2002... Il be 5 years old !

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Longitudinal study of child development in Québec

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COLLECTION Health and Well-Being

LONGITUDINAL STUDY OF CHILD DEVELOPMENT IN QUÉBEC (ÉLDEQ 1998-2002)

5-MONTH-OLD INFANTS

Temperament

Volume I, Number 7





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For further information on the Institut de la statistique du Québec (ISQ) (Québec Institute of Statistics) and the statistics available in its databases, contact:

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May 2000

Similar to what has been observed in the majority of industrialized nations over the past twenty years, Québec and Canada have seen a significant increase in the costs related to maladjustment, particularly in young people. The Longitudinal Study of Child Development in Québec (*l'Étude longitudinale du développement des enfants du Québec*) (ÉLDEQ 1998-2002) being conducted by *Santé Québec* (Health Québec),¹ a division of *l'Institut de la statistique du Québec (ISQ)*² (Québec Institute of Statistics) in collaboration with a group of university researchers, will provide an indispensable tool for action and prevention on the part of government, professionals and practitioners in the field, who every day must face maladjustment in children.

More precisely, a major purpose of this longitudinal study of a cohort of newborns is to give Québec a means of preventing extremely costly human and social problems, such as school dropout, delinquency, suicide, drug addiction, domestic violence, etc. Similar to what is being done elsewhere (in the UK, New Zealand, the US), *Santé Québec* and a group of researchers have designed and developed a longitudinal study of children 0 to 5 years of age (2,223 children in this study and 600 twins in a related one). It will help gain a better understanding of the factors influencing child development and psychosocial adjustment.

The general goal of ÉLDEQ 1998-2002 is to learn the PRECURSORS, PATHS and EFFECTS, over the medium and long terms, of children's adjustment to school. ÉLDEQ is the logical extension of the National Longitudinal Study of Children and Youth (NLSCY, Canada). These Québec and Canada-wide longitudinal studies are both comparable and complementary. They employ distinct survey methods, and use different techniques to obtain the initial samples. Though many of the

instruments are practically identical, about a third of those being used in ÉLDEQ are not the same.

This first report casts light on the enormous potential of the data generated by this study. From the descriptive analyses of the results of the first year of the study to the longitudinal analyses of subsequent years, there will be an enormous wealth of data. With updated knowledge on the development of the cohort of young children, the annual longitudinal follow-up will respond to the needs which the *ministère de la Santé et des Services Sociaux du Québec - MSSS* (Ministry of Health and Social Services), who financed the data collection, expressed in both the Report of the Working Group on Youth (*Rapport Bouchard, 1991, Un Québec fou de ses enfants -* the Bouchard Report, 1991, A Québec in Love with its Children) and the policy papers entitled *Politique de la santé et du bien-être, 1992* (Health and Well-Being) and *les Priorités nationales de santé publique 1997-2002* (Public Health Priorities 1997-2002).

Director General

Man Fist

Yvon Fortin

Certain French appellations in italics in the text do not have official English translations. The first time one of these appears, the unofficial English translation is shown immediately after it. Following this, for ease in reading, only the official French name appears in the text in italics, and it is suggested the reader refer to the Glossary for the English translation.

^{2.} Santé Québec officially became a division of the ISQ on April 1, 1999.

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This analytical paper is also available in French. [Ce numéro et aussi disponible en version française sous le titre : « Le tempérament » dans Étude longitudinale du développement des enfants du Québec (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, vol. 1, n° 7.]

Caution:

Unless indicated otherwise, "n" in the tables represents data weighted to the size of the initial sample.

Because the data were rounded off, totals do not necessarily correspond to the sum of the parts.

Unless explicitly stated otherwise, all the differences presented in this report are statistically significant to a confidence level of 95%.

To facilitate readability, proportions higher than 5% were rounded off to the nearest whole unit in the text, and to the nearest decimal in the tables and figures.

As expected, certain data characterizing various phenomena in the study did not follow a normal distribution. This non-normality, indeed the asymmetry of certain variables measuring child development or the infants family environment, makes it difficult to interpret the results of certain parametric tests (Student's *t* test, Fisher test - ANOVA). In spite of this, the authors, similar to their peers working on longitudinal studies, have calculated and presented associations using estimators such as means, linear regressions and correlations. For these data, caution is recommended when interpreting the results. In annual longitudinal monitoring, trends are important and not each cross-sectional measurement taken in isolation.

Symbols

.. .

Abbreviations

 NOI	applica	DIe	(N/A)	

.. Data not available

-- Nil or zero

CV Coefficient of variation Not avail. Not available not signif. Not significant

p < Refers to the threshold of significance

..

Santé Québec recognizes that the development and implementation of the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) flows directly from the synergy of effort and professionalism of many people throughout the whole process of mounting a survey of this size. Since 1995, individuals, various groups and organizations, a survey firm and the staff of Santé Québec have become indispensable links in making this ambitious project a reality - the first annual longitudinal survey of Québec infants.

A major characteristic of this project is that a pretest and survey are conducted every year. To accomplish this, we must annually: 1) make two sets of instruments (pretest and survey), 2) conduct two data collections, 3) analyze two sets of data, and 4) produce two types of communications materials. The results of each pretest means fine-tuning and developing instruments for the survey, which follows 17 months later. The results are sent to the parents (highlights), published in reports, and communicated to the scientific community and the public at large. The professionals and staff involved in collecting the data, as well as those involved before and after, must put their nose to the grindstone every year. We cannot over-emphasize our profound recognition of the incredible, concerted effort they are putting into this project over an 8-YEAR period, from the first pretest in 1996 to the final report to be published in 2004!

First, it must be said that without Daniel Tremblay, Director of Santé Québec (now part of the *ISQ*) since 1994, Christine Colin, Assistant Deputy Minister responsible for Public Health 1993-1998, Aline Émond, Director of Santé Québec 1986-1993, Richard E. Tremblay, Director of the ÉLDEQ research project, and Marc Renaud, President of *le Conseil québécois de la recherche sociale - CQRS* 1991-1997. ÉLDEQ 1998-2002, also known as "In 2002...I"II Be 5 Years Old!," would have never seen the light of day. In turn and together, they developed, defended and obtained the financing for this study. Thank you for your indefatigable tenacity.

A warm thanks to all the researchers and the support staff of their respective research groups, whose determination over the years has never wavered. Putting their research grants together every year has contributed to the development of the instruments, analysis of the data and publication of the copious results.

I would like to thank Lyne Des Groseilliers, ÉLDEQ's statistician since 1996, Robert Courtemanche, statistical advisor, and France Lapointe, ÉLDEQ's statistician 1995-1996. These three colleagues in the *Direction de la méthodologie et des enquêtes spéciales* (Methodology and Special Surveys Division) (*ISQ*) managed, with great skill, to set the signposts and navigate the somewhat winding course of this large-scale survey first.

A very special thanks to all the master designers of the National Longitudinal Study of Children and Youth (NLSCY, Canada). Without their expertise, advice and generosity, our survey would never have been accomplished. In many senses of the word "modeling," ÉLDEQ has learnt a lot from the NLSCY.

We would also like to extend out gratitude to the staff of the Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP (Research Unit on Children's Pyschosocial Maladjustment) at the University of Montréal. Without their expertise, some of our survey instruments would have never been computerized to such a high level of quality.

We would like to thank the personnel in the Service de support aux opérations de la Régie de l'assurance-maladie du Québec -RAMQ (Operations Support Section of the Québec Health Insurance Board). Without their efficiency, fewer letters of introduction would have found their way to the correct addresses of respondents.

Our sincerest thanks go to our survey firm, *Bureau* d'interviewers professionnels (*BIP*). Since 1996, this polling company has been responsible for data collection in the pretests and surveys, and follow-up of families both inside and outside of Québec. Lucie Leclerc, President of *BIP*, has set the standard of quality for our numerous and complex data collections. Assisted by Véronique Dorison, she has instilled in her interviewers a great sense of respect for the respondent families, as well as a rigourous regard for all the norms governing this first-of-a-kind survey in Québec. A big thank-you to the directors-general, directors of professional services, and staff of the medical records departments of some 80 hospitals in the province who accepted to collaborate in our study at a time when resources were rare and time was at a premium, and when the medical records departments in many hospitals were merging or in the process of doing so. Their support was exceptional. Birthing centres also graciously accepted to participate in this first Québec longitudinal study of children. A special thanks to Julie Martineau, medical records specialist, who contributed to the analysis of indispensable medical information by ensuring very rigourous coding of the data, which often lay concealed in the medical files of the infants and their mothers.

It goes without saying that the staff of Santé Québec Division directly attached to ELDEQ 1998-2002 are the cornerstone of its success from practically every point of view. Special thanks for their ongoing contribution and constant hard work go to Hélène Desrosiers and Josette Thibault, responsible respectively for analysis of the data and creation of the measurement instruments; Martin Boivin, Rolland Gaudet and Gérald Benoît, who constantly pushed the limits of what computer software can do in terms of programming and data processing; Suzanne Bernier-Messier and Diane Lord, who give meaning to the word versatility, who must organize, code and manage incredible quantities of data to ensure the progress of the study. Not directly attached to the team but who made extremely important contributions are: France Lacoursière, France Lozeau and Therese Cloutier, who put the finishing touches to the Santé Québec "look" in the survey instruments, reports and conference publications; Lise Ménard-Godin, who conducted fruitful literature searches and advised on many aspects of the collection instruments. The hard work, constant availability, ability to adapt, and finely-honed skills of the people working on this project match the enthusiasm that all our partners have demonstrated in making this study a resounding success.

Finally, I would like to extend a very special thank-you to the 2,223 families who responded to our survey. Thank you for the trust you have shown in *Santé Québec*, our partners and collaborators. Thanks to your participation, your children have become the veritable stars of ÉLDEQ 1998-2002, and are making it possible, in the short term, to gain a better understanding of psychosocial adjustment in children. In the

medium and long terms, they will likely be in large part responsible for the establishment of early detection programs, better designed prevention programs, and more effective interventions for such an important clientele - all of Québec's children.

Haut Jitt

Mireille Jetté Project Coordinator Santé Québec Division, ISQ

It suffices to consider the costs engendered by behavioural problems in children - school dropout, delinquency, alcoholism, drug addiction, family violence, mental disorders and suicide - to conclude that they largely surpass what a modern society can accept, morally and economically. Faced with the enormity of these problems, the first reflex is to provide services to these people which will, ideally, make the problems disappear, or at the very least, lessen their severity. For many years we have tried to offer quality services to children and adults who suffer from antisocial disorders, alcoholism, drug addiction, depression, and physical or sexual abuse. However, in spite of enormous investment, these curative services are far from being able to respond to the demand.

Although the idea of early intervention as a preventive measure can be traced at least as far back as ancient Greece, the second half of the 20th century will certainly be recognized as the dawn of the field of social maladjustment prevention (Coie et al., 1993; Mrazek & Haggerty, 1994). Numerous programs have been developed for adolescents and teenagers to prevent school dropout, delinguency, drug addiction and suicide. Scientific evaluations of these programs have been far too few in number, but they tend to demonstrate that it is extremely difficult to help those most at risk in this age group (Rosenbaum & Hanson, 1998; Rutter, Giller & Hagell, 1998; Tremblay & Craig, 1995). It is becoming increasingly clear that the factors which lead to serious adaptation problems are in place long before adolescence. Hence the idea that the prevention of social adaptation problems should start at least during childhood, and preferably right from pregnancy (Olds et al., 1998; Tremblay, LeMarguand & Vitaro, 1999). These principles are clearly outlined in the objectives of the Politique de la santé et du bien-être (Policy on Health and Well-Being) and les Priorités nationales de santé publique (Priorities for Public Health) set by the government of Québec (ministère de la Santé et des Services sociaux, 1992; 1997).

The Need to Understand Early Childhood Development

If the field of maladjustment prevention appeared at the end of the 20th century, it has certainly come on the heels of child development. "Émile," by Jean-Jacques Rousseau, needs to be re-read in light of recent studies to realize just to what degree it is impossible to understand the complexity of child development, and therefore the means of preventing deviant paths, simply by reflection or introspection. Although considerable knowledge has been acquired in the neurological, motor, cognitive, affective and social development of children, what really hits home is that Jean-Jacques Rousseau and his followers in education seemed to have had more certainty about the ways of educating children than we do today.

Progress in child development research has made us realize that things are not as simple as we can or would like to imagine. We have obviously all been children, and most of us have become parents, indeed, relatively well-adjusted ones. But we still do not clearly understand when, how and why adjustment problems appear, and above all, how to prevent and correct them.

Our ignorance is obvious when we examine the debates among specialists on the role of parents in the development of maladjustment problems in children. Some suggest that social maladjustment in children is largely determined by genetic factors (Bock & Goode, 1996; Rowe, 1994). Some accentuate economic factors (Duncan & Brooks-Gunn, 1997). Other researchers attribute a determining role to peer influence (Harris, 1998; Harris, 1995; Vitaro *et al.*, 1997). These larger questions lead to narrower ones which focus on particular aspects - the role of fathers in childhood maladjustment, the impact of alcohol and cigarette consumption during pregnancy, the effect of prenatal and birthing problems, the importance of breast feeding and diet; the role of sleep, cognitive development, temperament, and so on.

The majority of these questions are at the heart of the daily concerns of parents, grandparents, educators, family service providers, and legislators. What can we do to maximize the development of our children, to prevent severe psychosocial maladjustment? What should we do when problems begin to appear, when pregnant mothers, or fathers themselves have a long history of disorders? The answers to these questions obviously have an effect on the policies put forth by Québec government Ministries such as *ministères de la Famille et de l'Enfance* (Family and Child Welfare), *de l'Éducation* (Education), *de la Santé et des Services sociaux, de la Solidarité sociale* (Social Solidarity - formerly Income Security (Welfare)), *de la Sécurité publique* (Public Security), *de la Justice* (Justice), and *le ministère de la Recherche, Science et Technologie* (Research, Science and Technology).

The Contribution of ÉLDEQ 1998-2002

The Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) was conceived in order to contribute to our knowledge of the development of children in their first 5 years of life. The main goal is to gain a better understanding of the factors, in the years of rapid growth, which lead to success or failure upon entry into the school system. The goal of the second phase (if approved) is to better understand development in elementary school, in light of development in early childhood.

We know that this survey cannot be a definitive one on child development in Québec, but it is the first representative study of a provincial cohort of children who will be measured annually from birth to entry into the school system. It specifically aims at understanding the development of basic skills needed for educational success.

Although the effort to set up this study began in 1989, the first data collection coincided with the Québec government's implementation of its *Politique Familiale* (Policy on Families). The policy has virtually the same objectives as our study:

"These services for children 5 years and under should give all Québec children, whatever the socioeconomic status of their parents, the chance to acquire and develop the skills that will allow them to succeed in school (1997, p. 10)."

On March 3 1999, in the speech opening the 36th session of the Québec legislature, Premier Lucien Bouchard confirmed that early childhood development was a priority for the government: "The theme that will dominate our actions this year, next year, and throughout our mandate, is youth... The priority...with regards to youth in Québec, begins with the family and childhood... This massive investment in early childhood... will give our children the best chance of success in the short, medium and long terms. It is our best asset against alienation and despair. It is our best preparation for personal, social and economic success."

Because of this historic coincidence, ÉLDEQ has the potential of becoming an invaluable tool for monitoring the effects of Québec's massive investment in early childhood which began in 1997. Thanks to the data collected by the federal government's National Longitudinal Study of Children and Youth (NLSCY, Canada), we will be able to compare child development in Québec with that elsewhere in Canada, before and after the implementation of Québec's new policy on the family.

However, our initial objectives are more modest. The 12 or 13 papers in this series present the results of our first annual data collection. They describe the characteristics of the families and children when the latter were 5 months old.³ They cover sociodemographic characteristics, nature of the birthing process, health and social adaptation of the parents, family and couple relations, parent-infant relations, and characteristics of the 5-month-old, such as sleep, diet, oral hygiene, temperament, and motor, cognitive and social development. These data will eventually be compared to those on children the same age collected by the NLSCY in 1994 and 1996.

An Interdisciplinary, Multi-University Team of Researchers

This study saw the light of day because of the collaboration of many people. In the preceding pages, Mireille Jetté thanked a number of them. I would like to take advantage of this introduction to emphasize that the survey was set up and continues forward because of the dedication and hard work of a group of researchers from a variety of disciplines and

^{3.} To simplify the text in this report, the phrase "5-month-old infants" will be used to refer to infants whose <u>mean age</u> was 5 months during data collection in 1998. In section 3.1.3 (Volume 1, Number 1), we explain why the infants were not all exactly the same age. As indicated in no. 2 of this series, 52% of the infants were less than 5 months, and 3.4% were 6 months of age or over.

universities. I would particularly like to thank Michel Boivin, School of Psychology at Laval University, and Mark Zoccolillo, Department of Psychiatry at McGill University, who have been actively involved in this project since 1992. It was in that year that we prepared out first grant application for the Social Sciences and Humanities Research Council of Canada, A second group of researchers joined the team in 1993 and 1994: Ronald G. Barr, pediatrician, Montréal Children's Hospital Research Institute, McGill University; Lise Dubois, dietitian and sociologist, Laval University; Nicole Marcil-Gratton, demographer, University of Montréal and Daniel Pérusse, anthropologist, University of Montréal. Jacques Montplaisir, Department of Psychiatry, University of Montréal, joined the team in 1995. Louise Séguin, Department of Social and Preventive Medicine, University of Montréal and Ginette Veilleux, Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre (Public Health Department, Montréal-Centre Regional Health Board), joined in 1998. Three post-doctoral researchers have also made an important contribution. Raymond Baillargeon developed the task for measuring cognitive development. Christa Japel is the assistant to the scientific director for planning, analysis and presentation of the results. Heather Juby collaborates in the analysis of the data on couple and family history.

