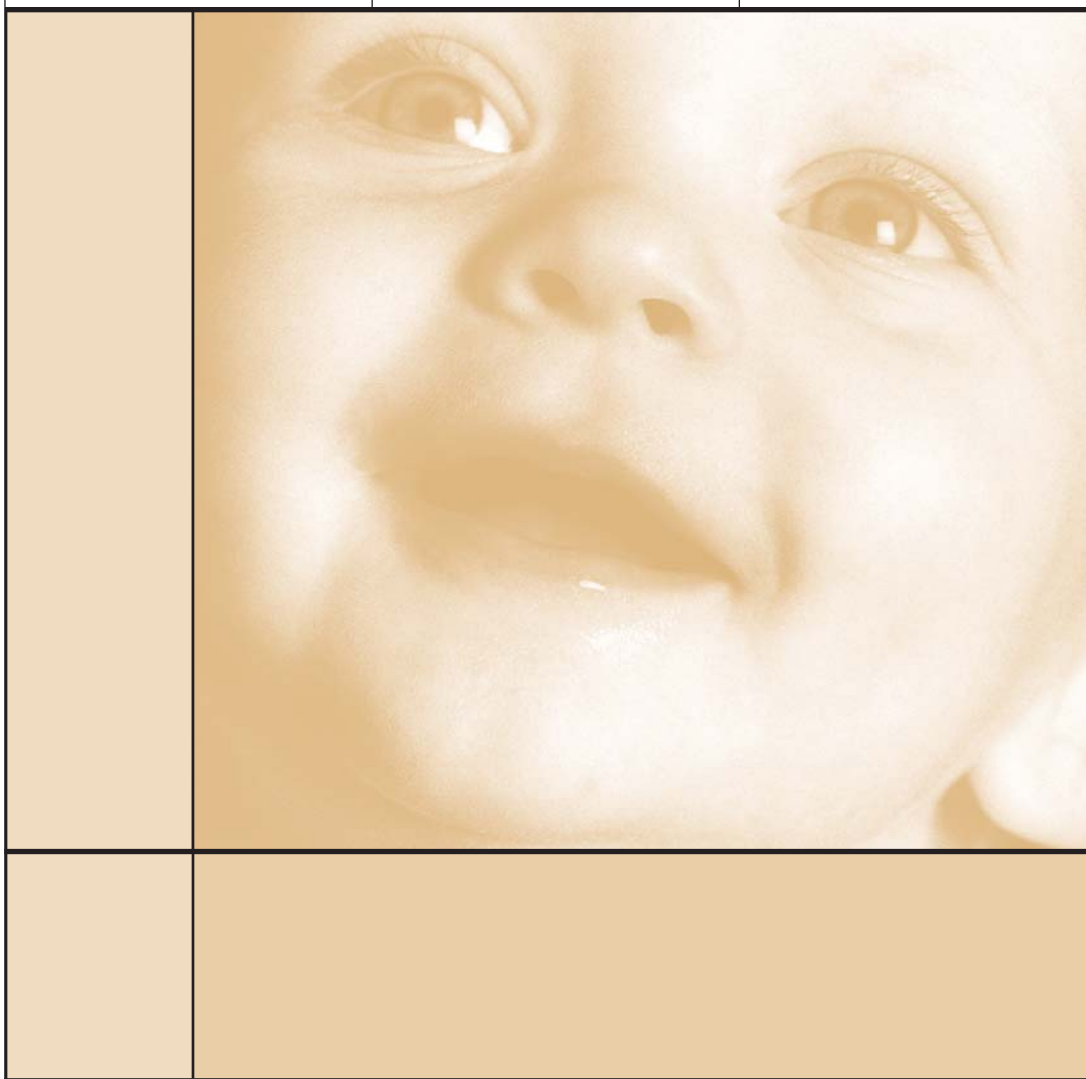
John LeBlanc, Assistant Professor of Pediatrics, Psychiatry, Community Health and Epidemiology at Dalhousie University called the study, "very well constructed" and praised the two-part structure whereby researchers used both related twins and co-twins as controls. "The main finding is in the study's second part, where twins with AMI were compared with their healthy twin partners. If there is a risk factor for AMI in the early uterine environment, it is something that appears to be inde-

pendent of restricted birthweight and must somehow affect one twin only." LeBlanc added that understanding the role of intrauterine growth in terms of a person's overall lifetime health has an impact on health programs and policies. "This kind of research helps sort out where to put our priorities in terms of prevention programs," he said.