A Unique Confluence of Circumstances

A study such as this requires the coordination of many researchers over many years, enormous financial resources, and a long period of preparation. Though in the early 1990s the research team was convinced of the need for the survey, those responsible for the public purse had also to be convinced. We must therefore acknowledge the happy confluence of circumstances that allowed the players to take advantage of the opportunity at hand. When a number of civil servants in the ministère de la Santé et des Services sociaux understood the essential role of prevention, the creation of a committee on children and youth in 1991 led to an increased awareness of the importance of early childhood. At the same time, the president of the CQRS, Marc Renaud, had come to the same realization with his colleagues in the Population Health Program at the Canadian Institute for Advanced Research (CIAR). Aline Émond, the Director of Santé Québec, was ready to apply her formidable determination to work for the cause. For their part, Health Minister Jean Rochon and his Assistant Deputy Minister for

Public Health, Christine Colin, aware of the importance and benefit of longitudinal studies on early childhood development, authorized the investment of large sums of money during a period of draconian budget cuts. This occurred at the same time as the federal government decided to create its own longitudinal study of children and youth (NLSCY). It is in this context that ÉLDEQ 1998-2002 materialized. Our survey also came to fruition because Mireille Jetté did everything in her power to make the researchers' dreams a reality, and Daniel Tremblay gave her all the support she needed by making various resources available for the project.

Richard E. Tremblay, Ph.D., M.S.R.C. Chair of Child Development University of Montréal

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This analytical paper is one of a series presenting crosssectional data collected on a large sample of 5-month-old infants surveyed in 1998. It reports on the first of 5 annual data collections on 2,120 children in Québec who will be studied until they are 5 years old. In the first year of data collection, the results on 2,223 infants were retained.⁴

The target population of the survey is Québec babies, singleton births only,⁵ who were 59 or 60 weeks of gestational age⁶ at the beginning of each data collection period, born to mothers residing in Québec, excluding those living in the Northern Québec, Cree, and Inuit regions, and on Indian reserves, and those for whom the duration of pregnancy was unknown. Due to variations in the duration of pregnancy and the 4 or 5 weeks allotted for each data collection wave, the infants were not all exactly the same age (gestational or chronological) at the time of the survey. Therefore, the children in Year 1 (1998) of the survey had a mean gestational age of 61 weeks - about 5 chronological months.

The survey had a stratified, three-stage sampling design, with a mean design effect for the proportions estimated at 1.3. To infer the sample data to the target population, each respondent was given a weight corresponding to the number of people he/she "represented" in the population. ÉLDEQ 1998 comprised eight main collection instruments which obtained data from the person who was closest to the baby (called the Person Most Knowledgeable - PMK), the spouse (married or common-law), the infant and the absent biological parent, if applicable. Given variation in the response rates to each instrument, three series of weights had to be calculated to ensure inferences to the population were accurate. Except for the Self-Administered Questionnaire for the Absent Father (SAQFABS) and a series of

questions in the Computerized Questionnaire Completed by the Interviewer (CQCI) on absent fathers - the overall or partial response rates of which were too high - the results of all the instruments could be weighted. Therefore, the data presented here have all weighted to reduce the biases.

All data that had coefficients of variation (CV) 15% or higher are shown with one or two asterisks to clearly indicate the variability of the estimate concerned. In addition, if the partial nonresponse rate was higher then 5%, there is a note specifying for which sub-group of the population the estimate is less accurate.

Similar to any cross-sectional population study, the Year 1 part (5-month-old infants) of ÉLDEQ 1998-2002 has certain limits. However, the vast majority of the results are valid and accurate, and provide a particularly detailed portrait, for the first time, of 5-month-old infants in Québec.

Note to the reader: For more details on the methods, see Volume 1, Number 1 in the present series. Detailed information on the sources and justification of the instruments used in Year 1 of ÉLDEQ 1998-2002, and the design of the scales and indices used in this paper, are covered in Number 12, entitled "Concepts, Definitions and Operational Aspects."

^{4.} Though the results for 2,223 children were retained for the first year of data collection, 2,120 will be retained for the rest of the longitudinal study; the extra 103 were part of an over-sample used to measure the effects of the January 1998 ice storm.

^{5.} Twins (twins births) and other multiple births were not targeted by the survey.

Gestational age is defined as the sum of the duration of gestation (pregnancy) and the age of the baby.



Philosophers, educators and psychologists have been trying for a long time to explain differences in temperament among human beings. Greek and Roman philosophers proposed the existence of a four fold typology of temperament, that is the melancholic, phlegmatic, sanguine and coleric type. They asserted these types were biological in origin and immutable. This hypothesis of a biological foundation and temporal continuity of temperament is still put forward today.

Research on temperament has mainly focused on adults. It was only in the second half of the 20th century that researchers began the systematic study of individual differences observed in children. The New York longitudinal study was launched in the mid-1950s by Thomas and Chess and constitutes an important contribution to child psychology and psychiatry. These researchers followed 133 babies from birth to adulthood. They identified, defined and measured individual differences and thereby were able to show associations between temperament in early childhood and temperament in adulthood. They showed that three types of temperament in children, namely difficult, easy or "slow-to-warm-up" could be observed in the first months of life. Children who had been identified as having a difficult temperament, for example, had character traits such as a lack of "rhythmicity" in physiological functions, withdrawal when confronted with new stimuli, slow adjustment to changes in their environment and intense emotional reactions (Thomas et al., 1968).

Their studies also revealed that infants with a difficult temperament were at higher risk of facing adjustment problems in the future. A number of recent longitudinal studies have confirmed that a difficult temperament during the first years of life can be a predictor of psychosocial maladjustment in childhood, adolescence or adulthood (Bates *et al.*, 1991; Bates *et al.*, 1985; Caspi *et al.*, 1995; Caspi *et al.*, 1996; Caspi & Silva, 1995; Guerin *et al.*, 1999). These results suggest that temperament may play a significant role in the genesis and evolution of behavioural disorders in children.

According to Thomas & Chess (1977), temperament can be defined as behavioural style. It is "how the child reacts" which differs from ability and motivation. Two children can have the same skills to accomplish a difficult task, and their motivations to

accomplish this task can also be identical. However, these two children may be significantly different in terms of the speed of their physical movements, the ease with which they approach new person or environment, the intensity of their expression of emotion and the effort required to distract them when they are absorbed by an activity.

Although there are several models with respect to the factors that constitute temperament, researchers agree on the fact that an innate style of reactivity and self-regulation is at the origin of individual differences in temperament (Rothbart & Bates, 1998). Individual differences in central nervous system functioning related to behaviour are detectable even before birth and appear to be associated with infant temperament (DiPietro *et al.*, 1996). Since individual behavioural styles are detectable very early in life and prove to have a certain stability over time, some researchers have suggested that temperament has a genetic component (Bates, 1987; Chess, 1990; Goldsmith *et al.*, 1987; Rothbart & Bates, 1998).

However, children do not develop in a vacuum. The family environment can exert an important influence on the innate behavioural tendencies of the child, given that he or she is in constant interaction with the people around him from the fetal period onward. The infant reacts to his family, and in turn can act on his environment (Coffman *et al.*, 1992; Wachs, 1992). In other words, the irritability of an infant with a difficult temperament risks being increased if his mother has difficulty in responding to the particular needs of a difficult baby. On the other hand, an irritable baby who is difficult to console may exhaust the physical and psychological resources of the mother, even if she is quite capable of detecting and responding appropriately to his needs.

According to Werner & Smith (1992), infant temperament may be a risk or a protective factor. In their longitudinal study in Kauai, they showed that in an environment with other risk factors such as poverty and family dysfunction, a child with an easy temperament is less likely to develop socio-affective adjustment problems than a child with a difficult temperament. It is understandable that a difficult baby who is impossible to comfort may elicit less warmth and more hostility on the part of his parents than a baby who can be easily calmed, particularly if the parents are lacking emotional and financial resources.

It is therefore the compatibility between the "nature" of the child and the "nurture" provided by his environment - the "goodness of fit" (Lerner & Lerner, 1983) - that plays an important role in the child's future development and adjustment. An disadvantaged socioeconomic context, social maladjustment or psychological distress in the mother can significantly increase the probability that the baby will present a difficult temperament (Bates et al., 1979; Oberklaid et al., 1990; Vaughn et al., 1987). Recent Canadian data from the National Longitudinal Study of Children and Youth (NLSCY, Canada) revealed that variables such as family functioning, age of the mother, parenting practices and psychosocial adjustment of brothers and sisters can influence a child's temperament (Normand et al., 1996). These results, however, were based on the mother's description of the child's temperament. This source of information on child temperament has often been criticized as subjective. However Bates (1994) and Rothbart & Bates (1998) have demonstrated that the parent may be an effective observer and can provide a relatively accurate and reliable report on the child's behaviour, in part indicating the objective or biological component of a difficult temperament (Bates, 1994). Nonetheless, new longitudinal research is needed to better understand how individual characteristics of the infant interact with those of his environment, and which interactions are associated with developmental variability.

2. Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002)

ÉLDEQ 1998-2002 provides an excellent opportunity to advance our knowledge of child development from birth to school age. A particular benefit of ÉLDEQ is that data are collected annually, not only from mothers, but also from fathers. Rarely included in research on infant temperament, fathers are an important source of information to complete the portrait painted by the mother of the context in which the infant is evolving, and particularly the factors that can influence the child's development (Mebert, 1991).

The ELDEQ data were drawn from a representative sample of 2,223 Québec infants, with an average age of 5 months at the time of the first data collection in 1998. These data can be used to achieve a number of objectives. The cross-sectional data of the first collection presented in this paper provide a portrait of parental perceptions of infant temperament. In addition, the large number of variables emanating from ELDEQ have made it possible to explore the associations between difficult temperament in infants and factors pertaining to family environment. Because of the longitudinal and prospective nature of ÉLDEQ 1998-2002, it will be possible to monitor the developmental pathway of infants perceived as being difficult and perhaps tease apart contributions of the biological component of temperament and environmental characteristics to the psychosocial adjustment of the target children of this study.

The snapshot of the temperament of Québec infants presented in this paper is based on data derived from the Computerized Questionnaire Completed by the Interviewer (CQCI) addressed to the person who best knows the child (PMK⁷ - Person Most Knowledgeable) and from the Self-Administered Questionnaire for the Father (SAQF) addressed to the biological father or spouse/partner living in the household.⁸ In ÉLDEQ, a number of questions from the "Infant Characteristics Questionnaire" (ICQ), designed by Bates, Freeland and Lounsbury (1979), are used to assess infant temperament. Inspired by the factor structure of temperament identified by Thomas and Chess (1977), Bates *et al.* set out to develop and validate a brief questionnaire measuring the degree of difficulty a child presents to his parents. In the ICQ, parents are asked to indicate on a scale of 1 (easy) to 7 (difficult) how they perceive the behaviour of their baby compared to an "average" or "typical" baby. Of the items presented to the mothers and fathers, seven constitute the difficult temperament scale.⁹ These questions, asked of both the mother and father in ÉLDEQ 1998, were the following:

- How many times per day, on average, does he/she get fussy and irritable - for either short or long periods of time?
- · How much does he/she cry and fuss in general?
- · How easily does he/she get upset?
- When he/she gets upset (e.g. before feeding, during diapering, etc.) how vigourously or loudly does he/she cry and fuss?
- On average, how much attention does he/she require, other than for caregiving (feeding, bathing, diaper changes, etc.)?
- · When left alone, does he/she play well by him/her self?
- Please rate the overall degree of difficulty he/she would present for the average parent?

^{7.} In 99.7% of cases, the PMK was the biological mother.

Given the low response rates obtained for absent biological fathers (SAQFABS), they were not included in this analysis (for more detail, see No. 1 and No. 2 in this series of papers).

The seven items comprising the difficult temperament scale were identified through factor analysis. Cronbach alphas for the mothers and fathers were 0.77 and 0.78 respectively.

The perceptions of the mothers¹⁰ and fathers¹¹ of their infant's temperament are presented in Figure 3.1. The distribution of babies on the difficult temperament scale is a curve with a strong bias towards the left. This indicates that the majority of mothers and fathers classified the temperament of their infant as easy rather than difficult.

Figure 3.1

Distribution of Infants on the Temperament Scale, by Perception of the Mother and Father, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

At first glance, the two distributions seem to be similar. However, their means were significantly different (11.2 for the mothers vs. 12.0 for the fathers; p < 0.001).¹² The description of the infant's temperament by the majority of fathers was located closer to the mid-point between easy and difficult, whereas that of the majority of mothers was closer to the easy side. Perceiving one's

baby as easier than a "typical" one could be an important mechanism fostering mother-infant attachment preserving a sense of confidence as a mother (Elliott *et al.*, 1996). Although there was a slight gap between them on the difficult temperament scale, the perceptions of the two parents were strongly correlated (r = 0.59; p < 0.0001). The mothers and fathers therefore share, to a certain degree, the perception of their infant's temperament, even if the mode of administering the questionnaires differed, namely face-to-face and selfadministered respectively.

Due to lack of data, a difficult temperament score could be calculated for only 2,211 infants. In all cases, the PMK was the biological mother.

Comprising 1,822 spouses, of which 1,809 were the biological fathers (99.3%), who responded to all the questions used to calculate the difficult temperament score.

^{12.} Data from a number of the ÉLDEQ scales did not follow a normal distribution. Here and in the rest of the paper, when mean comparison tests were done, they were subjected to chi-square tests to confirm the results obtained, categorizing the variables related to the various scales into three equi-probable categories. These analyses confirmed the trends observed in comparing the means. In general, the thresholds of significance observed were close to those obtained in the chi-square tests.

The diversity of variables collected from the mother and father provide a means of examining the association between many factors relevant to the infant and/or his family environment and the parents' perception of the infant's temperament (easy or difficult). To study the factors associated with a difficult temperament, boys and girls above the 90th perentile on the difficult temperament scale, namely the 10% comprising the most difficult¹³, were compared to the other infants. Consequently, analyses were conducted on 231 infants described by their mother as having a difficult temperament, that is 118 boys and 113 girls. These were compared to babies fulfilling the easy criterion (1,011 boys and 969 girls). For the fathers, 91 boys and 85 girls were above the 90th percentile on the difficult temperament scale, and these 176 difficult infants were compared to 1,646 "easier" ones (828 boys and 818 girls). Among infants living with both their parents, 11% were identified as having a difficult temperament by one parent, 6% by the mother only and 5% by the father only; 4.6% were considered as such by both parents. Hence, 84% of infants in two-parent families were considered to have an easy temperament by both parents. Let us keep in mind that he correlation between the perceptions of the two parents was 0.59 (p < 0.001).

Information on infant and parental factors was derived from the Computerized Questionnaire Completed by the Interviewer (CQCI), the Paper Questionnaire Completed by the Interviewer (PQCI), the Self-Administered Questionnaire for the Mother (SAQM) and the Self-Administered Questionnaire for the Father (SAQF). Data collected by ÉLDEQ also comprised an evaluation of the mother/child interaction by a third person - the interviewer, who filled out the OFL (Observations of Family Life) after visiting the household. The variables included in the analyses can be divided into four groups - infant characteristics, sociodemographic characteristics of the parents and family, prenatal health of the mother and postnatal factors (see Table 4.1).

Table 4.1

List of Variables Included in the Analyses of Factors Associated with the Perception of Difficult Temperament in the Infant, 1998

Infant Characteristics	-
Gestational age of the infant	ISO
Low birth weight	CQCI
Sociodemographic Characteristics of the Parents and	d Family
Age group (mother and father)	CQCI
Immigration status (mother and father)	CQCI
Educational level (mother and father)	CQCI
Type of family	CQCI
Number of brothers and sisters	CQCI
Socioeconomic status	CQCI
Sufficiency of income	CQCI
Prenatal Health of the Mother	
During the Pregnancy, Consumption of:	
Tobacco	CQCI
Alcohol	CQCI
Prescription, over-the-counter and/or illegal drugs	CQCI
Postnatal Factors	
Postpartum depression	CQCI
Depression at the time of the survey (mother)	CQCI
Depression at the time of the survey (father)	SAQF
Breast feeding	PQCI
Infant sleep habits	PQCI
Family functioning	CQCI
Spousal/partner support perceived by the mother	SAQM
Tobacco consumption at the time of the survey	CQCI
(mother & father)	
Alcohol consumption in the 12 months preceding the	CQCI
survey (mother & father)	
Positive parenting practices	CQCI
Perceptions and behaviours (mother)	SAQM
Perceptions and behaviours (father)	SAQF
Degree of stimulation and verbal communication of	OFL
the mother	

1. Institut de la statistique du Québec

- 2. Computerized Questionnaire Completed by the Interviewer
- 3. Self-Administered Questionnaire for the Father
- 4. Paper Questionnaire Completed by the Interviewer
- 5. Self-Administered Questionnaire for the Mother
- 6. Observations of Family Life completed by the interviewer

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

^{13.} This cut-off was based on the Thomas and Chess (1977) study that identified 10% of their sample as presenting the profile of a "difficult" temperament. The calculation was done separately for girls and boys to control for differences due to sex.

These variables have been previously identified as being associated with the perception of a child's temperament (Bates *et al.*, 1979; Normand *et al.*, 1996; Oberklaid *et al.*, 1990; Vaughn *et al.*, 1987).

4.1 Infant Characteristics

In terms of infant characteristics, the 1998 ÉLDEQ data revealed that the gestational age of the baby,¹⁴ which varied between 56 and 65 weeks at the time of the survey (for a mean of 60.8 weeks), was not associated with the parental perception of a difficult temperament in the infant. Low birth weight, namely below 2,500 grams, was also not associated with the perception of the infant's temperament at the age of 5 months (data not shown).

4.2 Characteristics of the Parents and Family

Table 4.2 presents the proportion of infants identified by their mother or father as having a difficult temperament according to various sociodemographic characteristics of the parents and family. Perception of the infant's temperament was not associated with the age of the mother or father. Furthermore, parental perceptions of temperament did not seem to vary with the type of family the infant was living in at the time of the survey (intact two-parent, step or mother-headed families), nor with indicators of ethnocultural belonging such as immigrant status or number of years in Canada (data not shown). Mothers having more than two children were less likely to describe their baby as being difficult (7%) compared to those whose infant was the firstor second-born (11%). With regards to the parents' education. only the association between the mother's educational level and the father's perception of the infant's temperament was significant. As shown in Table 4.2, fathers whose spouse/partner had completed post secondary studies were more inclined to report their infant as having a difficult temperament than those whose spouse/partner were less educated (12% vs. 8% or less). Educational level of the father, however, was not associated with the parents' perception of the infant's temperament,

Socioeconomic status¹⁵ of the family and insufficient household income was also found to be associated with the father's perception of the infant's temperament, but not with the mother's. Fathers who described their infant's temperament as difficult had on average a higher socioeconomic status than those who considered their babies "easy" (0.17 vs. 0.02; p < 0.01) (data not shown). In similar fashion, fathers in a household above the low-income cut-off were more likely to describe their infant as difficult than other fathers (11% vs. 6%).

Therefore, in general, fathers with higher socioeconomic status were more likely to perceive their infant as being difficult, whereas this was not the case for the mothers. It is possible that these fathers were more involved in caring for the infant compared to other fathers, and were therefore more sensitive to manifestations of difficult temperament in their child.

^{14.} Gestational age is defined as the sum of the duration of gestation and the age of the baby.

^{15.} Socioeconomic status was established from five sources educational level of the PMK and the spouse/partner, if applicable, occupational prestige of the PMK and spouse/partner, and household income (for more detail, see Willms & Shields, 1996 and No. 12 in this series of papers).

Table 4.2

	Difficult temperament according to the mother		Difficult temperament according to the father	
	n	%	n	%
Age group of the mother			annt anna in dia 1744	
< 20 yrs	73	14.2**	38	7.2**
20-24 yrs	438	8.7*	335	9 .1*
25-29 yrs	672	11.6	581	10.0
30-34 yrs	722	10.5	617	10.5
35-39 yrs	251	9.4*	217	8.3*
40 yrs or +	54	10.0**	32	5.0**
Age group of the father				
< 20 yrs'	171	11.9°	151	8.8**
25-29 угз	544	11.3	486	9.5
30-34 yrs	686	10.1	628	10.6
35-39 yrs	435	10.9	397	10.1*
40 yrs or +	173	6.4**	152	6.1*
Educational level of the mother				
No high school diploma	394	10.3	274	5.1 ¹⁺⁺
High school diploma	753	8.9	618	7.8
Vocational/technical diploma	238	13.7*	195	11.3*
College (junior) diploma	280	11.1*	243	13.5*
University degree	545	11.1	490	12.0
Educational level of the father				
No high school diploma	349	11.1	358	6.9*
High school diploma	679	9.7	574	9.0
Vocational/technical diploma	229	13.2*	196	8.3**
College (junior) diploma	242	8.9*	232	11.6*
University degree	491	10.3	443	11.7
Type of family				
Intact, two-parent	1,762	10.4	1,596	9.8
Stepfamily	240	10.6*	211	9.5*
Single-parent	201	10.8		
Number of brothers and sisters				
None	923	11.6 [†] *	751	8.9
1 brother or sister	882	11.0*	744	11.5
2 brothers or sisters	272	6.5*	223	8.3*
3 and more	135	7.0**	103	5.1**
Annual household income below the low-income cut-off				
Yes	598	9.7	382	6.3 [†] *
No	1,571	10.9	1,417	10.6

Proportion of Infants Perceived by their Parents as Having a Difficult Temperament, by Certain Sociodemographic Characteristics, 1998

Note: [†] indicates p < 0.05.

Fathers under 25 years of age were grouped into one category because of small numbers.
Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

4.3 Prenatal Health of the Mother

Among the variables related to the prenatal period, lifestyle habits of the mother during the pregnancy did not seem to be associated with her perception, or that of her spouse/partner, of the infant's temperament. Therefore, the baby's exposure to tobacco, alcohol, medications or drugs¹⁶ *in utero* did not appear to be predictors of a difficult temperament at the age of 5 months. Other data related to the mother's health during the pregnancy such as diabetes or hypertension were gathered in the 1998 survey. However, these data, derived from the mothers' medical records, were not available before the writing of this paper. Future analyses will be conducted on them.

4.4 Postnatal Factors

With the exception of postnatal depression in the mother, all the postnatal factors measured for possible associations with the infant's temperament (see Table 4.1) describe the infant's world at 5 months of age. These factors cover various aspects of the child's life. Infant characteristics comprise feeding method and sleep habits, such as whether he or she was sleeping through the night and the number of night awakenings reported by the mother. Variables on the lifestyle habits of the parents and their psychological well-being at the time of the survey are also examined. In addition, analyses also include the mother's perception of spousal/partner support, a description of the parental perceptions and behaviours regarding their infant and a third person's evaluation of the level of stimulation of the infant and verbal communication of the mother.

Maternal perception of the infant's temperament was not significantly associated with having suffered from postpartum depression¹⁷ (12% vs. 10%). However, the results of the analyses indicate that the mother's postnatal depression was

associated with the father's perception of the infant's temperament. As shown in Figure 4.1, fathers whose spouse/partner reported having suffered from postpartum depression were more likely to perceive their baby as having a difficult temperament than those whose spouse/partner indicated they had not (13% vs. 8%).

Figure 4.1

Proportion of Infants Perceived by their Parents as Having a Difficult Temperament, by Whether the Mother Reported Postpartum Depression, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

There was a clear association between the psychological wellbeing of the parents and the infant's temperament following analyses of the symptoms of depression¹⁸ indicated by the mother and father when the baby was 5 months old. As shown in Figure 4.2, mothers who perceived their infant as having a difficult temperament reported more symptoms of depression than other mothers (6.7 vs. 5.6). Similarly, the father's perception of the infant as having a difficult temperament was also associated with the level of depression reported, namely 4.8 for difficult vs. 3.9 for easy.

^{16.} Mothers who responded "Yes" to any of the questions on the consumption of tobacco, alcohol, medications or drugs during pregnancy were compared to those who responded as not having consumed these substances while they were pregnant.

¹⁷ Postpartum depression in ÉLDEQ was measured with a single question addressed to the mothers. The percentage of mothers who indicated having suffered from "postpartum depression" may include a certain number who experienced postpartum "blues," which is clinically different from the former.

¹⁸ The presence and severity of symptoms associated with depression were measured by a shortened version of the CES-D depression scale developed by L. S. Radoff at the Centre for Epidemiological Studies of the National Institute of Mental Health in the United States. Also used in the NLSCY, this scale indicates only the symptoms of depression; a certain score does not necessarily mean that a parent is suffering from clinical depression.

Figure 4.2 Mean Scores of Parents on the Depression Scale, by their Perception of the Infant's Temperament, 1998





Source: Institut de la statistique du Québec, ELDEQ 1998-2002.

Infant sleep habits were strongly associated with the parents' perception of temperament. As shown in Figure 4.3, infants 5 months of age who were not sleeping through the night were clearly more likely to be perceived as having a difficult temperament than those who were sleeping through the night, by both the mother (19% vs. 8 %) and the father (18% vs. 8%). In similar fashion, the proportion of infants described as being difficult by their parents increased significantly with the number of times they interrupted their parents' sleep (p < 0.001; data not shown). Approximately 7% of infants who did not interrupt their parents' sleep at night were perceived by their mother as being difficult, whereas the percentage increased to 13% in those who woke their parents three to four times and to 20% in those who did so five times or more a night. Approximately 3% of infants who did not interrupt their parents' sleep were considered to have a difficult temperament by their fathers, whereas this proportion rose to 15% in those who woke their parents three or more times a night (data not shown).19

Figure 4.3





1. As reported by the mother.

2. p < 0.001



An interesting result is that the feeding method of the infant seemed to be associated with the father's perception, but not the mother's. Infants being breast fed at the age of 5 months were more likely to be perceived by their father as being difficult than infants who had never been breast fed or had ceased to be (12% vs. 8%) (see Figure 4.4).

Figure 4.4





Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

^{19.} With the exception of the 20% figure, the percentages showing the number of night awakenings were based on small numbers and should therefore be interpreted with caution.

Among postnatal factors, parental perception of infant temperament did not seem to be associated with factors such as family functioning, spousal/partner support perceived by the mother, or lifestyle habits of the parents such as smoking at the time of the survey or alcohol consumption in the 12 months preceding the survey (data not shown). However, a number of variables related to the quality of parent/child interactions contributed to the perception of the infant's temperament.

Figures 4.5 and 4.6 show the mean scores obtained by mothers and fathers on the different dimensions of the Parental Perceptions and Behaviours Regarding the Infant Scale (PPBS) according to their perception of the infant's temperament PPBS - a questionnaire developed specifically for ELDEQ measures six perceptual and behavioural dimensions of the mother and father regarding their infant, namely feeling of selfefficacy, perception of impact, tendency to coercion, parental affection/pleasure, 30 overprotection, and perception of the infant's gualities. As indicated in Figure 4.5, mothers who viewed their babies as difficult were more likely to have hostile and constraining responses to the behaviour of their infant compared to those who perceived their infant as easy (1.6 vs. 1.0). Compared to the latter, the former also perceived themselves as less effective as a parent (8.6 vs. 9.0). Mothers who described their babies as difficult, however, did not differ from other mothers in terms of perception of the impact of their behaviour on their child's development, overprotection, or perception of their infant's physical and cognitive qualities.

Figure 4.5 Mean Scores of Mothers on the Dimensions of the PPBS,¹ by their Perception of the Infant's Temperament, 1998



1 Parental Perceptions and Behaviours Regarding the Infant. 2. $p \leq 0.001$

Source Institut de la statistique du Quehec, ÉLDEQ 1998-2002.

The link between the father's perception of the infant's temperament and the different dimensions of the PPBS is presented in Figure 4.6.



Mean Scores of Fathers on the Dimensions of the PPBS,¹ by their Perception of the Infant's Temperament, 1998



^{1.} Parental Perceptions and Behaviours Regarding the Infant.

Source. Institut de la statistique du Québec, ÉLDEQ 1998-2002.

^{2.} p≤0.001.

^{3.} p < 0.01

²⁰ Given that the parental affection/pleasure scale was strongly correlated with the parental self-efficacy scale, the former was not retained here (for more details see No. 10 in this series of analytical papers).

Compared to other fathers, those who perceived their baby as difficult considered themselves, on average, a little less effective in their role as parent (7.1 vs. 8.0), and reported resorting more often to coercive behaviours (2.2 vs. 1.3). They also differed from fathers who viewed their infant as easy in that they had a tendency to perceive their infant as less attractive with respect to the child's physical attractiveness and cognitive abilities (7.4 vs. 7.9).

However, it is of note that neither the mother's nor the father's perception was significantly associated with the frequency of positive parenting practices reported by the PMK.²¹

Finally, we wanted to examine in ELDEQ 1998 whether there was any association between the quality of the mother/child interaction as evaluated by a third person and the mother's or father's perception of their infant's temperament. The Observations of Family Life (OFL)22 was filled out by the interviewer following the visit to the household. Two scales from this questionnaire were retained for the analyses here - the infant stimulation scale and the mother's verbal communication (with the infant) scale. The results indicated no significant association between the mother's perception of the infant's temperament and the results of these two scales. However, the father's perception of the infant's temperament was related to certain mother/child interactions. The level of the mother's stimulation of the infant, as observed by the interviewer, was higher in infants perceived by their father as difficult than in other infants (Figure 4.7). This unexpected association may in part be attributed to the fact that the degree of infant stimulation was positively correlated with the mother's educational level (see No. 10 in this series) or to a lesser degree, with the family's socioeconomic status (r = 0.16; p < 0.001) (data not shown). As seen earlier, these factors were also related to the father's perception of the infant's temperament.

Figure 4.7

Mean Scores of Mothers on the Infant Stimulation Scale, by Mother's and Father's Perception of the Infant's Temperament, 1998



1. p < 0.05.

Source. Institut de la statistique du Québec, ÉLDEQ 1998-2002.

In summary, the results of these bivariate analyses suggest that a number of environmental factors are related to parents' perceptions of their infant's temperament. In mothers, the quality of the infant's sleep and his/her birth order, the mother's psychological well-being, her feeling of parental self-efficacy and the quality of her interactions with the infant were the main factors associated with her perception of the infant's temperament. In fathers, reported symptoms of depression, educational level of the mother, socioeconomic status of the family, sleep habits, feeding method, as well as certain attitudes and behaviours of the father regarding the infant, were associated with his perception of the infant's temperament.

Although many of the associations were relatively weak, they confirm the results obtained in other studies of infant temperament. For example, these have revealed that depression in the parents (Daniels *et al.*, 1984; Mebert, 1991; Sameroff *et al.*, 1982, Vaughn *et al.*, 1987), birth order (Bates *et al.*, 1979) and the quality of the parent/infant interaction (Lee & Bates, 1985; Normand *et al.*, 1996; Seifer *et al.*, 1996) seem to be associated with parental perceptions of difficult infant temperament.

A number of authors have suggested that socioeconomic status or its components can contribute to the mother's evaluation of

This 5-item scale, part of the CQCI, was derived from the NLSCY. It measures the frequency of positive interactions such as playing, speaking, laughing, doing activities with and enjoying the baby

The Observation of Family Life (OFL) is an adapted and abridged version of the HOME, developed by B. Caldwell & R. Bradley (for more detail, see No. 12 in this series of papers).

her infant's temperament (Bates et al., 1979; Oberklaid et al., 1990; Sameroff et al., 1982). However, the 1998 ELDEQ results showed no association between the family's socioeconomic status and maternal perception of difficult temperament in the infant. In the fathers, however, socioeconomic status, or more precisely, household income, and the mother's educational level, were associated with paternal perception of the infant's temperament. However, contrary to what was expected, the associations were in the opposite direction. Having a higher socioeconomic status, a more educated spouse/partner and a household income above the low-income cut-off (as defined by Statistics Canada) increased the likelihood that the father would rate his baby as having a difficult temperament. Given that the family's socioeconomic status was associated with certain aspects of spousal/partner support perceived by the mother and the latter was associated with paternal self-efficacy (see No. 10 and No. 11 in this series), the results of this analysis possibly reflect a more marked engagement on the part of certain fathers in caring for the infant. Fathers with higher socioeconomic status may more frequently witness times when the baby is more difficult or irritable, and therefore be more sensitive to these behaviours in their child.

The final association observed in the fathers and to be commented on is the link between the perception of the infant's temperament and the feeding method of the baby at the time of the survey. Although the maternal perception of the infant did not vary with the feeding method, infants who were still being breast fed at the age of 5 months were more likely to be perceived by their father as difficult compared to those who had never been breast fed or had ceased to be. Calming an infant who is often irritable and fussy because he is hungry can indeed be a challenge for a father. Not being able to respond to the needs of the infant by feeding him, for example, may increase the father's distress resulting in a greater likelihood to perceive his child as difficult. However, this result may also be due to the fact that the feeding method of the child was associated with the family's socioeconomic status (see No. 5 in this series), a factor which in turn increases the probability that a father would perceive his baby as being difficult.