More research in this area is critical, added Robin Walker, Professor of Pediatrics at the University of Ottawa and Chief of Neonatology at the Children's Hospital of Eastern Ontario. "This is a very preliminary finding. You

need more studies and you need larger sample numbers," he said. However, doing this research is essential, Walker noted: "Fetal health, genetics as well as the child and adolescent environment may all be profoundly affecting adult health. We need to know more about these factors."

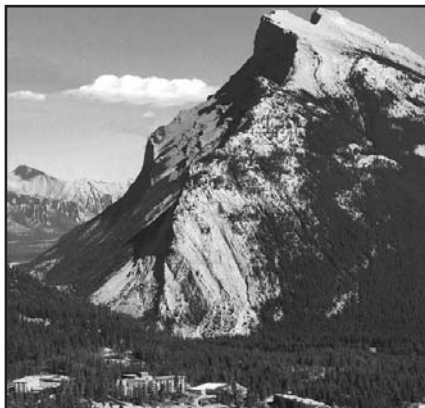
Ref.: A. Hübinette, S. Cnattingius, A. Ekbom, P. Lichtenstein, U. de Faire and M. S. Kramer. "Birthweight, Early Environment, and Genetics: A Study of Twins Discordant for Acute Myocardial Infarction." *The Lancet*. Vol. 357. June 2001. 🦋



DEVELOPMENT: LINKING RESEARCH TO POLICY AND PRACTICE

Banff, March 16-19, 2003

**35th Annual Banff International Conference on Behavioural Science
Co-sponsored by the Centre of Excellence for Early Childhood Development**



The Banff International Conference on Behavioural Science and the Centre of Excellence for Early Childhood Development will co-host this conference presenting the best international research on early childhood programs. A wide range of specific programs for children aged 0-5 years will be covered: prenatal and post-natal programs, home visiting programs, centre-based programs for infants and toddlers, large-scale family training and family support programs, comprehensive community-based projects, programs for parents of preschool children, and preschool programs for two- to five-year-olds.

Keynote speakers will review three specific program areas: What is known about the effects of these programs, implementation issues and lack of research. Each day, two three-hour workshops will be presented concurrently. Plenaries will introduce participants (service planners, policy makers) to a discussion on the implications of the presented data and recommendations for Canadian policy and program planning. Members of the Early Childhood Development Initiative (federal/provincial/territorial) will be invited to join in the discussion.

CONFERENCE PROGRAM

Sunday, March 16

7:30 - 9:30 pm	Registration and Welcoming Reception
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Monday, March 17

EFFECTIVE PRENATAL TO INFANCY PROGRAMS

8:00 - 8:45 am	Registration
8:45 - 9:00	Welcome and opening remarks Ray Peters, Queen's University
9:00 - 10:15	Address: Home visiting programs Donna Bryant, University of North Carolina
10:15 - 10:30	Coffee break
10:30 - 11:45	Address: Centre-based programs for infants/toddlers Donna Spiker, Stanford University
11:45 - 1:30	Lunch
1:30 - 4:30 pm	Workshops A. Home visiting programs (Quebec) In French with simultaneous interpretation Johanne Laverdure, INSPQ & Lyne Jobin, MSSS B. Attachment-focused parenting programs Alison Niccols, Chedoke Family and Child Centre
2:45 - 3:00	Coffee break
4:45 - 5:45	Conversation and discussion with presenters
5:45 - 7:45	Dinner
7:45 - 9:00	Plenary: Implications for policy and program planners: effective prenatal and infancy programs (with two presenters, Canadian policy and program planners, names to be confirmed)
9:00 - 10:30	Poster session and reception

CONFERENCE

Tuesday, March 18 **EFFECTIVE PROGRAMS FOR PRESCHOOL CHILDREN**

8:45 - 9:00 am	Welcome, Robert McMahon, University of Washington
9:00 - 10:15	Address: Parent training programs Charles Cunningham, McMaster University
10:15 - 10:30	Coffee break
10:30 - 11:45	Présentation: Preschool programs Steven Barnett, Rutgers University
11:45 - 1:30	Lunch
1:30 - 4:30 pm	Workshops C. Parent training programs Charles Cunningham, McMaster University D. Child-care programs Donna Bryant, University of North Carolina
2:45 - 3:00	Coffee break
4:45 - 5:45	Conversation and discussion with presenters
6:00 - 7:30	Plenary: Implications for policy and program planners: effective programs from three to five (with two presenters, Canadian policy and program planners, names to be confirmed)
7:30 - 10:00	Banquet

Wednesday, March 19 **EFFECTIVE COMPREHENSIVE PROGRAMS**

8:45 - 9:00 am	Welcome, Richard Tremblay, University of Montreal
9:00 - 10:15	Address: Large scale family training/support programs Matthew Sanders, University of Queensland (Australia)
10:15 - 10:30	Coffee break
10:30 - 11:45	Address: Comprehensive community-based projects Ray Peters, Queen's University
11:45 - 1:30	Lunch
1:30 - 4:30 pm	Workshops E. Triple P: Positive Parenting Program Matthew Sanders, University of Queensland (Australia) F. Birth to five programs David Fergusson, Christchurch School of Medicine (New Zealand)
2:45 - 3:00	Coffee break
4:45 - 5:45	Conversation and discussion with presenters
5:45 - 7:45	Dinner
7:45 - 9:00	Plenary: Implications of the three days' presentations for effective early child development policy and practice in Canada
9:30 - 10:30	Concluding Discussion, Awards, Reception

Registration and Information: www.excellence-earlychildhood.ca

For more information on the Banff Centre:

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PROMOTING BREASTFEEDING HELPS MOTHERS NURSE LONGER

Most health care professionals will tell a pregnant woman or new mother that "breast is best" for her baby. But ensuring that this sage advice is put into practice hasn't been easy. So the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) developed a ten-step "Baby-Friendly Hospital Initiative" (BFHI) that provides help, information and support for breastfeeding women. The program aims to increase both the length of time women breastfeed and the number of months babies receive breast milk exclusively.

However, the effectiveness of the BFHI has never been tested. It remains to be seen whether this ten-step initiative will increase breastfeeding rates.

Some researchers also question the benefits we attribute to breastfeeding (especially the supposed benefits of reducing the incidence of infection and atopic eczema) since the evidence for these benefits is based solely on observational (non-experimental) studies.

To address these issues, a multidisciplinary team of researchers set up the Promotion of Breastfeeding Intervention Trial (PROBIT) in the Republic of Belarus. It was the first multi-centre, randomized trial to measure the effects of a breastfeeding promotion program. The study also examined the health benefits of breastfeeding to specifically determine whether breastfeeding would reduce gastrointestinal and respiratory infections or atopic eczema. A

total of 17,046 mother-infant pairs were enrolled in the trial. All mothers initially breastfed their infants. These mothers were then randomly divided into two groups, with one half participating in a breastfeeding promotion program (similar to the BFHI) and the other half receiving no such information or support.