The sleep habits of the infant, namely whether he was sleeping through the night and the number of night awakenings, were strongly associated with the perceptions of both mothers and fathers of the infant's temperament. This may interpreted in

several ways. On the one hand, it may suggest that the stress of chronic lack of sleep makes the baby more irritable and demanding, therefore objectively more difficult (Weissbluth, 1989). On the other hand, it can be easily imagined that parents whose sleep is often interrupted by their infant crying are exhausted and more likely to perceive their child as being difficult. Viewed another way, sleep itself seems to be an aspect of temperament. In the ICQ, for example, the degree to which it is easy or difficult to predict when the baby will sleep or wake up is part of the four factors of temperament identified by Bates et al. (1979). However, sleep is one of the items of the "unpredictable" factor²³ and not among those describing a difficult temperament. It is possible that sleep as a component of temperament has a biological foundation. Therefore, an acute sensitivity to external stimuli may reduce the quality of an infant's sleep. Given the strong association between sleep habits and difficult temperament, it seems that the latter may in part be defined by sleep problems. Number 4 in this series of analytical papers presents a detailed portrait of the sleep of Québec infants and the environmental factors associated with it.

^{23.} The "unpredictable" factor comprises items such as to what extent it is easy or difficult for the parent to foresee when the baby is hungry, to know what will disturb him, or predict when he will need his diaper changed.
After establishing a good number of associations between parental perception of the infant's temperament and variables pertaining to the infant, parents and their environment, the question is what factors among those related to a difficult temperament can best predict whether a mother or father describes the infant as being difficult. Therefore two logistical regression analyses were conducted, in which groups of variables significantly associated with the description of a difficult temperament were entered (see Table 4.1).²⁴

The summary of these analyses is presented in Tables 5.1 and 5.2. As these tables show, some variables which entered into the equation at the beginning did not seem to exert a significant effect on the perception of the parents once all the factors were taken into account. For the mothers, the number of children, their educational level²⁵ and symptoms of depression no longer contributed to the perception they had of their baby once the parenting perceptions and behaviours scale (PPBS) was added to the analysis (Table 5.1). In fathers, the effects of the mother's educational level and father's symptoms of depression on the perception of the infant's temperament became non-significant when some sub-scales of the PPBS were entered into the equation. In addition to the variables characterizing the interaction between parent and child, the quality of the infant's sleep was an important predictor of the infant's temperament as perceived by both mothers and fathers (Tables 5.1 and 5.2). Compared to babies who did not interrupt

- 24. The following variables were entered into the two regressions: mother's educational level, number of brothers and sisters, sufficiency of income, postpartum depression, parental depression at the time of the survey, infant feeding method, number of night awakenings of the infant, maternal and paternal self-efficacy and tendency to coercion (PPBS), father's perception of the infant's qualities (PPBS) and the degree of stimulation of the infant by the mother as observed by the interviewer. It should be noted that in the bivariate analyses, some of these variables revealed an association with the perception of the infant's temperament on the part of only one of the two parents.
- 25. Although in the bivariate analysis, educational level of the mother was not associated with her perception of the infant's temperament, this variable had an effect in the logistical regression.

their parents' sleep, those who did so three or four times a night were four times more at risk of being perceived by their father as being difficult. Note that the mothers seemed more "tolerant" of their sleep being interrupted. It was only after five or more interruptions that they were more likely to perceive their infant as having a difficult temperament.

Table 5.1

Summary of Logistical Regression Analysis - Mother's Perception of Difficult Temperament in the Infant, 1998

Variables dans l'équation	ß	p	Relative risk
Number of brothers and sisters		not signif.	-
Educational level of the mother		not signif.	-
Depression in the mother		not signif.	-
Sleep interrupted by the infant ¹			
Once or twice	0.11	0.65	not signif
3 or 4 times	0.56	0.05	1.74
5 times or more	1.05	0.000	2.85
Parental self-efficacy (mother) ²	- 0.26	0.000	0.77
Coercive behaviour (mother) ²	0.19	0.001	1.26
Coercive behaviour (father) ²	0.14	0.01	1.23

 The comparison group comprised infants who did not interrupt their parents' sleep during the night.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Table 5.2

Summary of Logistical Regression Analysis - Father's Perception of Difficult Temperament in the Infant, 1998

Variables in the equation	ß	p	Relative risk
Educational level of the mother		not signif	-
Depression in the father		not signif	-
Sleep interrupted by the infant ¹			
Once or twice	1,07	0,001	2,90
3 or 4 times	1,50	0,000	4,47
5 times or more	1,57	0,000	4,81
Parental self-efficacy (mother) ²	- 0,22	0,01	0,80
Parental self-efficacy (father) ²	- 0,27	0,000	0,67
Coercive behaviour (father) ²	0,30	0,000	155

 The comparison group comprised infants who did not interrupt their parents' sleep during the night.

2. The relative risk was calculated using one (1) standard deviation above the mean.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

^{2.} The relative risk was calculated using one (1) standard deviation above the mean.

With regards to the Parental Perceptions and Behaviours Regarding the Infant Scale (PPBS), parental self-efficacy and the tendency to coercion contributed in a significant manner to the perception of the infant's temperament. For example, if the result obtained by the mother on the parenting self-efficacy scale was located at one standard deviation above the mean, the relative risk of her perceiving the infant as difficult decreased by a factor of 0.77, or in other words, was 23% lower (see Table 5.1). In contrast, the probability that a baby was perceived as difficult by the mother was higher when the mother (1.26) or the father (1.23) reported resorting to more coercive behaviours (one standard deviation above the mean).

Similar results were observed regarding the father's evaluation of the infant's temperament. The relative risk of the father perceiving the infant as having a difficult temperament was lower than 1 when he or his spouse/partner reported a greater feeling of parental self-efficacy, namely 0.67 and 0.80 respectively. Fathers reporting a higher tendency to coercion presented a relative risk 55% higher (risk ratio 1.55) of describing the temperament of their infant as difficult (see Table 5.2). These results indicate a strong association between parenting attitudes and behaviours and the perception of the infant's behaviour. This association seems to increase as the child ages (Landy & Tam, 1998).

These results suggest that having controlled for the effects of other variables, parental self-efficacy, the nature of the parent/infant interaction and the quality of the infant's sleep were the best predictors of the parents' perception of the infant's temperament. It is not surprising that the infant's quality of sleep remained strongly associated with difficult temperament once the other factors were taken into account. Not interrupting the parents' sleep seems to be an important component of the infant's temperament or, at the very least, a characteristic parents strongly associate with an easy baby.

With regards to parental attitudes and behaviours, these seemed linked to both the infant's temperament and certain characteristics of the parents. Depression in the mother, for example, was negatively correlated with her feeling of selfefficacy as a parent (r = -0.13; p < 0.001) and positively with coercive behaviours towards the baby (r = 0.22; p < 0.001). Fathers reporting a high level of depressive symptoms were also more likely to feel less effective as a parent (r = -0.25; p < 0.001) and show more coercive behaviours (r = 0.23; p < 0.001) (data not shown).²⁶ These results suggest that parenting attitudes towards the infant are variables that mediate the effect of parental characteristics (such as education and depression) on their perception of the infant's difficult temperament. The data collected in Year 1 (1998) of ÉLDEQ, are cross-sectional, and therefore no cause-effect relationship can be inferred given that they were collected simultaneously.

Nevertheless, these data show that the parents' description of the infant's temperament comprise several elements. On the one hand, the data suggest that parental characteristics are associated with the perception of the infant. On the other hand, the strong correlation between the perception of both parents of the infant, along with the fact that all of the contextual factors examined explained only a small proportion of the variance, namely 9% in the mothers and 14% in the fathers, suggests that the parents' evaluations may reveal an objective component of an infant's difficult temperament. The associations indicated by the analyses can be interpreted in a number of ways. For example, the association between the perception of a difficult temperament in the infant and coercive behaviours in the parents suggests that a negative interaction style may have developed between parents and their baby (van den Boom & Hoeksma, 1994). However, it remains to clarify to what degree the infant is reacting to parental behaviours and to what degree the parents are reacting to the infant's temperament. The longitudinal data of ELDEQ 1998-2002 will help gain a better understanding of the contribution of the two parents and the child to this interaction, particularly of the relationship of parenting practices to the developmental trajectories of these children.

^{26.} Tests on the Pearson correlation coefficients were conducted even if the PPBS scores showed abnormal and strongly biased distributions. As a result, coefficients with weak values are presented for descriptive purposes only.

6. Conclusion

Several researchers have suggested that interaction style and parenting practices, such as the manner in which children are disciplined, are important factors in the development of adjustment problems in children (Hart & Risley, 1995; Rutter, 1989; Werner, 1989, 1993). Analyses of data from the National Longitudinal Study of Children and Youth (NLSCY, Canada) have revealed that hostile and ineffective parenting practices are associated with hyperactive behaviours, conduct disorder, affective disorders, as well as social and school problems in children (Landy & Tam, 1996,1998). In a recent study, Chao & Willms (in press) noted that parenting practices are more strongly associated with social adjustment and cognitive development in children than family characteristics and socioeconomic status.

The origins of adjustment problems in children may be attributable to the incompatibility between infant temperament and parenting style, which seems to increase the probability of future behavioural maladiustment (Thomas et al., 1968). Both child temperament and parental behaviours towards the child are therefore important risk or protective factors in child development (Werner & Smith, 1992). Lee & Bates (1985) observed that children with a difficult temperament have a more negative reaction to the mother's attempts to control their behaviour. At the same time, these mothers tend to use more intrusive control strategies than those whose children have an easy temperament. Again this suggests that a cycle of coercion and negative control may establish itself between a difficult baby and his/her parents, and this is very likely to become a vicious circle of endless conflict between parents who try to control their child through ineffective means on the one hand, and the child who reacts with increasing resistance on the other. This vicious circle risks remaining unchanged without appropriate intervention (van den Boom & Hoeksma, 1994).

Fostering the positive development and social adjustment of children and youth, thereby reducing the prevalence of behavioural problems in children by 2002, is one of the public health priorities of Québec (ministère de la Santé et des services sociaux, 1997). To attain this objective, it seems of great importance to implement ongoing assistance and support services for parents from pregnancy to their children's entry into the school system. Although targeting the populations most at risk is a worthwhile priority, other families with young children presenting adjustment problems should also be provided with adequate support. All children need good parents. Therefore, equipping all parents with the means of appropriately responding to the particular needs of their child cannot help but increase the feeling of parental self-efficacy and the quality of the parent/child relationship. These are important protective mechanisms that can reduce the chances that a child will find himself on a developmental pathway that will compromise his future psychosocial adjustment.

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Glossary

Centre de la petite enfance Child-care centre Commission d'accès à l'information du Québec - CAI Québec Access to Information Commission Conseil guébécois de la recherche sociale (CQRS) Social Research Council of Québec Direction de la méthodologie et des enquêtes spéciales, ISQ Methodology and Special Surveys Division, ISQ Direction de la santé publique de la Régie régionale Public Health Department, Montréal-Centre de la santé et des services sociaux de Montréal-Centre **Regional Health Board** Direction de la technologie et des opérations statistiques, ISQ Technology and Statistical Operations Division, ISQ Direction des normes et de l'information, ISQ Standards and Information Division, ISQ Direction Santé Québec, ISQ Health Québec Division Étude des jumeaux nouveaux-nés au Québec - ÉJNQ Québec Study of Newborn Twins Fichier maître des naissances Master Birth Register Fonds de la recherche en santé du Québec (FRSQ) Health Research Fund of Québec Fonds pour la formation de chercheurs et l'aide Researcher Education and Research à la recherche (FCAR) Assistance Fund Groupe de recherche sur l'inadaptation Research Unit on Children's psychosociale chez l'enfant - GRIP Pyschosocial Maladiustment Institut de la statistique du Québec, ISQ Québec Institute of Statistics La Politique Familiale **Policy on Families** Le Rapport Bouchard (1991) The Bouchard Report, 1991: A Québec « Un Québec fou de ses enfants » in Love with its Children **Priorities for Public Health** Les Priorités nationales de santé publique ministère de l'Éducation Ministry of Education ministère de la Famille et de l'Enfance Ministry of Family and Child Welfare Ministry of Justice ministère de la Justice Ministry of Research, Science and Technology ministère de la Recherche, Science et Technologie Ministry of Health and Social Services of Québec ministère de la Santé et des Services sociaux du Québec (MSSS) Ministry of Public Security ministère de la Sécurité publique Ministry of Social Solidarity - formerly ministère de la Solidarité sociale Income Security (Welfare) Policy on Health and Well-Being Politique de la santé et du bien-être Research services Service de la recherche Operations Support Section of the Service de support aux opérations de la Régie de l'assurance-maladie du Québec - RAMQ Québec Health Insurance Board

List of Papers in Volume 1 of this Series

This paper is one of a series comprising Volume 1 of: JETTÉ, M., H. DESROSIERS, R. E. TREMBLAY and J. THIBAULT (2000). Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, Vol. 1.

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Temperament significantly contributes to the genesis and development of behavioural problems in children. A difficult temperament during the first years of life, for example, increases the risk of future adjustment problems, whereas an easy temperament is a protective factor in multiple-risk environments. Although temperamental traits are detectable manifest very early in life and seem to vary little over time, the environment in which the child is growing up is likely to influence these tendencies present at birth. This paper examines the temperament of Québec infants at the age of about 5 months in 1998. The mother's and father's perceptions of the infant are first presented. Furthermore, associations between certain characteristics of the infant and his environment and the parents' perception of a difficult temperament are examined.



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5-MONTH-OLD INFANTS

Motor, Social and Cognitive Development

Volume I, Number 8

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COLLECTION Health and Well-Being

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5-MONTH-OLD INFANTS

Motor, Social and Cognitive Development

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November 2001

Foreword

Similar to what has been observed in the majority of industrialized nations over the past twenty years, Québec and Canada have seen a significant increase in the costs related to maladjustment, particularly in young people. The Longitudinal Study of Child Development in Québec (*l'Étude longitudinale du développement des enfants du Québec*) (ÉLDEQ 1998-2002) being conducted by *Santé Québec* (Health Québec),¹ a division of *l'Institut de la statistique du Québec* (*ISQ*)² (Québec Institute of Statistics) in collaboration with a group of university researchers, will provide an indispensable tool for action and prevention on the part of government, professionals and practitioners in the field, who every day must face maladjustment in children.

More precisely, a major purpose of this longitudinal study of a cohort of newborns is to give Québec a means of preventing extremely costly human and social problems, such as school dropout, delinguency, suicide, drug addiction, domestic violence, etc. Similar to what is being done elsewhere (in the UK, New Zealand, the US), Santé Québec and a group of researchers have designed and developed a longitudinal study of children 0 to 5 years of age (2,223 children in this study and 600 twins in a related one). It will help gain a better influencing child of the factors understanding development and psychosocial adjustment.

The general goal of ÉLDEQ 1998-2002 is to learn the PRECURSORS, PATHS and EFFECTS, over the medium and long terms, of children's adjustment to

school. ÉLDEQ is the logical extension of the National Longitudinal Study of Children and Youth (NLSCY, Canada). These Québec and Canada-wide longitudinal studies are both comparable and complementary. They employ distinct survey methods, and use different techniques to obtain the initial samples. Though many of the instruments are practically identical, about a third of those being used in ÉLDEQ are not the same.

This first report casts light on the enormous potential of the data generated by this study. From the descriptive analyses of the results of the first year of the study to the longitudinal analyses of subsequent years, there will be an enormous wealth of data. With updated knowledge on the development of the cohort of young children, the annual longitudinal follow-up will respond to the needs which the ministère de la Santé et des Services Sociaux du Québec - MSSS (Ministry of Health and Social Services), who financed the data collection, expressed in both the Report of the Working Group on Youth (Rapport Bouchard, 1991, Un Québec fou de ses enfants - the Bouchard Report, 1991, A Quebec in Love with its Children) and the policy papers entitled Politique de la santé et du bien-être, 1992 (Health and Well-Being) and les Priorités nationales de santé publique 1997-2002 (Public Health Priorities 1997-2002).

Director General

April Fist

Yvon Fortin

Certain French appellations in italics in the text do not have official English translations. The first time one of these appears, the unofficial English translation is shown immediately after it. Following this, for ease in reading, only the official French name appears in the text in italics, and it is suggested the reader refer to the Glossary for the English translation.

Santé Québec officially became a division of the ISQ on April 1, 1999.

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Caution:

Unless indicated otherwise, "n" in tables represents data weighted to the size of the initial sample.

Because the data were rounded off, tables do not necessarily correspond to the sum of the parts.

To facilitate readability in Section I, proportions higher than 5% were rounded off to the nearest whole unit in the text and to the nearest decimal in tables and figures.

In section I, weighting and the complex sample design were taken into account in calculating the results and their precision. The precision of the estimates of proportions was calculated using a mean design effect. This was also used for the chi-square tests, except in questionable cases for which the SUDAAN software program was used. In all other analyses, SUDAAN was used. Basic hypotheses, such as the normality of the data, were verified before applying the selected statistical tests.

The second part of this paper presents certain results which could not be verified by the Santé Québec Division and the Methodology and Special Surveys Division, namely those derived from Latent Class Analysis (LCA). Though this type of model may prove to be the most appropriate and promising for assessing cognitive development and behaviours in children (see Baillargeon, Tremblay and Willms, 1999), it does not allow for calculating estimates of variance that take into account the complex sample design of ÉLDEQ. Therefore, the results and the paper presented herein are the sole responsibility of the authors and not the ISQ.

Symbols:

 ...
 Data non available

 ...
 Not applicable (N/A)

 Nil or zero

 p
 Refers to the threshold of significance

Abbreviations

CV	Coefficient of variation
Not avail.	Not available
Non signif.	Not significant

Santé Québec recognizes that the development and implementation of the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) flows directly from the synergy of effort and professionalism of many people throughout the whole process of mounting a survey of this size. Since 1995, individuals, various groups and organizations, a survey firm and the staff of *Santé Québec* have become indispensable links in making this ambitious project a reality - the first annual longitudinal survey of Québec infants.

A major characteristic of this project is that a pretest and survey are conducted every year. To accomplish this, we must annually: 1) make two sets of instruments (pretest and survey), 2) conduct two data collections, 3) analyze two sets of data, and 4) produce two types of communications materials. The results of each pretest means fine-tuning and developing instruments for the survey, which follows 17 months later. The results are sent to the parents (highlights), published in reports, and communicated to the scientific community and the public at large. The professionals and staff involved in collecting the data, as well as those involved before and after, must put their nose to the grindstone every year. We cannot over-emphasize our profound recognition of the incredible, concerted effort they are putting into this project over an 8-YEAR period, from the first pretest in 1996 to the final report to be published in 2004!

First, it must be said that without Daniel Tremblay, Director of Santé Québec (now part of the *ISQ*) since 1994, Christine Colin, Assistant Deputy Minister responsible for Public Health 1993-1998, Aline Émond, Director of Santé Québec 1986-1993, Richard E. Tremblay, Director of the ÉLDEQ research project, and Marc Renaud, President of *le Conseil québécois de la recherche sociale - CQRS* 1991-1997. ÉLDEQ 1998-2002, also known as "In 2002...I'll Be 5 Years Old!," would have never seen the light of day. In turn and together, they developed, defended and obtained the financing for this study. Thank you for your indefatigable tenacity.

A warm thanks to all the researchers and the support staff of their respective research groups, whose determination over the years has never wavered. Putting

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I would like to thank Lyne Des Groseilliers, ÉLDEQ's statistician since 1996, Robert Courtemanche, statistical advisor, and France Lapointe, ÉLDEQ's statistician 1995-1996. These three colleagues in the *Direction de la méthodologie et des enquêtes spéciales* (Methodology and Special Surveys Division) (*ISQ*) managed, with great skill, to set the signposts and navigate the somewhat winding course of this large-scale survey first.

A very special thanks to all the master designers of the National Longitudinal Study of Children and Youth (NLSCY, Canada). Without their expertise, advice and generosity, our survey would never have been accomplished. In many senses of the word "modeling," ÉLDEQ has learnt a lot from the NLSCY.

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We would like to thank the personnel in the Service de support aux opérations de la Régie de l'assurancemaladie du Québec - RAMQ (Operations Support Section of the Québec Health Insurance Board). Without their efficiency, fewer letters of introduction would have found their way to the correct addresses of respondents.

Our sincerest thanks go to our survey firm, *Bureau* d'interviewers professionnels (*BIP*). Since 1996, this polling company has been responsible for data collection in the pretests and surveys, and follow-up of families both inside and outside of Québec. Lucie Leclerc, President of *BIP*, has set the standard of quality for our numerous and complex data collections. Assisted by Véronique Dorison, she has instilled in her interviewers a great sense of respect for the respondent families, as well as a rigourous regard for all the norms governing this first-of-a-kind survey in Québec. A big thank-you to the directors-general, directors of professional services, and staff of the medical records departments of some 80 hospitals in the province who accepted to collaborate in our study at a time when resources were rare and time was at a premium, and when the medical records departments in many hospitals were merging or in the process of doing so. Their support was exceptional. Birthing centres also graciously accepted to participate in this first Québec longitudinal study of children. A special thanks to Julie Martineau, medical records specialist, who contributed to the analysis of indispensable medical information by ensuring very rigourous coding of the data, which often lay concealed in the medical files of the infants and their mothers.

It goes without saying that the staff of Santé Québec Division directly attached to ÉLDEQ 1998-2002 are the cornerstone of its success from practically every point of view. Special thanks for their ongoing contribution and constant hard work go to Hélène Desrosiers and Josette Thibault, responsible respectively for analysis of the data and creation of the measurement instruments: Martin Boivin, Rolland Gaudet and Gérald Benoît, who constantly pushed the limits of what computer software can do in terms of programming and data processing; Suzanne Bernier-Messier and Diane Lord, who give meaning to the word versatility, who must organize, code and manage incredible quantities of data to ensure the progress of the study. Not directly attached to the team but who made extremely important contributions are: France Lacoursière. France Lozeau and Thérèse Cloutier, who put the finishing touches to the Santé Québec "look" in the survey instruments, reports and conference publications; Lise Ménard-Godin, who conducted fruitful literature searches and advised on many aspects of the collection instruments. The hard work, constant availability, ability to adapt, and finelyhoned skills of the people working on this project match the enthusiasm that all our partners have demonstrated in making this study a resounding success.

Finally, I would like to extend a very special thank-you to the 2,223 families who responded to our survey. Thank you for the trust you have shown in *Santé Québec*, our partners and collaborators. Thanks to your participation, your children have become the veritable stars of ÉLDEQ 1998-2002, and are making it possible, in the short term, to gain a better understanding of psychosocial adjustment in children. In the medium and long terms, they will likely be in large part responsible for the establishment of early detection programs, better designed prevention programs, and more effective interventions for such an important clientele - all of Québec's children.

mul fit

Mireille Jetté Project Coordinator Santé Québec Division, ISQ

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Introduction of ÉLDEQ 1998-2002

Preventing Social Maladjustment

It suffices to consider the costs engendered by behavioural problems in children - school dropout, delinquency, alcoholism, drug addiction, family violence, mental disorders and suicide - to conclude that they largely surpass what a modern society can accept, morally and economically. Faced with the enormity of these problems, the first reflex is to provide services to these people which will, ideally, make the problems disappear, or at the very least, lessen their severity. For many years we have tried to offer quality services to children and adults who suffer from antisocial disorders, alcoholism, drug addiction, depression, and physical or sexual abuse. However, in spite of enormous investment, these curative services are far from being able to respond to the demand.

Although the idea of early intervention as a preventive measure can be traced at least as far back as ancient Greece, the second half of the 20th century will certainly be recognized as the dawn of the field of social maladjustment prevention (Cole et al, 1993; Mrazek & Haggerty, 1994). Numerous programs have been developed for adolescents and teenagers to prevent school dropout, delinguency, drug addiction and suicide. Scientific evaluations of these programs have been far too few in number, but they tend to demonstrate that it is extremely difficult to help those most at risk in this age group (Rosenbaum & Hanson, 1998; Rutter, Giller & Hagell, 1998; Tremblay & Craig, 1995). It is becoming increasingly clear that the factors which lead to serious adaptation problems are in place long before adolescence. Hence the idea that the prevention of social adaptation problems should start at least during childhood, and preferably right from pregnancy (Olds et al, 1998; Tremblay, LeMarquand & Vitaro, 1999). These principles are clearly outlined in the objectives of the Politique de la santé et du bien-être (Policy on Health and Well-Being) and les Priorités nationales de santé publique (Priorities for Public Health) set by the government of Québec (ministère de la Santé et des Services sociaux, 1992; 1997).

The Need to Understand Early Childhood Development

If the field of maladjustment prevention appeared at the end of the 20th century, it has certainly come on the heels of child development. "Émile," by Jean-Jacques Rousseau, needs to be re-read in light of recent studies to realize just to what degree it is impossible to understand the complexity of child development, and therefore the means of preventing deviant paths, simply by reflection or introspection. Although considerable knowledge has been acquired in the neurological, motor, cognitive, affective and social development of children, what really hits home is that Jean-Jacques Rousseau and his followers in education seemed to have had more certainty about the ways of educating children than we do today.

Progress in child development research has made us realize that things are not as simple as we can or would like to imagine. We have obviously all been children, and most of us have become parents, indeed, relatively welladjusted ones. But we still do not clearly understand when, how and why adjustment problems appear, and above all, how to prevent and correct them.

Our ignorance is obvious when we examine the debates among specialists on the role of parents in the development of maladjustment problems in children. Some suggest that social maladjustment in children is largely determined by genetic factors (Bock & Goode, 1996; Rowe, 1994). Some accentuate economic factors (Duncan & Brooks-Gunn, 1997). Other researchers attribute a determining role to peer influence (Harris, 1998; Harris, 1995; Vitaro et al, 1997). These larger questions lead to narrower ones which focus on particular aspects - the role of fathers in childhood maladjustment, the impact of alcohol and cigarette consumption during pregnancy, the effect of prenatal and birthing problems, the importance of breast feeding and diet; the role of sleep, cognitive development, temperament, and so on.

relations, parent-infant relations, and characteristics of the 5-month-old, such as sleep, diet, oral hygiene, temperament, and motor, cognitive and social development. These data will eventually be compared to those on children the same age collected by the NLSCY in 1994 and 1996.

An Interdisciplinary, Multi-University Team of Researchers

This study saw the light of day because of the collaboration of many people. In the preceding pages, Mireille Jetté thanked a number of them. I would like to take advantage of this introduction to emphasize that the survey was set up and continues forward because of the dedication and hard work of a group of researchers from a variety of disciplines and universities. I would particularly like to thank Michel Boivin, School of Psychology at Université Laval, and Mark Zoccolillo, Department of Psychiatry at McGill University, who have been actively involved in this project since 1992. It was in that year that we prepared out first grant application for the Social Sciences and Humanities Research Council of Canada. A second group of researchers joined the team in 1993 and 1994: Ronald G. Barr, pediatrician, Montréal Children's Hospital Research Institute, McGill University; Lise Dubois, dietitian and sociologist, Université Laval; Nicole Marcil-Gratton, demographer, University of Montréal and Daniel Pérusse, anthropologist, University of Montréal, Jacques Montplaisir, Department of Psychiatry, University of Montréal, joined the team in 1995. Louise Séguin, Department of Social and Preventive Medicine, University of Montréal and Ginette Veilleux, Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre (Public Health Department, Montréal-Centre Regional Health Board), joined in 1998. Three post-doctoral researchers have also made an important contribution. Raymond Baillargeon developed the task for measuring cognitive development. Christa Japel is the assistant to the scientific director for planning, analysis and presentation of the results. Heather Juby collaborates in the analysis of the data on couple and family history.

A Unique Confluence of Circumstances

A study such as this requires the coordination of many researchers over many years, enormous financial resources, and a long period of preparation. Though in the early 1990s the research team was convinced of the need for the survey, those responsible for the public purse had also to be convinced. We must therefore acknowledge the happy confluence of circumstances that allowed the players to take advantage of the opportunity at hand. When a number of civil servants in the ministère de la Santé et des Services sociaux understood the essential role of prevention, the creation of a committee on children and youth in 1991 led to an increased awareness of the importance of early childhood. At the same time, the president of the CQRS, Marc Renaud, had come to the same realization with his colleagues in the Population Health Program at the Canadian Institute for Advanced Research (CIAR). Aline Émond, the Director of Santé Québec, was ready to apply her formidable determination to work for the cause. For their part, Health Minister Jean Rochon and his Assistant Deputy Minister for Public Health. Christine Colin, aware of the importance and benefit of longitudinal studies on early childhood development, authorized the investment of large sums of money during a period of draconian budget cuts. This occurred at the same time as the federal government decided to create its own longitudinal study of children and youth (NLSCY). It is in this context that ÉLDEQ 1998-2002 materialized. Our survey also came to fruition because Mireille Jetté did everything in her power to make the researchers' dreams a reality, and Daniel Tremblay gave her all the support she needed by making various resources available for the project.

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Review of the Methodology

This analytical paper is one of a series presenting crosssectional data collected on a large sample of 5-monthold infants surveyed in 1998. It reports on the first of 5 annual data collections on 2,120 children in Québec who will be studied until they are 5 years old. In the first year of data collection, the results on 2,223 infants were retained.⁴

The target population of the survey is Québec babies, singleton births only,⁵ who were 59 or 60 weeks of gestational age⁶ at the beginning of each data collection period, born to mothers residing in Québec, excluding those living in the Northern Québec, Cree, and Inuit regions, and on Indian reserves, and those for whom the duration of pregnancy was unknown. Due to variations in the duration of pregnancy and the 4 or 5 weeks allotted for each data collection wave, the infants were not all exactly the same age (gestational or chronological) at the time of the survey. Therefore, the children in Year 1 (1998) of the survey had a mean gestational age of 61 weeks - about 5 chronological months.

The survey had a stratified, three-stage sampling design, with a mean design effect for the proportions estimated at 1.3. To infer the sample data to the target population, each respondent was given a weight corresponding to the number of people he/she "represented" in the population. ÉLDEQ 1998 comprised eight main collection instruments which obtained data from the person who was closest to the baby (called the Person Most Knowledgeable - PMK), the spouse (married or common-law), the infant and the absent biological parent, if applicable. Given variation in the response rates to each instrument, three series of weights had to be calculated to ensure inferences to the population were accurate. Except for the Self-Administered Questionnaire for the Absent Father (SAQFABS) and a series of questions in the Computerized Questionnaire Completed by the Interviewer (CQCI) on absent fathers – the overall or partial response rates of which were too high – the results of all the instruments could be weighted. Therefore, the data presented here have all weighted to reduce the biases.

All data that had coefficients of variation (CV) 15% or higher are shown with one or two asterisks to clearly indicate the variability of the estimate concerned. In addition, if the partial non-response rate was higher then 5%, there is a note specifying for which sub-group of the population the estimate is less accurate.

Similar to any cross-sectional population study, the Year 1 part (5-month-old infants) of ÉLDEQ 1998-2002 has certain limits. However, the vast majority of the results are valid and accurate, and provide a particularly detailed portrait, for the first time, of 5-month-old infants in Québec.

Note to the reader: For more details information on the methodology, see Volume 1, Number 1, of this collection.

⁴ Though the results for 2,223 children were retained for the first year of data collection, 2,120 will be retained for the rest of the longitudinal study; the extra 103 were part of an over-sample used to measure the effects of the January 1998 ice storm.

Twins (twins births) and other multiple births were not targeted by the survey.

Gestational age is defined as the sum of the duration of gestation (pregnancy) and the age of the baby.

Motor, Social and Cognitive Development

Motor and Social Development



Introduction

Watching their children take their first steps and hearing them say their first words are unique and marvellous moments in the life of any parent. For the children, those first steps and first words are among their most significant achievements – crucial steps on the road to autonomy. In fact, the acquisition of such skills is part and parcel of a developmental progression that begins very early in life. Shortly after birth, infants start exploring their physical and social environment. Gradually acquiring new skills, they learn to coordinate their movements and interact with the people around them, and thus to adapt to the changing conditions in which they are growing up.

The acquisition of new motor and social skills is linked to brain development, the pace of which accelerates during pregnancy and childhood. With increasing neuropsychological maturity, children can engage in more and more complex movements and interactions. The stages and sequence of the acquisition of motor and social skills appear to be universal. This suggests that the pathway of motor and social development among human beings is largely determined by the genetic characteristics of our species.

It has been observed, however, that the age at which children manifest certain behaviours varies. Some infants present delayed development while others progress more rapidly than the average child or even skip developmental stages. The unequal pace of development in children has an impact on their later adjustment. Studies based on longitudinal data have shown that the level of motor and social development during early childhood is associated with success in school and the risk of manifesting behavioural problems in the early school years (Baker et al., 1993) or in adolescence (White et al., 1990). Delays in the acquisition of motor, social or language skills in very young children may be detrimental to their later psychosocial adjustment. The value of identifying the factors associated with motor and social development from the earliest months of life thus becomes clear.

Indeed, that is the purpose of Part I of this paper. In it, we briefly examine the findings of various studies on the sequence of motor and social development in children as well as the factors likely to foster or hinder such development. We then present data on the prevalence of a variety of motor and social skills in the sample of infants in Québec targeted by ÉLDEQ 1998. Finally, we attempt to identify the links between various factors outlined in the literature on motor and social development and the acquisition of these skills by children in Québec.

As a starting point, it should be noted that this portrait of motor and social development in Québec children is based on the parents' description of their child's development. To complete the portrait, tests on the children's cognitive skills were conducted by ÉLDEQ interviewers. The results of those direct evaluations are presented in Part II of this paper.

1.1 The Sequence of Motor and Social Development

Studies on the sequence of development in young children are far from new. At the end of the 19th century, William Preyer, a German researcher, wrote about the growth of young children and noted the age at which they demonstrate specific behaviours. His work inspired the American Arnold Gesell, who was the first to identify norms for the physical and motor development of young children. Then, in the 1930s and 1940s, several other scientists carried out detailed studies on the stages of development in infants and young children. Their work led to the creation of various standardized measures to assess child development. One of the best known and most often used of these instruments is the *Bayley Scales of Infant Development*, created by Nancy Bayley (BSID-II; Bayley, 1993).