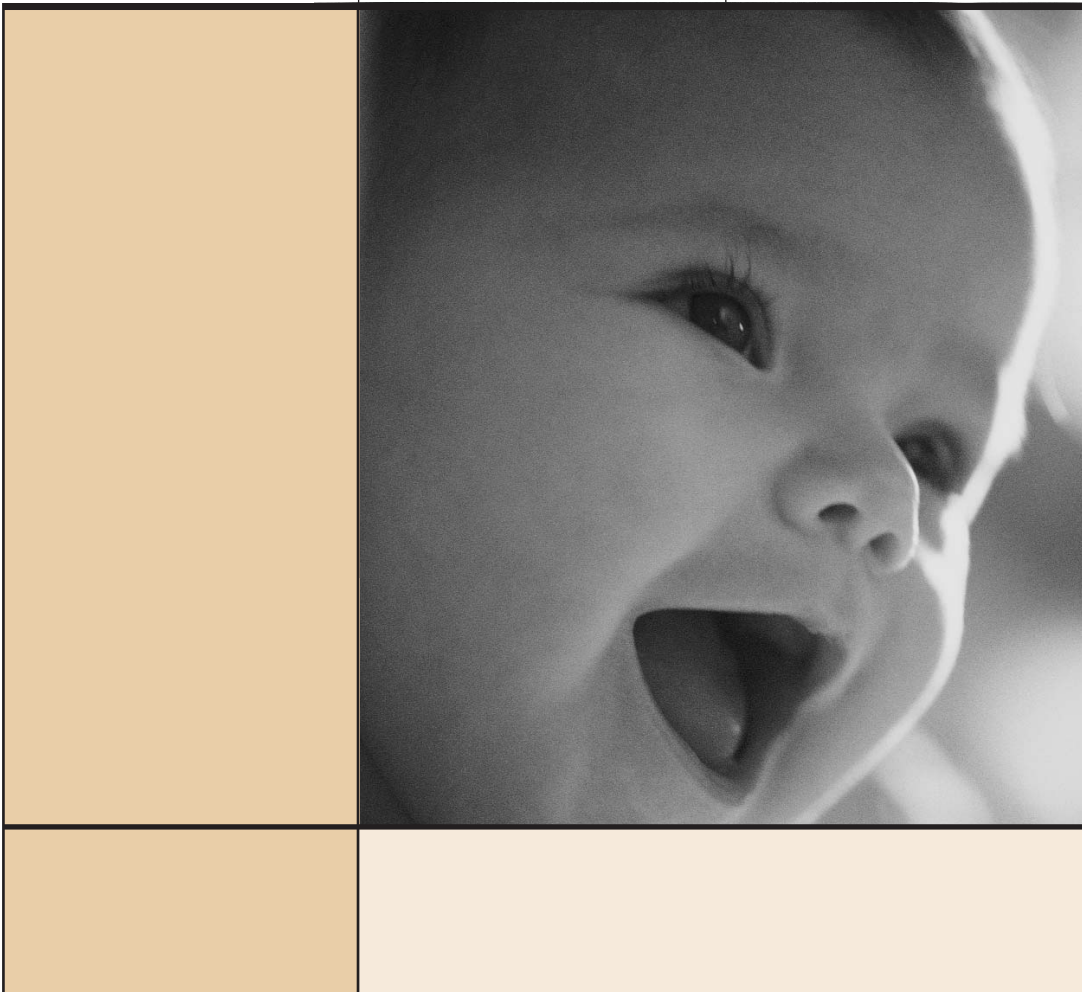
The results showed that the women who participated in the breastfeeding promotion program were significantly more likely to be nursing at one year than their counterparts who received no support (19.7% versus 11.4%). Moreover, those who had received breastfeeding support were more likely to be exclusively breastfeeding at three and six months. Their infants were also less likely to develop gastrointestinal

tract infections or atopic eczema. However, researchers found no significant differences in respiratory infection rates between the two groups.

Louise Dumas, a professor of Nursing at Université du Québec à Hull, was one of the three experts who assessed the only Canadian hospital to receive a BFHI designation, the Brome-Missisquoi-Perkins Hospital (Quebec). "The PROBIT study is a landmark," she says. "It is the first time researchers have been able to assess a BFHI-like program with control and experimental groups. However, while the study clearly demonstrates the effectiveness of a breastfeeding promotion program and the benefits of breast milk to the baby, implementing the BFHI in Canada has proven difficult. Factors such as extremely short hospital stays for new mothers, short maternity leaves and extensive advertising by [baby] formula companies make it difficult to increase breastfeeding rates."

The study highlights the importance of helping health care professionals (particularly doctors) increase their knowledge of breastfeeding. "Doctors, especially general practitioners and obstetricians, are missing out on training and information around breastfeeding," says Dumas. She is urging that further study be conducted on the implementation process of the BFHI. "We generally aren't able to put all [ten] steps into place at once. So let's see how people react to each step, where the resistance is and how people find solutions. Now [that] we know that the Baby-Friendly Hospital Initiative works, we need to know why we are having such a problem implementing it here [in Quebec]."

Ref: M. S. Kramer et al. "Promotion of Breastfeeding Intervention Trial (PROBIT): A Randomized Trial in the Republic of Belarus." *Journal of the American Medical Association*. Vol. 285. January 2001. 🦋



NO NEED FOR A BAN: STUDY FINDS PACIFIERS NOT LINKED TO EARLY WEANING

Whether it is called a pacifier, a soother or, as the British do, a dummy, this little rubber object has created controversy. Studies have suggested a link between pacifier use and early weaning from breastfeeding, possibly by creating nipple confusion in the baby.