At the clinical level, an evaluation of psychomotor development is normally part of the examination given by pediatricians to detect signs of neurological delays in infants. Pediatricians verify that infants who are 2 months old can follow a person who moves around with their eyes, make different sounds and hold their heads upright while being held. According to a standard widely accepted today (Illingworth, 1988), babies in their fourth month start grasping objects, get closer to objects they wish to reach for, hide their faces under their blanket, laugh out loud and turn their heads to look at someone who says their name. Because such standards were established on the basis of "average" babies, there is some variation in the age at which infants commence certain behaviours; each child follows its own developmental pathway.

1.2 Factors Associated with Motor and Social Development in Infants

The variations in development in infants are linked to several factors. Babies who are born prematurely or with low birth weight or congenital illness are more likely to exhibit delays in development (Illingworth, 1988; McCarton et al., 1996; Ross et al., 1996). The quality of care received by infants is, however, even more important to their development. For example, incidents of trauma, emotional deprivation, malnutrition or physical abuse may compromise normal development and result in significant delays in the development of motor and social skills (Illingworth, 1988; Mrazek, 1993; Yarrow et al., 1982). In contrast, parents who are able to stimulate their babies as well as discern and respond to their needs adequately and in a positive manner seem to enhance the development of their child's motor, social and language skills (Eisenberg, 1999; Tamis-Lemonda et al., 1998; Yarrow et al., 1982). Analyses of data from the National Longitudinal Survey of Children and Youth (NLSCY) conducted by Statistics Canada have revealed that positive interactions between parents and their children under 2 years of age are associated with the latters' motor and social development (Landv & Tam, 1996). The correlation seems to be relatively weak, however; this suggests that parenting practices are but one of numerous factors influencing the social and motor development of young children.

The characteristics of the family such as whether it is a single-parent household (Pedersen *et al.*, 1979) or a low-income household (Halpern, 1993; Miller, 1998) and even the birth rank of the child in the family (Eaton *et al.*, 1989; Hoff-Ginsberg, 1998) have also been linked to the neuropsychological and cognitive development of the child.

Finally, studies on motor and social development in children have reported differences between the sexes from the first year of life (Nordberg, 1996) as well as developmental variations resulting from interactions between some characteristics of the family environment and the sex of the child (Baker *et al.*, 1993; Nordberg *et al.*, 1991).

We therefore examined those factors in this study of motor and social development in infants in Québec.

2. The Data

To assess motor and social development in infants in Québec, ÉLDEQ adopted a scale used in numerous other large studies such as the National Longitudinal Survey of Youth (NLSY) in the United States, the National Child Development Survey (NCDS) in Britain and the National Longitudinal Study of Children and Youth (NLSCY) in Canada. Completed during a face-toface interview with the person who best knows the child. or Person Most Knowledgeable (PMK), this scale on motor and social development was developed by Dr Gail Poe of the National Center for Health Statistics in the United States. It comprises a series of questions drawn from standardized developmental measurements (Bayley, 1993; Knobloch & Pasamanick, 1975; Frankenburg et al., 1987). The validity and reliability of this instrument are widely acknowledged.

The questions, totalling 15 in all, are integrated in the the Computerized Questionnaire Completed by Interviewer (PQCI).⁷ Among other things, they aim at discerning if the baby has already rolled over without help and voluntarily, that is, entirely on his/her own, if the baby has looked around with his/her eyes for an object that is missing or not nearby, or has laughed out loud without having been tickled or touched. In essence, these questions measure the infants' motor skills. To obtain an idea of their social behaviours, 11 questions were adopted from the socialization scale in the Vineland Adaptive Behavior Scales (Sparrow et al., 1984). Note that these questions on social adjustment were developed to be administered during a conversation between an interviewer specially trained for this and a parent. For ÉLDEQ, the questions were adapted for inclusion in the PQCI.

The data cover 1,136 boys and 1,087 girls representative of infants in Québec approximately 5 months old in 1998. As indicated in Volume 1, Number 2 of the present collection, the children targeted by ÉLDEQ 1998 were between 56 and 65 weeks of gestational age⁸ during the period of data collection; their mean age was 60.8 weeks (SD \pm 1.1 weeks). Because of the variation in gestational age, the infants were not all exactly the same chronological age at the time of the interview; while virtually all of them were 4 (52%) or 5 (45%) months of age, some, namely those born prematurely, were 6 to 8 months old (3.4%).

 Because this scale varies with the age of the infant, we used all the questions covering infants 4 to 6 months old.

B. Gestational age is defined as the sum of the duration of gestation (pregnancy) and the age of the baby.
3.1 The Prevalence of Motor and Social Skills in Infants in Québec

Table 3.1 shows the percentages of male and female infants who had demonstrated certain motor and social skills, as reported by the PMK, who in virtually all cases (99.7%) was the biological mother of the infant. As may be seen, the majority of infants had already, by this age, manifested the first seven of the motor and social tasks

in the scale. In contrast, fewer than 1 child in 5 was capable of the other eight skills. Of those skills, four were carried out by 7% to 19% of the infants. However, the behaviours such as having already walked at least 2 steps, stayed sitting for 10 minutes, stood up without help and waved "bye-bye" were rarely reported. They were part of the repertoire of fewer than 5% of infants approximately 5 months old in Québec in 1998.

Table 3.1

Proportion of Infants Approximately 5 Months of Age Manifesting Certain Motor and Social Skills¹, by Gender, 1998

	Infants who are capable		
	Boys	Girls	
	%		
Holds head up straight	97.3	97.7	
Laughs out loud 1	93.3	90.2	
Holds a medium-size object in his/her hand [†]	98.5	99.6	
Rolls over by him/herself	72.1	70.3	
Seems to enjoy looking at him/herself in mirror	93.2	93.5	
Supports him/herself with legs stretched out [†]	90.0	86.9	
Look for missing object with his/her eyes	76.1	75.4	
Sits up by him/herself	17.7	14.4	
Stays sitting for 10 minutes	4.4*	2.8*	
Stands up without help	0.6**	1.1**	
Crawls	19.1	16.8	
Says recognizable words ("mama", "dada") *	10.0	7.5	
Picks up small objects	6.8	7.3	
Walks at least 2 steps	4.5*	3.0*	
Waves "bye-bye"	0.9**	0.9**	

† p < 0,05

1. As reported by the Person Most Knowledgeable (PMK),

* Coefficient of variation between 15% and 25%; interpret with caution.

** Coefficient of variation higher than 25%; imprecise estimate for descriptive purposes only

Table 3.2 presents the breakdown (%) of infants who manifested certain social behaviours usually, sometimes or never. Almost all of the babies demonstrated the majority of behaviours usually or sometimes. In contrast, only somewhat more than two-thirds had played interactive games, while fewer than half had reached for a familiar person.

The data in Tables 3.1 and 3.2 also reveal differences between boys and girls in their acquisition of motor and social skills. According to the reports by the PMK, somewhat more boys than girls had laughed out loud, supported their weight with their legs or said recognizable words at the age of 5 months. In contrast, proportionally more girls had held a moderate-sized object in their hands and showed interest in novel objects or new people. Although significant statistically, the differences seem nonetheless slight, and in some cases, minimal. Recall that we had no expectation that the infants would demonstrate all of the skills evaluated by this scale, which assesses not only behaviours that may be anticipated of children this age, but also behaviours normally acquired at a later stage. Furthermore, as stated, the percentages shown in Tables 3.1 and 3.2 were generated from information collected from the PMK and not on the basis of examination or observation by a third party. The data must therefore be interpreted with caution. For example, according to child development experts, children of about 5 months of age are not likely to be able to say recognizable words, and it is only around 9 months that the average child starts to crawl (Illingworth, 1988).

Table 3.2

	ionano ora,	of request	Frequency of	f behaviour ¹		000
	Us	ually	Some	times	Nev	/er
	Boys	Girls	Boys	Girls	Boys	Girls
1998 - Barris 1998 - Barris 1998 - Barris Markel (1999) (1999) (1999) (1999) (1999)			9	6		
Looks at the face of the caregiver	98.1	97.2	1.9*	2.8*	-	-
Responds to the voices of people around him/her	97.7	97.4	2.3*	2.6*	-	•
Distinguishes the caregiver from other people	94.8	95.2	4.3*	3.9*	0.8**	0.9**
Shows interest in novel objects or new people [†]	82.4	86.5	14.8	11.7	2.8*	1.8**
Expresses 2 or more recognizable emotions	93 .3	93.7	6.1	6.0	0.6**	0.3**
Responds to being picked up	9 5.0	94.6	3.8*	4.6	1.2**	0.8**
Shows affection toward familiar people	85.8	85.7	8.7	8.9	5.5	5.4
Shows interest in children or peers ²	67.7	70.4	22.5	22.2	9.8	7.4
Reaches for a familiar person ²	28.6	26.9	18.4	17.8	53.0	55.3
Plays with a toy	87.1	87.1	10.3	10.7	2.6*	2.2*

44.8

24.9

24.0

32.2

31.2

42.9

Distribution of Infants Approximately 5 Months Old, by Frequency of Social Behaviours and Gender, 1998

t p < 0,05

Plays interactive games²

1. As reported by the Person Most Knowledgeable (PMK).

2. Rate of partial non-response higher than 5% for the boys and for the girls; possible bias.

Coefficient of variation between 15% and 25%; interpret with caution.

** Coefficient of variation higher than 25%; imprecise estimate for descriptive purposes only.

3.2 Factors Associated with the Level of Motor and Social Development

What are the factors that play a role in the acquisition of motor and social skills in infants in Québec? To answer that question, the researchers selected variables from ÉLDEQ that had been shown, in previous studies on child development, to be associated with motor and social skills. We also took into account certain characteristics of the family environment of the child, such as the socioeconomic status and age of the mother and her degree of depression, that have an impact on the educational activities and the modalities of the parent-child relationship (see Volume 1, Number 10, of the collection). For this number we decided to consider the individual characteristics of the mother only. Those of the father were not included for two reasons: First, in virtually all cases, the biological mother was the respondent to the scale on motor and social development. Second, the relevant data on fathers are available only for a sub-population of infants, namely, those whose fathers live in the household.⁹

Four sets of variables are examined:

Characteristics of the infant

- gestational age at the time of the survey (chronological age adjusted for the duration of the pregnancy, as discussed in Section 3)
- birth weight

Characteristics of the mother

- age of the mother
- degree of depression

Characteristics of the family

- socioeconomic status¹⁰
- type of family as characterized by the presence or absence of the father or spouse in the household
- number of children present in the household

Perceptions and parenting practices:

- positive parenting practices¹¹
- mother's perception of the infant's qualities¹² (Scale of Parental Perceptions and Behaviours Regarding the Infant, or SPPBI)
- level of stimulation of the child, as reported by the interviewer¹³

Among the questions from the scale of motor and social development addressed to the PMK, some proved particularly interesting because the responses to them varied widely. These were then used to examine whether the manifestation of the measured behaviours is related to the various characteristics listed above.

- 11. The scale on positive parenting practices is also used in the National Longitudinal Study of Children and Youth (NLSCY). For infants from 0 to 23 months, it has five items (see Number 10 of the present collection).
- 12. The Échelle de cognitions et de conduites parentales à l'égard du nourrisson (ÉCOPAN) (Scale of Parental Perceptions and Behaviours Regarding the Infant) was developed for ÉLDEQ. We retained the dimension on the mother's perception of the physical attractions and cognitive abilities of the infant (see Number 10 of the present collection).
- The scale on stimulation is drawn from the Observations of Family Life (OFL), which is an adapted and abridged version of HOME, developed by Caldwell and Bradley (1984).

For more information on the data on fathers, whether they lived in or apart from the household, see Numbers 1 and 2 of Volume 1.

^{10.} Socioeconomic status is determined on the basis of five sources: educational level of the PMK and the spouse/partner, if applicable; occupational prestige of the PMK and the spouse/partner, if applicable; and household income (for more information, see Number 12 in this collection as well as Willms & Shields, 1996).

The questions related to the infant's motor skills are:

- Has he/she ever voluntarily rolled over completely on his/her own?
- When he/she is sitting and you raise him/her to a standing position, has he/she supported his/her own weight with legs stretched out?
- Has he/she ever looked around with his/her eyes for a toy that was missing or not nearby?
- Has he/she sat alone without help, except for leaning forward on his/her hands or with just a little help from someone else?
- Has he/she crawled when left lying on his/her stomach?

The five questions related to the infant's social skills are:

- Has he/she shown interest in novel objects or new people?
- Has he/she shown affection toward familiar people?
- Does he/she reach for a familiar person?
- Has he/she played with a toy or other object, alone or with others?
- Has he/she played simple interactive games with others (for example, imitating a sound, noise or gesture)?

It would, of course, have been preferable to calculate a global score for each of the scales, that is, the scale evaluating motor skills, on the one hand, and the scale on social skills, on the other hand. We were not able to proceed this way because of the weak correlation between the items within each of the scales.¹⁴

Finally, recall that the results for ÉLDEQ 1998 revealed

few differences between boys and girls (Tables 3.1 and 3.2). Nonetheless, because some studies have reported variation in the level of motor and social development based on the interactions between some characteristics of the family environment and the sex of the child (Baker *et al.*, 1993; Nordberg *et al.*, 1991), we present below an analysis of our data according to the gender of the infants.

For each question on motor and social development, the analysis is undertaken by means of simple cross-tabulations or mean comparison tests. With respect to social skills, the responses were grouped into two categories based on whether the child performed the queried behaviours either (a) usually or (b) sometimes or never.¹⁵

3.2.1 Characteristics of the Child and the Family Environment

Characteristics of the child

The data in Tables 3.3 and 3.4 indicate that only some skills are associated with the age of the child at the time of the survey. Thus the results show that infants, either boys or girls, who are older in terms of gestational age¹⁶ are somewhat more likely to have rolled over without help and voluntarily. Among the boys of at least 60 weeks of gestational age at the time of data collection, 69% or more had already carried out this behaviour versus 58% of younger boys. Almost the same spread is observed among the girls. Greater gestational age is

^{14.} The data for ÉLDEQ 1998 reveal that the scale of motor and social development, like the scale of social behaviour, demonstrates an internal consistency that is too weak (alpha coefficients under the acceptable threshold) to derive a global score.

^{15.} It appears that several of the characteristics presumably linked to the level of the child's development are themselves interrelated; thus, a multivariate analysis might have been required for each measure of motor and social development. Given the difficulty of establishing a global score (*mesure synthétique*) of motor and social development for infants 5 months old, this option was not considered further.

For this analysis, the gestational age of the infants was regrouped in 5 categories, that is 59 weeks and less, 60, 61, 62 and 63 weeks and over.

also associated with the acquisition of social skills such as holding out the arms toward a familiar person in boys or displaying affection for familiar persons and playing with a toy in girls (Tables 3.3 and 3.4). Birth weight, on the other hand, is associated with the onset of two skills, but in boys only ("crawls" and "reaches for a familiar person"). Contrary to expectations, boys with low birth weight are more likely than other infants to demonstrate these behaviours (37% vs. 18% and 48% vs. 28%, respectively). These results may be explained in part by the impact of other variables such as socioeconomic status (see below).

Table 3.3 Proportion of Male Infants Manifesting Various Motor and Social Skills, by Gestational Age and Birth Weight, 1998

	Gestational	age at the	Birth weight				
	59 weeks and less	60	61	62	63 weeks and over	Less than 2,500 g	2,500 g and over
Motor skills		10000000000000000000000000000000000000		<u> </u>			
Rolls over by himself	57.9	72.6	71.8	79.7	69.31	76.5	71.9
Supports his weight with his legs	89.2	88.3	91.1	90.8	91.8	85.4	90.4
Looks for a missing object with his eyes	73.7	74.8	73.9	80.7	83.1	77.2	76.1
Sits up by himself	16.2**	13.1	19.8	19.9*	24.4*	12.6**	18.1
Crawls	10.2**	19.9	17.0	24.7	21.5*	37.1*	18.3
Social skills ¹							
Shows interest in novel objects/new people	81.5	80.6	81.8	87.4	82.6	81.1	82.3
Shows affection for familiar persons	84.8	87.7	86.3	84.1	81.2	82.2	86.0
Reaches for a familiar person	21.6*	22.9	29.4	36.4	39.0 *	47.9*	28.01
Plays with a toy	87.2	87.5	84.7	91.3	87.0	80.8	87.3
Plays interactive games	39.5	40.9	44.5	39.8	53.6	50.8*	42.4

† p < 0.05.

1. For social skills, the percentages represent infants who manifest the skills usually, rather than sometimes or never.

* Coefficient of variation between 15% and 25%; interpret with caution.

Coefficient of variation higher than 25%; imprecise estimate for descriptive purposes only.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Table 3.4 Proportion of Female Infants Manifesting Various Motor and Social Skills, by Gestational Age and Birth Weight, 1998

	Gestional age at the time of the survey (in weeks)					Birth we	íght
	59 weeks and less	60	61	62	63 weeks and over	Less than 2,500 g	2,500 g and over
Motor skills							
Rolls over by herself	56.7	70.7	68.5	73.2	84.8†	77.5	69.9
Supports her weight with her legs	78.7	87.9	86.8	88.9	85.2	93.5	86.4
Looks for a missing object with her eyes	69.9	73.2	74.2	80. 9	86.4	64.0	75.8
Sits up by herself	13.6**	11.8	14.4	17.8*	22.3*	11.7**	14.4
Crawls	8.6**	16.0	16.5	20.2	23.3°	25.1*	16.3†
Social skills							-
Shows interest in novel objects/new people	84.0	84.8	87.6	88.3	89.1	80.5	86.8
Shows affection toward familiar people	86.6	81.4	87.1	89.2	94.3†	85.3	85.7
Reaches for a familiar person	14.5**	26.1	28.1	29.7	32.8†	19.1**	27.0†
Plays with a toy	81.9	83.7	88.7	92.7	93.3†	80.5	87.4
Plays interactive games	42.2	41.6	48.4	45.3	48.6	59.8*	43.9

† p < 0.05.