Both the World Health Organization and the United Nations Children's Fund strongly discourage its use, and observational (nonexperimental) studies have consistently shown that babies who use pacifiers on a daily basis are weaned earlier than those who do not. Yet studies also show that pacifiers reduce a baby's crying in the short term, a benefit for both parents and child.

Then a team of Canadian researchers set out to explore what role the pacifier might play in weaning and soothing babies. They carried out a randomized, double-blind, controlled study at Montreal's Royal Victoria Hospital with 281 mothers (258 completed the study). All the women received information and help with breastfeeding. However, one group was asked to avoid using a pacifier when the baby cried or fussed. Instead, mothers were asked to offer the breast or to try carrying or rocking the infant. A second group received information on all options available for soothing the baby from breastfeeding to using a pacifier. The mothers kept a log of their infant's behaviour at four, six and nine weeks of age. The mothers were also interviewed at three months to assess breastfeeding and pacifier use rates.

The researchers discovered that pacifier use, when analyzed according to the randomized allocation, had no effect on the risk of weaning by three months. When randomized allocation was ignored, however, those

babies who used pacifiers on a daily basis were more likely to be weaned by three months. These results strongly suggest that pacifier use is a marker (indicator) of breastfeeding difficulties or a mother's declining commitment to breastfeeding, rather than a true cause of early weaning.

The study also found that the pacifier was no more successful in pacifying the baby than other soothing methods, such as breastfeeding, carrying and rocking. This much-debated object may provide a warning to health professionals of

potential breastfeeding difficulties that could derail the mother-infant nursing relationship.

"Understanding that pacifier use is a marker and not a cause of breastfeeding difficulties may help health professionals find new approaches to helping breastfeeding mothers who are reaching for the pacifier, and pacifier; when a breastfeeding mother is using a soother, she may need more help and support," said Dawn Walker, Executive Director of the Canadian Institute of Child Health. Walker

added that women today feel great pressure to breastfeed but may underestimate the time and effort involved. Using a pacifier may be one way to shift a breastfeeding baby's schedule (normally every hour and half to two hours) more towards the three-to-four hour intervals of a formula-fed infant.

Ref.: M. S. Kramer et al., "Pacifier Use, Early Weaning, and Cry/Fuss Behavior. A Randomized Controlled Trial," *Journal of the American Medical Association*, vol. 286, July 2001. 🦋

TINY BABIES, LONG-TERM PROBLEMS

Tiny, fragile and vulnerable, babies born weighing less than one kilogram need all the help advanced technology can provide. Simply surviving is a struggle, and those who live often face a host of health and developmental problems. Now, a recent study suggests that these extremely low-birthweight (ELBW) babies may need monitoring, particularly for behavioural problems, well into their school years.

Published in *The Lancet*, the study examined 408 ELBW children from height to ten years of age in the Netherlands, Germany, Canada and the United States. Researchers asked parents to answer questions about their children using a tool called the Child Behavior Checklist. This list helps identify behaviours that are aggressive, delinquent, anxious, somatic (such as dizziness and headaches) or withdrawn, as well as social, thought and

attention problems.

The scores for the ELBW children were compared to scores for full-term children. In all four countries, the ELBW children exhibited greater social, thought and attention difficulties.

The researchers concluded that ELBW children, regardless of the culture they are born into, are at risk for thought problems, attention difficulties and problems integrating into social groups. They hold that ELBW children should be monitored on an ongoing basis and provided with preventive intervention for learning and social problems.

Chad O'Brien, a regional coordinator of Early Childhood for First Nations of Quebec and Labrador Health and Social Services Commission, said the study came to some very valid conclusions. "Extremely low-birthweight children are definitely at a disadvantage," he said. However, O'Brien added that more research should be done to look

at how socio-economic issues impact the behavioural problems of ELBW children. He also noted that the study looked exclusively at Western and European cultures and suggested it would be worthwhile to look at other cultures such as First Nations.

While the study confirms what many practitioners have long suspected, namely that extremely low-birthweight children need long-term care and follow-up, O'Brien added that resources are still few and far between. "There is so little out there for these kids. We need education and awareness programs. Preventing preterm birth would also be key. But we need to increase the funding for services to children."

Ref.: É. T. M. Hille et al. "Behavioral Problems in Children Who Weigh 1000g or Less at Birth in Four Countries." *The Lancet*. Vol. 357. May 2001. 🦋

MOTHERING MATTERS: HOW RAT PUPS BENEFIT FROM A HIGH LEVEL OF MATERNAL CARE

Does good parenting produce smarter children? While science has yet to provide an answer for human beings, a new study on rats suggests that certain kinds of maternal care improve spatial learning and memory in some offspring by increasing hippocampal development.

A Canadian research team observed mother rats as they interacted with their newborn pups. Some mothers spent a great deal of time licking, grooming and nursing in an arched-back position (labelled high LG-ABN),

while others spent little time on these activities (low LG-ABN). The offspring of the high and low LG-ABN rats were then tested for spatial learning and memory using a water maze. Pups who had received a high level of maternal care performed significantly better on the test for spatial learning and memory. Studies done on the rats later in life showed that these effects continued into adulthood.

The researchers also "cross-fostered" pups by placing a pup born to a low LG-ABN mother with a high LG-ABN moth-

er (labeled low-high) and vice versa (high-low). The low-high pups showed spatial learning and memory that was indistinguishable from high LG-ABN pups reared by their high LG-ABN mothers. In contrast, high-low pups showed no decrease in their level of spatial learning and memory, hence their abilities were unaffected by the maternal care they received.

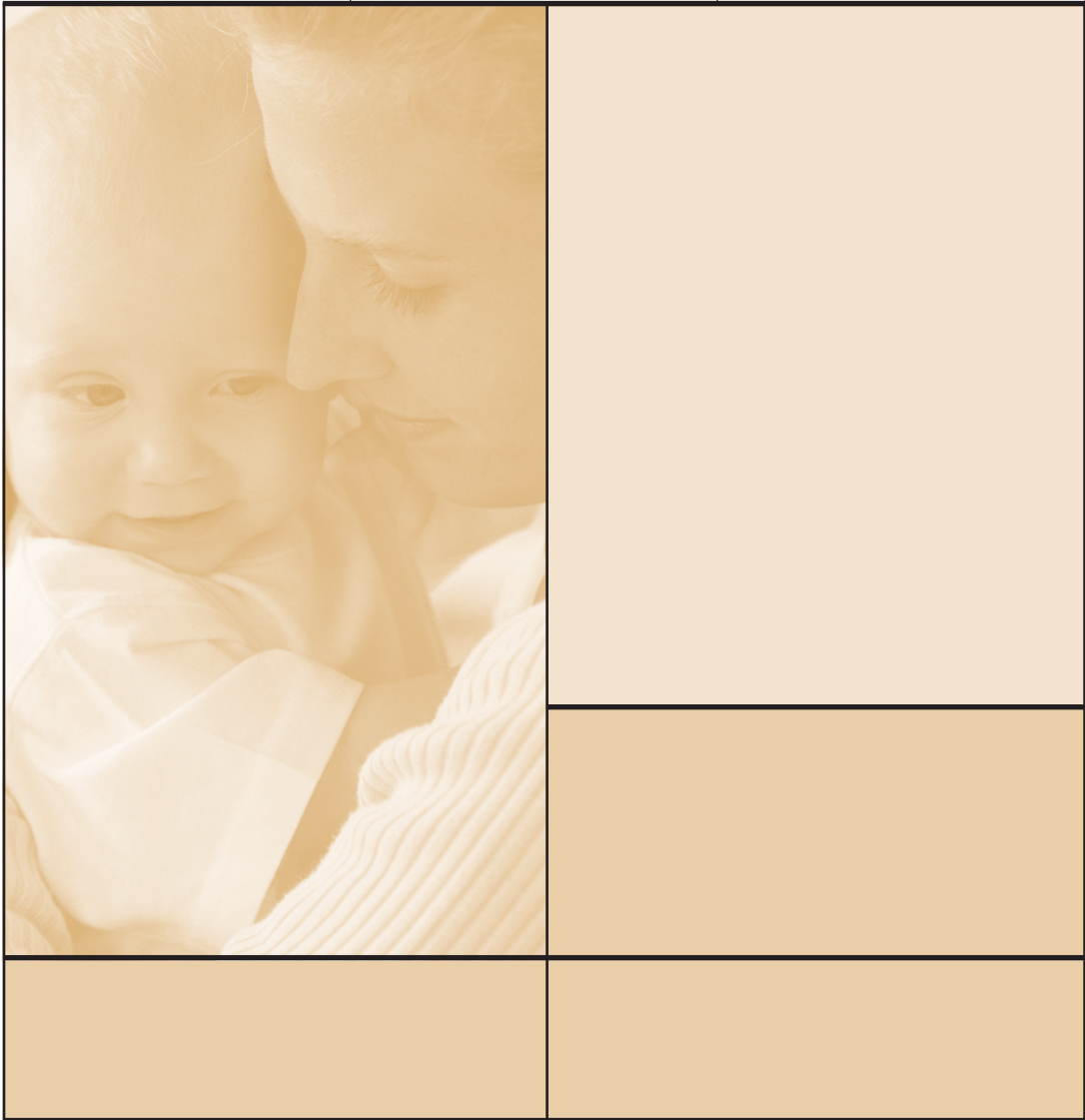
Researchers then examined the hippocampi of both high and low LG-ABN pups. They discovered that high LG-ABN pups had higher rates of