1. For social skills, the percentages represent infants who manifest the skills usually, rather than sometime or never.

Coefficient of variation between 15% and 25%; interpret with caution.

** Coefficient of variation higher than 25%; imprecise estimate for descriptive purposes only.

Characteristics of the Family Environment

From the data presented in Tables 3.5 and 3.6 as well as in Figures 3.1 and 3.2, several features stand out:

- Given the large number of cross-checks that were done, relatively few motor and social skills seem significantly linked to characteristics of the family environment in 5-month-old infants.
- 2) The observed associations vary from one item to the next and by the gender of the infant. Allowing for exceptions, the observed associations nonetheless reveal a high prevalence of certain motor behaviours

in the groups most at risk, that is, in infants whose mothers are young and without spouses or who exhibit depressive tendencies (Tables 3.5 and 3.6), or infants from families of low socioeconomic status (Figure 3.1). In contrast, with the exception of a skill that is both motor and social — "reaches for a familiar person" — the most typically social skills such as "shows interest in novel objects or new people" and "plays simple interactive games" were more often reported in the groups often judged to be less "at risk", such as two-parent families and families in a higher socioeconomic bracket (Tables 3.5 and 3.6 and Figure 3.2).

Table 3.5

Proportion of Male Infants Manifesting Various Motor and Social Skills, by Characteristics of the Family Environment, 1998

	Number of children		Type of family		Age group of the mother			High degree of depression (mother) ¹	
	1	2+	Two- parent	Single- parent	< 25 years	25-34 years	35 years and +	Yes	No
Motor skills									
Rolls over by himself	71.7	72.3	71.4	78.7	78.6	70.0	70.8†	67.0	72.8
Supports his weight	92.2	88.5	90.2	87.8	93.6	88.8	90.3	86.9	90.6
Looks for a missing object with his eyes	76.3	76.0	75.4	83.8	82.5	75.0	70.3†	85.8	74.9†
Sits up by himself	19.0	16.9	16.3	32.01	17.5	16.7	23.1	17.3*	17.8
Crawls	19.1	19.1	17.6	32.8†*	23.3	17.6	18.4	22.0*	18.7
Social skills ²									
Shows interest in novel objects/new people	87.3	79 .0†	82.3	83.3	79.3	83.4	B2.8	83.6	82.2
Shows affection toward familiar people	86.5	85.3	85.6	89.0	87.6	84.6	88.2	84.7	86 .0
Reaches for a familiar person	33.2	25.6†	27.7	39.6†	32.6	26.8	31.0	33.3	28.2
Plays with a toy	86.2	87.8	87.8	81.7	85.4	88.3	84.4	81.5	87.8
Plays interactive games	45.0	41.4	43.7	34.0*	44.4	41.9	45.0	42.9	42.9

† ρ < 0.05.

1. Mothers whose score on the depression scale ranks above the 90th percentile, that is, among the 10% with the highest scores, are considered to present a high degree of depression.

2. For social skills, the percentages represent infants who engage in this usually rather than sometimes or never.

Coefficient of variation between 15% and 25%; interpret with caution.

Table 3.6 Proportion of Female Infants Manifesting Various Motor and Social Skills, by Characteristics of the Family Environment, 1998

	Number of children		Type of family		Age group of the mother			High degree of depression (mother) ¹	
-	1	2+	Two- parent	Single- parent	< 25 years	25-34 years	35 years and +	Yes	No
Motor skills				········	÷				
Rolls over by herself	70.1	70.4	68.9	83.81	72.8	69.1	71.6	75.6	69.7
Supports her weight	89.5	84.81	86.7	88.5	90.6	86.7	81.1†	84.7	87.0
Looks for a missing object with her eyes	76.0	74.9	74.9	80.2	77.0	75.0	74.5	82.6	74.5
Sits up by herself	18.3	11.6†	14.0	16.9**	7.7**	16.6	15.91*	18.8*	13.9
Crawls	16.9	16.6	15.5	28.4 *	17.7	14,4	25.31*	32.8	14.7†
Social skills ²				r.			•		
Shows interest in novel objects/new people	87.6	85.7	87 .6	74.6†	82.4	87.6	88.1	82.0	87.0
Shows affection toward familiar people	84.0	87.0	86.1	82.3	84.6	85.6	88.2	79.3	86.5
Reaches for a familiar person	28.6	25.6	25.1	42.3†	30.1	22.4	40.8†	40.9	25.1†
Plays with a toy	86.7	87.5	87.5	83.5	87.6	87.6	84.6	90.7	86.8
Plays interactive games	47.4	42.9	46.1	32.0 *	44.5	44.9	45.0	42.3	45.1

† p < 0.05.

Mothers whose score on the depression scale ranks above the 90th percentile, that is, among the 10% with the highest scores, are considered to present a high degree of depression.

2. For social skills, the percentages represent infants who engage in this usually rather than sometimes or never.

* Coefficient of variation between 15% and 25%; interpret with caution.

** Coefficient of variation higher than 25%; imprecise estimate for descriptive purposes only.

Figure 3.1 Proportion of Infants Manifesting Certain Motor Skills, by Family's Socioeconomic Status and by Gender, 1998

Rolls over without help



Figure 3.1 (cont'd) Proportion of Infants Manifesting Certain Motor Skills, by Family's Socioeconomic Status and by Gender, 1998

Sits up without help

Quintile of

socioeconomic status¹



1. The families are classified by increasing rank of socioeconomic status. Thus, the 1st quintile comprises the 20% of families with the lowest socioeconomic status.

- 2. p < 0.05.
- Coefficient of variation between 15% and 25%; interpret with caution.
- ** Coefficient of variation higher than 25%; imprecise estimate for descriptive purposes only.

Figure 3.2 Proportion of Infants Usually' Manifesting Certain Social Skills, by Family's Socioeconomic Status and by Gender, 1998

Shows interest in novel objects / new people

Quintile of

socioeconomic status²





Ouintile of

Quintile of

socioeconomic status²



Reaches for a familiar person



Figure 3.2 Proportion of Infants Usually' Manifesting Certain Social Skills, by Family's Socioeconomic Status and by Gender, 1998

Plays with a toy

Quintile of





Quintile of

socioeconomic status²



1. As opposed to sometimes or never.

- The families are classified by increasing socioeconomic status. Thus, the 1st quintile regroups the 20% of families with the lowest socioeconomic status.
- 3. p < 0,05

For example, with respect to the link between the socioeconomic status of the family and motor development in the infant, the activity rolling over by him/herself in girls and crawling in infants of both sexes appears to be significantly linked to the socioeconomic status of the family. In each case, the proportion of infants who had already manifested the behaviour decreases in relation to an increase in socioeconomic status (Figure 3.1). With respect to the skill crawling, the proportions fall from 30% to 12% in boys and from 25% to 12% in girls when passing from the lowest to the highest quintile. Compared to other PMKs, those reporting low socioeconomic status are also most likely to report that the infant, whether a boy or a girl, usually reaches for a familiar person (Figure 3.2).

The examination of some more typically social skills reveals, however, an entirely different picture. As seen in Figure 3.2, the following social behaviours are more often reported in families with higher socioeconomic status: "shows interest in novel objects or new persons" (in boys only), "shows affection toward familiar people" (in infants of both sexes) or "plays with a toy" (in boys only). With respect to playing, the demarcation falls between the lowest quintile and the other quintiles (81% vs. nearly 90% in boys in quintiles 2 to 5) (Figure 3.2).

An analysis of the links between motor and social skills and the other characteristics of the family environment such as the mother's age, her degree of depression¹⁷ or the type of family generally reveals the same tendencies, that is, a positive link between these risk factors and the prevalence of some motor behaviours, varying according to the sex of the child (Tables 3.5 and 3.6). In contrast, for some more typically social skills (excluding the skill "reaches for a familiar person"), the links seem to be negative, at least in the girls. For example, proportionally more girls living in a two-parent family usually show interest in novel objects or new people (88% vs. 75%) or usually play simple interactive games such as imitating a sound, noise or gesture compared to girls living in a single-parent family (46% vs. 32%). However, these associations were not observed among the boys (Table 3.6).

Furthermore, in addition to the characteristics already considered, the birth rank of the child is a central aspect of family environment likely to influence the child's development.

The data for ÉLDEQ 1998 reveal that proportionally more girls than boys who are the only child (without brothers or sisters living in the household) had, according to the PMK, carried out skills such as supporting their own weight with legs stretched out or sitting alone (90% vs. 85% and 18% vs. 12%). In boys, although the result does not seem significant, a similar trend is observed between the skill "supports own weight with legs stretched out" and birth rank in the family (92% vs. 89%; p = 0.06). Interestingly, with respect to social skills, the number of children in the family seems to have an impact only among the boys. Boys who are the only child are more inclined to show interest in novel objects or new people (87% vs. 79%) or to reach for a familiar person (33% vs. 26%) than their counterparts living with brothers or sisters.

Finally, several parental characteristics seem to be associated with the responses given to the ten questions on the motor and social development of the infant. Thus, the motor skills and social behaviours varied according to certain sociodemographic or parental characteristics such as the age of the mother, socioeconomic status of the family, type of family, birth rank of the child and degree of depression of the mother. Generally, the associations varied from one item to the next and by the sex of the infant in such a way that it is difficult to come up with a clear, overall picture of the factors associated with motor and social development. This may indicate that the acquisition of some motor or social skills is the result of complex

^{17.} For the analysis, mothers who reported a high degree of depression are those whose scores on the depression scale used for ELDEQ were above the 90th percentile.

interactions between the family environment and the sex of the child. To support this hypothesis, it would be necessary to carry out further analysis of the ÉLDEQ data; for example, to model the link between the skills and the explanatory variables to take into account gender and the potential interaction of gender and these variables.

Furthermore, the results might explain the effect of other characteristics such as the type of relationship between the parent and child and, more precisely, the level of stimulation accorded to the infant, based on whether it is a boy or a girl. The data assembled for ÉLDEQ 1998 provide a means to explore this question, as shown in the second part of this paper.

3.2.2 Parenting Practices and Motor and Social Development in Infants

When we examine the link between motor and social development in babies and the quality of the parentchild relationship, the picture becomes clearer. Thus, the frequency of positive interactions between the PMK — the biological mother in virtually all cases — and the child, such as praising the infant and playing or talking to and laughing with him/her, is positively associated with the performance of most of the motor and social skills examined in this survey. As Figures 3.3 and 3.4 show, the mean of the scale on positive parenting practices is generally highest for the infants who had already carried out the skills in question than for the others, in girls as well as in boys.¹⁸

^{18.} The data for several of the ÉLDEQ scales did not show a normal distribution. Here and in the remainder of Part I, when mean comparison tests were applied, chi-square tests were done to confirm the results. These categorized the variables related to the scales into three relatively equal categories (tertiles). The analyses confirm the trends observed by comparing the means. Furthermore, the level of significance observed in the mean comparison tests was close to that obtained in the chi-square tests.

Figure 3.4

Mean Scores Obtained from the PMK on the Positive Parenting Practices Scale, by Infant's Manifestation of Certain Social Skills and by Gender, 1998¹



1. For each sex and each skill, the mean scores on the scale of positive parenting practices were compared. All the results presented here are significant at the threshold of 0.05.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

We wanted to know if there was a relationship between the mother's perception of the physical attractions of her child and its cognitive abilities - one dimension of the Échelle de cognitions et de conduites parentales à l'égard du nourrisson (ÉCOPAN) (Scale of Parental Perceptions and Behaviours Regarding the Infant) developed for ÉLDEQ (Boivin et al., 1997) and the motor and social skills that were examined. Unlike the measurements for social and motor development, the assessment by the mother of the physical attractions and cognitive abilities of the infant was conducted using a self-administered questionnaire. The responses are thus less likely to be affected by the bias of social desirability than the responses obtained during the face-to-face interviews. The perception of the parent is evaluated using the following questions: "I get the impression that my baby is particularly intelligent compared to other children his/her age", "I get the impression that my baby is particularly cute compared to other children his/her age". Two similarly formulated questions, on the child's level of curiosity and whether she/he has an endearing nature, complete the scale.

Based on the data for ÉLDEQ 1998, the mother's perception of the physical attractions and cognitive abilities of her child is positively associated with the level of perceived motor and social development. In general, girl babies who had already demonstrated or who usually demonstrate the examined motor and social skills are perceived more favourably by their mothers with respect to physical attractions and cognitive abilities than those who have not yet shown these behaviours or do so less frequently. The exceptions have to do with the motor skill of crawling as well as some social behaviours (specifically, "plays with a toy alone or with others", "plays simple interactive games" or "shows affection toward familiar people"). In boys, significant differences are observed in the qualities attributed to the infant by the mother and the presence or absence of certain social behaviours (e.g., "shows interest in novel objects or new people", "shows affection toward familiar people" or "plays simple interactive games"). Note that, unlike in the girls, this relationship is observed only for one of the motor behaviours ("looks around for an object that is missing or not nearby") (for which the data are not presented).¹⁹

Finally, the demonstration of some skills seems to be linked to processes observed by the interviewers during their visits. For example, showing an interest in novel objects and new people in boys is associated with the infant's level of stimulation as observed by the interviewer. As Figure 3.5 shows, boys who usually demonstrate this behaviour seem to have been slightly more stimulated than the other boys (mean = 14.4 vs. 13.4).

Figure 3.5

Mean Scores Obtained by the PMK on the Infant Stimulation Scale, by Infant Having Shown Interest in Novel Objects and New People and by Gender, 1998



1. p < 0,05

^{19.} The data for several of the ELDEQ scales did not show a normal distribution. Here and in the remainder of Part I, when mean comparison tests were applied, chi-square tests were done to confirm the results. These categorized the variables related to the scales into three relatively equal categories (tertile). The analyses confirm the trends observed by comparing the means. Furthermore, the level of significance observed in the mean comparison tests was close to that obtained in the chi-square tests.)

Reaching for a familiar person is, on the other hand, a behaviour that may be associated with the level of stimulation in girl babies. Thus, a higher degree of stimulation is observed in girls who usually display this social behaviour than in girls who do so sometimes or never (mean = 15.0 vs. 14.2; see Figure 3.6). A similar trend is observed in boys, but the results do not appear significant at the threshold of 0.05 (p = 0.10). Finally, note that girls who sit up without help also seem to have been somewhat more stimulated (mean = 15.2 vs. 14.3, p = 0.05; data are not presented).

Figure 3.6





1. p < 0,05

Conclusion

What conclusion may be drawn from these results? First, they suggest that a very large majority of children in Québec are developing well because the children exhibit the motor and social skills expected of an infant of approximately 5 months of age. The evaluation of the child's skills was not, however, based on an examination by an expert in child development but rather on parental perception. The latter may have been influenced by a number of factors, including age, socioeconomic status, family situation and the parents' level of psychological well-being.

In our analyses, some of these characteristics are associated with the evaluation by the parent of the child's motor and social development. Our results suggest, for example, that younger parents, living without a spouse, in the lowest socioeconomic bracket and exhibiting a higher degree of depression report more often than other parents the presence of certain skills in their children. These results seem counter-intuitive given that these risk factors increase the probability of developmental delays in children. It appears that factors linked to the parents themselves colour their perception of the accomplishments of their child.

Analyses of data from the National Longitudinal Study of Children and Youth (NLSCY), conducted by Statistics Canada, have revealed a similar link between parental risk factors and parental evaluation of the motor and social development of their children 0 to 3 years of age (Landy & Tam, 1996). Since the questions on the motor and social development of the child are among those directed to the PMK, the most vulnerable parents are perhaps more likely to give responses that they believe are socially acceptable.

Motor and social skills are nonetheless linked in different ways to the sociodemographic characteristics of parents. More precisely, compared to other parents, single parents and those with low socioeconomic status and those displaying depressive tendencies are more likely to report certain motor skills, whereas certain social skills are more often present in infants in two-parent families or those at the highest socioeconomic level. These associations may be interpreted in two ways. First, parents whose living conditions make them vulnerable may be more likely to perceive their child's motor skills than their social skills, whereas the opposite holds true for parents in the highest socioeconomic level. it seems that motor and social Nevertheless, development in children is also a reflection of certain dimensions of the relationship between the parent and the child. Parents at risk may engage, in particular, in physical interactions with their child whereas parents in higher socioeconomic levels may engage more in social interactions with the child (Hoff-Ginsberg & Tardif, 1995).