synaptogenesis, suggesting that maternal care had a direct effect on hippocampal development by directly affecting the number and form of synaptic neurons.

Paul Gendreau, a professor at the Université de Montréal's School of Psycho-Education and a member of U de M's Children's Psychosocial Maladjustment Research Unit, said that studies done in rats cannot be directly generalized to humans, whose early development proceeds in a far different manner. However, he added, "The study is very well done, very elegant and very intriguing. It is rare to find a study that has the two elements of behaviour and biology examined so meticulously." Gendreau also noted that while the difference in activity between the high LG-ABN and low LG-ABN mothers was not extremely large, these small differences seemed to have a significant impact on the pups. "It did not take much difference in maternal behaviour to see a big difference in neural development," he said.

The study also points the way to other areas of exploration, added Gendreau. Does the maternal behaviour affect other parts of the brain? What about the effects on social and emotional behaviours? Do these findings hold true for other kinds or "strains" of rats and other animal species? And, of course, what does this research tell us about humans? "Answering all of these questions will be a lengthy undertaking, but one greatly aided by the progress made in this study," said Gendreau. "In neurobehavioural sciences, it's very uncommon to have a study with results of this magnitude. It's very impressive."

Ref.: D. Liu, J. Diorio, J. C. Day, D. D. Francis and M. J. Meaney. "Maternal Care, Hippocampal Synaptogenesis and Cognitive Development in Rats." *Nature Neuroscience*. Vol 3. August 2000. 🐭



BOYHOOD AGGRESSION: WHO IS AT RISK AND WHY?

In the spring of 1984, an ambitious longitudinal study of physical aggression in boys began. The subjects were 1,037 French-speaking kindergarten boys from low socio-economic areas in Montreal.

They were assessed regularly from the age of six until they were fifteen years old. Over the years, the researchers identified four different kinds of aggressive boys: chronic aggressors, high but declining aggressors (very aggressive boys whose aggression diminished as they matured) moderate but declining aggressors (moderately aggressive boys who tempered their aggression as they matured), and low aggressors. The study established that most boys reduced their level of physical aggression as they grew older, while a small group (3%) maintained high levels of aggression.

The researchers wondered if it

would be possible to identify boys at risk of chronic physical aggression from the time they entered school. Further study revealed that those who remained physically aggressive until adolescence tended to be hyperactive, highly oppositional and have low verbal IQs. Particularly worrisome was the combination of hyperactivity and high opposition. Together, these two factors increased a boy's odds of becoming a chronic aggressor eightfold.

When researchers turned their attention to the parents to determine what family characteristics (if any) might predict the boys' aggressive tendencies, their findings were somewhat surprising. A father's socio-economic and educational status appeared to have no effect whatsoever on a boy's risk of chronic aggression. It was the mother's age

when she gave birth to her first child and her level of education that mattered. Thus, the son of a teenaged mother who had received limited schooling was nine times more likely to become a chronic aggressor.

Sylvie Fortin, who heads up the Family-Child-Youth program at the Association des CLSC et des CHSLD du Québec notes that the study has important implications for health professionals. Helping young women avoid unwanted pregnancies in their teens is crucial, according to Fortin. But providing support to teen mothers is also essential. We must "help young mothers provide a stable and supportive environment for their children. Mothers should be helped to develop long-term plans and a strong social network to break down isolation from peers," Fortin says.

Given the strong link between hyperactivity and long-term aggression shown in the study, Fortin says that there is a vital need to identify hyperactive children at a very young age and provide them with appropriate services. She notes that this kind of program has been instituted in Quebec and targets school-aged children. Fortin expects that the program will be extended to preschool-aged children, adding that we need "an approach that brings together family, daycare services and schools for these children."

Ref.: D. S. Nagin and R. E. Tremblay. "Parental and Early Childhood Predictors of Persistent Physical Aggression in Boys from Kindergarten to High School." *Archives of General Psychiatry*. Vol. 58. April 2001. 🦋

ARE CHILDHOOD TRAUMAS AND EATING DISORDERS RELATED?

Do childhood traumas such as physical or sexual abuse make women more likely to develop bulimia nervosa later in life? Current research suggests that childhood abuse is associated with anomalous serotonin and cortisol functioning in the body. Studies of bulimic women also show this same anomaly. Reduced serotonin activity is associated with mood disorders such as depression and reduced cortisol (the stress hormone) activity to prolonged intense stresses.

A Quebec research team decided to examine the activity of serotonin and cortisol in four groups: Abused bulimic and non-abused bulimic women, and abused and non-abused normal eaters. The researchers found no systematic association between childhood abuse and bulimia. However, they did find that bulimic women were much more likely to suffer from major depression. As well,

symptoms of post-traumatic stress disorder (PTSD) occurred significantly more often in abused bulimic women.

As in previous studies, the research team found reduced serotonin activity to be associated with both bulimia and childhood abuse. However, lower cortisol activity was only associated with abuse, not with bulimia. From these findings, the researchers speculate that the same vulnerability that makes a woman more likely to develop bulimia may make her more vulnerable to the detrimental effects of abuse. This vulnerability may be manifested on the neurobiological level as reduced cortisol activity and at the behavioural level as PTSD symptoms.

"There have been questions about whether or not childhood abuse was a causative factor in eating disorders, but research has failed to show causation," noted Katherine Austin Leonard, Medical Director of the Eating Disorders Program at North York

General Hospital and a lecturer in the University of Toronto's Division of Adolescent Medicine. "These findings are consistent with prior studies. It is an elegant study and the researchers have been very responsible with their conclusions," said Leonard.

As a clinician working with eating disorder patients and their families, Leonard has seen many abused bulimic women who also suffer from PTSD and self-destructive behavior, a finding consistent with the results of this study. "This finding may be helpful to patients in terms of understanding their symptoms," she added. Patients might also want to know about the changes in serotonin activity associated with bulimia. "There were significant biological markers for eating disorders and abuse," Leonard said. "Understanding the biological factors in eating disorders has become increasingly important in terms of treatment."



"Usually I'm very cautious about findings from small studies such as this one," said Leonard. "However, their findings were striking, and they were very measured and careful in their conclusions."

Ref.: H. Steiger et al. "Association of Serotonin and Cortisol Indices With Childhood Abuse in Bulimia Nervosa." *Archives of General Psychiatry*. Vol. 58. September 2001. 🦋

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The Bulletin is a quarterly publication of the Centre of Excellence for Early Childhood Development. The Centre identifies and summarizes the best scientific work on social and emotional development of young children and makes this information available to planners, providers of public and community services and policy makers.

Main partners are Health Canada, Université de Montréal, Canadian Paediatric Society, Canadian Child Care Federation, University of British Columbia, Institut national de santé publique du Québec, Dalhousie University, IWK Health Center, Centre de Psycho-Éducation du Québec, Queen's University, Conseil de la Nation Atikamekw, Canadian Institute of Child Health and Human Resources Development Canada, Centre de Recherche de l'Hôpital Sainte-Justine.

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Translation: Hugh Ballem

Proofreading: Cynthia Kelly

Layout: ARSENAL media

Printing: Litho Lachance

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ISSN 1499-6219

ISSN 1499-6227