It is interesting to note that infants from single-child homes are proportionally more likely to display certain social or motor skills than infants with brothers or sisters. It may be that parents of only children are more inclined to perceive certain behaviours in their infant than those who must divide their attention among several children. The result may also reflect the fact that only children receive more stimulation from their parents or, more precisely, are more likely to seek stimulation from them, given that they have fewer chances to interact with other children in their daily lives (Eaton *et al.*, 1989).

Recall, moreover, that for numerous items the relationship between the variables and the motor or social skills varies according to the sex of the child. This finding merits greater attention; it may indicate that the differences in the acquisition of motor or social skills are the result of interactions between certain characteristics of the child or its family environment and its gender. To support this hypothesis, further analysis of the data collected on the 5-month-old infants is required.

For the time being, the associations between the sociodemographic characteristics of parents and the motor and social skills of infants, taken together with the weak internal consistency of the scales used in ÉLDEQ, prompt us to ask the following questions: Are the queries addressed to the PMK appropriate, given the age of the children? Is this method of data collection, that is, by means of face-to-face interviews with a parent, adequate for evaluating motor and social development in the infant? An examination by a third party may be required to obtain a more objective profile of the child's motor and social growth and, therefore, a more reliable means of detecting a potential delay in his or her development.

The initial results of research on the relationship between the quality of the parent-child interaction and the child's development nonetheless confirm the findings of previous studies (Eisenberg, 1999; Landy & Tam, 1996; Tamis-Lemonda et al., 1998; Yarrow et al., 1982). Thus, in boys as well as in girls, the manifestation at about 5 months of age of some social behaviours and, to a lesser extent, some motor behaviours is associated with the frequency of positive interactions between the mother and the child. These interactions include praising, talking to, playing or laughing with or taking part in a special activity with the child. The degree of stimulation of the child by the mother, as observed by the interviewer, also seems to be associated with the absence or presence of certain motor or social skills in children.

Because the data collected for ÉLDEQ 1998 are crosssectional, no causal link may be drawn between parenting practices and motor and social development in children. It may be that an environment that provides a high degree of stimulation and attention to children accelerates their development, but it is also possible that children who are more alert and sociable solicit more positive behaviours towards themselves from others than do those who interact less with their environment. Sylva (1997) has suggested that human beings are born with an innate predisposition ("hard wiring") that makes babies pay attention to certain things in their environment, in particular, messages directed to them by their caregivers. Thus the nature of these messages can shape the development of the innate abilities of the child with respect to motor, cognitive, social and language skills. The longitudinal data for ÉLDEQ will enable us to examine in greater depth the role of parental practices in the developmental pathway of children, from birth through to school entry.

Motor, Social and Cognitive Development Section II Cognitive Development



According to many specialists in the field, cognitive development in children progresses through a number of stages. Between the ages of 0 and 18 months, six stages constitute what is called the sensory-motor period of cognitive development (Piaget, 1936, 1937).

Table 1

Relationship between the Six Stages of the Sensory-Motor Period of Cognitive Development and Mental-Attentional Capacity in Children

Mental- Attentional Capacity	Stage	Approximate Age in Months
0	Reflex acts	0-1
1	Primary circular reactions and begins to develop skills.	1-4
2	Secondary circular reactions and repeats actions that by chance produce interesting results.	4-8
З	Secondary circular reactions and applies acquired skills to new situations.	8-12
4	Tertiary circular reactions and seeks to acquire new skills through active experimentation.	12-18
5	Invents new skills by interiorizing combinations of them.	18-26

Source: Piaget (1936, 1937).

The passage from one stage to the next may be due, at least in part, to the growth of the mental-attentional capacity of the child with age. Mental-attentional capacity is defined as the number of units of information or schemes a child can simultaneously coordinate in a single action directed towards a goal. (Alp, 1988, 1994; Benson, 1989; Pascual-Leone & Johnson, 1991). Table 1 illustrates the relationship between the six stages of the sensory-motor period and the mentalattentional capacity of children. For example, a child progresses to the third stage when he is able to coordinate two schemes. A typical achievement in this period, which appears around the age of five months, is the ability to visually track an object, reach for it and grasp it in the field of vision. Studies conducted over 30 years ago demonstrate that the exercise of the schemes of visual tracking and grasping can considerably accelerate the acquisition of the vision-grasping superscheme (White, 1967, 1971; White, Castle & Held, 1964; White & Held, 1966). Thus, infant experience may play a determining role in cognitive development in the first year of life.

A possible indicator of the quality of experience provided by the environment is the socioeconomic status of the family²⁰. Some studies show a link between family socioeconomic status and infant cognitive development in the first year of life, while others have not observed this (for a literature review (see Golden & Birns, 1983; Slater, 1995). This divergence in results may be explained by a number of factors. According to the model developed by Wachs (Haywood & Wachs, 1981; Wachs & Gruen, 1982) on the role of experience in cognitive development, at least four factors can explain the divergence.

First, family socioeconomic status is a variable with many aspects – ages and educational levels of the mother and father, family income, number of children, etc. It is possible that one of these could have an impact on the cognitive development of the child in the first year, and another might not.

Second, cognitive development in the first year of life is a complex phenomenon that covers various domains such as spatial-temporal and logical-mathematical. It is possible that one of these may be affected by family socioeconomic status and another not. In this regard, mental-attentional capacity defined as the ability to coordinate a number of schemes in one action directed

^{20.} Please note that the authors of this section use "socioeconomic status of the family" to designate a possible indicator of the quality of experience provided by the environment. This indicator is different from the derivative variable "socioeconomic status" developed by *Santé Québec* and used in the majority of analytical papers in Volume 1 of the ÉLDEQ 1998-2002 series. This derivative variable is called **ainfd08** in ÉLDEQ's databank.

towards a goal is considered to be independent of these domains, because the number is not supposed to be dependent on the type of scheme – spatial-temporal, logical-mathematical, etc.

Third, the possible influence of family socioeconomic status on infant cognitive development in the first year of life may depend on characteristics of the child. For example, there could be an association with boys, but not with girls.

Fourth, an influence could vary with the age of the child. An association may be present at a given age, while it may not be at a younger or an older age.

Furthermore, another factor could explain, at least in part, the aforementioned seemingly contradictory results. None of the above studies examined a representative sample of the target population. Therefore, they may have produced biased estimates of the relationship between family socioeconomic status and cognitive development in the first year of life. All these factors could explain, at least in part, why there is absence of consensus in the scientific community on this question.

The main objective of this study was to assess mentalattentional capacity of 5-month-old infants. Do infants at 5 months of age in the population differ in terms of the rate of growth of their mental-attentional capacity? If so, is there a link between certain characteristics of the socioeconomic status of the family and the rate of growth of mental-attentional capacity during the first 5 months of life?

1. Testing Infant Mental-Attentional Capacity: The One, Two, Three Hands Task and Socioeconomic Status of the Family

In the 1998 cycle of the ÉLDEQ survey, the mentalattentional capacity of 5-month-old infants was assessed using the One, Two, Three Hands Task. It comprises two eliciting situations adapted from Uzgiris and Hunt (1989). In the first situation, called "facilitating," the infant has to grasp a plastic ring presented to him/her in front of the nose or mouth. In the second situation, called "misleading," the infant has to grasp a small object (i.e. a plastic farm animal), after a ring had been placed in each of his/her hands. Both of these situations require coordinating the visual tracking and grasping schemes in order to grab an object in their field of vision.²¹ In addition, the misleading situation requires prior inhibition of the grasping scheme to one or the other or both rings.

Administering the task always begins with the facilitating situation. Each situation comprises three trials. The procedures of administering the One, Two, Three Hands Task are described in detail in the Appendix.

A number of socioeconomic characteristics of the family were analyzed in this study: (a) mother's age at the time of the survey (i.e., under 20, 20-24, 25-29, 30-34 or 35 years of age and over); (b) father's age (i.e., under 25, 25-29, 30-34, 35-39 or 40 years of age and over); (c) and (d) educational level of the mother and father (i.e., no high school diploma, high school diploma, partial high school, vocational/technical school diploma, CEGEP (junior college) diploma or university degree); (e) type of family (i.e., intact two-parent, stepfamily or single-parent); (f) income level (i.e., above or below the low-income cut-off);²² (g) number of brothers and sisters usually living in the household, including step brothers or sisters (i.e., 0, 1, 2 or 3 and more); (h) mother's immigrant status (i.e., non-immigrant, immigrant of European origin or immigrant of non-European origin);²³ (i) mother's age at the birth of her firstborn (i.e., under 21 years of age or not).

^{21.} The schemes of visual tracking and grasping are considered to be in the repertory of schemes of 5-month-old infants, except perhaps in those who have particular disabling diseases such as cerebral palsy. Children with serious disabilities were excluded from the study. However, 9% of *ELDEQ* children had a chronic health condition diagnosed by a doctor at about five months of age such as allergies, kidney or heart problems, epilepsy, etc. (see no. 3 in this series).

^{22.} In this study, income sufficiency status is based on the low income cut-off for a given size of household and region of residence as defined by Statistics Canada (see numbers 2 and 12 in this series of analytical papers).

^{23.} In this study, immigrant status of the father was not analyzed.

2. Statistical Models Used to Account for the 5-Month-Old Infants' Behaviours in the One, Two, Three Hands Task

Latent Class Analysis (LCA) (Lazarsfeld & Henry, 1968) was the main statistical method used in this study. For each situation in the One, Two, Three Hands Task, there were 3 trials with 5 response options for each. Therefore, a priori, there were 125 (5³) categories (i.e., latent classes) of infants for each of the two situations. The main objective of latent class analysis was to identify a limited number of categories of 5-month-old infants from the data collected from the Task's six trials. By definition, infants belonging to the same category will all present the same ability to coordinate visual tracking and grasping. Infants in two different categories will differ as to this same ability. The three LCA models used to analyze infants' behaviours in the Task are presented in the Appendix. The Appendix also contains a brief description of the three statistical models used to examine the possible link between each characteristic of family socioeconomic status and the rate of growth of infant mental-attentional capacity. It also contains technical details on the estimation of the parameters of these statistical models and an assessment of their fit with the data collected in the survey.

3. Results

3.1 Mental-Attentional Capacity of 5-Month-Old Infants in the Population

Among the 2,120 infants who participated in the One, Two, Three Hands Task, 1,851 (87.3%), that is 946 boys and 905 girls, completed the three trials for each of the two situations.²⁴ The results presented in this paper were obtained from the data on these 1,851 babies. They were specially weighted for the Task so that they could be generalized to the Québec population of infants approximately 5 months of age.

Did these infants differ in terms of the rate of growth of their mental-attentional capacity? The results showed that indeed there was a differential, and that the observed differences were not associated with the sex of the infants. The results obtained from the three latent class models are shown in the Appendix. They reveal that the infants belonged to five different categories for both situations, those who: (a) look at the object but do not try to reach for it; (b) try to reach for it but neither touch nor grasp it; (c) touch the object but do not grasp it; (d) grasp it without having previously opened their hand(s); and, (e) grasp it having previously opened their hand(s). Five-month-old infants in the fourth or fifth categories were able to coordinate the schemes of visual tracking and grasping. Infants in the third category were able only in part, whereas those in the first and second were not. Figures A.1 to A.6 in the appendix present the cumulative probabilities of demonstrating a behaviour of a given level of complexity or lower in light of membership in a given category for each of the six trials in the One, Two, Three Hands Task.

Table 3.1 shows the distribution of category membership for the facilitating situation: 56.2% of 5-month-old infants coordinated the visual tracking and grasping schemes to grab an object in their field of vision (i.e., categories 4 and 5); 10.0% coordinated these two schemes in part (i.e., category 3); and 33.8% (i.e., categories 1 and 2) did not demonstrate coordination of these two schemes.

However, we can gain a better understanding of the infants' capacity to coordinate the two schemes by simultaneously examining their performance in both the facilitating situation and the misleading one. Table 3.2 shows the joint conditional distribution of category membership for the misleading situation by given category membership for the facilitating one.

Table 3.1

Distribution	of	Category	Membership	in	the
Facilitating S	ituat	ion. 1998			

Category	Description	Estimated Percentage		
1	Looks at the object but does not try to reach for it	25.5		
2	Tries to reach for the object but neither touches nor grasps it	8.3		
3	Touches the object but does not grasp it	10.0		
4	Grasps the object without having previously opened the hand(s)	9.7		
5	Grasps the object having previously opened the hand(s)	46.4		

^{24.} For more details, see no. 1 in this series of papers.

It was observed that only 51.0% of 5-month-old infants in the fifth category for the facilitating situation were in this same category for the misleading one (see Table 3.2). Table 3.2 also shows, in parentheses, the joint nonconditional distribution of category membership for both situations. The findings were as follows: 23.5% of infants belonged to the fifth category in both situations (see Table 3.2); 61.9% coordinated the two schemes (i.e., categories 4 and 5), in at least one of the two situations (percentages identified by the letter "a"), that is 20.6% in the facilitating situation only, 5.7% in the misleading

situation only, and 35.6% in both situations. It was found that 10.8% of infants 5 months of age coordinated, in part, the visual tracking and the grasping schemes (i.e., category 3) in at least one of the two situations (percentages indicated by the letter "b"); namely, 5.4% in the facilitating situation only, 2.6% in the misleading situation only, and 2.7% in both situations. Finally, 27.3% did not coordinate the two schemes (i.e., categories 1 and 2) in either situation (percentages indicated by the letter "c").

Table 3.2

Joint Conditional Distribution of Category Membership in the Misleading Situation Given Category Membership in the Facilitating Situation, 1998

C ir S	ategory Membership the Facilitating ituation	Category Membership in the Misleading Situation								
		Looks at the object but does not try to reach for it (1)	Tries to reach for the object but neither touches nor grasps it (2)	Touches the object but does not grasp it (3)	Grasps the object without having previously opened the hand(s) (4)	Grasps the object having previously opened the hand(s) (5)				
1	Looks at the object but does not try to reach for it	0.79 (20.1) ^c	0.09 (2.3) ^c	0.03 ⁴ (8.0)	0.03 (0.7) ^a	0.07 (1.7) ^a				
2	. Tries to reach for the object but neither touches nor grasps it	0.43 (3.6) ^c	0.16 (1.4) ^e	0.22 (1.8) ^b	0.10 (0.8) ^a	0.09 (0.7) ^a				
3	Touches the object but does not grasp it	0.33 (3.3) ⁵	0.21 (2.1) ⁶	0.27 (2.7) ⁶	0.07 (0.7)*	0 11 (1.1) ^a				
4	Grasps the object without having previously opened the hand(s)	0.33 (3.2) ^e	0.06 (0.6) ^a	0 17 (1.6) ³	0.33 (3.2) ^a	0.11 (1.1) ^a				
5	Grasps the object having previously opened the hand(s)	0.18 (8.2) [°]	0.04 (1.9)*	0.11 (5.1) ^a	0.17 (7.8) ^a	0.51 (23.5) [*]				

Note : The joint non-conditional distribution of category membership for the two situations are indicated in parentheses.

a. Infants who coordinated the schemes of visual tracking and to grab an object in the field of vision.

b. Infants who coordinated in part the schemes of visual tracking and to grab an object in the field of vision.

c. Infants who did not coordinate the schemes of visual tracking and to grab an object in the field of vision.

3.2 Links Between Socioeconomic Characteristics and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

Are there links between certain family socioeconomic characteristics and the growth rate of mental-attentional capacity during the first 5 months of life? The results did not show a link between mental-attentional capacity and the following: mother's and father's educational levels, type of family, and mother's age at the birth of her firstborn.

However, the results showed that mother's and father's ages, household income sufficiency status, number of brothers and sisters, and mother's immigrant status were associated with the rate of growth of mental-attentional capacity in the Québec population of 5-month-old infants. Furthermore, the results showed that these associations did not differ for boys and girls except for income sufficiency in the misleading situation. The results of the three statistical models used to estimate the possible effect of each family socioeconomic characteristics on mental-attentional capacity in 5-month-old infants are shown in the Appendix (Tables A.1 to A.9). What follows are details on the statistically significant associations.

3.2.1 Association Between Mother's Age and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants in the Québec Population

Five-month-old infants with younger mothers were more likely to coordinate the schemes of visual tracking and to grab an object in their field of vision. Figures 3.1a and 3.1b show the estimates of the odds of being in a given category rather than in the next lower one given the age of the mother for the facilitating and misleading situation respectively. For example, for the facilitating situation, infants whose mothers were under 20 years of age were 4.6 times more likely (5.0 for the misleading situation) to be in the fifth rather than the fourth category, compared to those whose mothers were between 20 and 24 years of age.

Figure 3.1a

Odds of Being in a Given Category Rather Than the Next Lower One Given Mother's Age for the Facilitating Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Figure 3.1b

3

Odds of Being in a Given Category Rather Than the Next Lower One Given Mother's Age for the Misleading Situation, 1998

2.20 2.10 2 1 2.00 Estimate of the Odds 1.61 111 1.30 **▲** 1.24_ B1_1 - A. A. 1.12 \$ 1.07 1. \$-0:22 ---- 6-0.24 * 0.20 . 0.19 0 Lass than 20 25-74 ----75-79 Years 30-14 years 35 years and more Y2 2 TL Hother's Age melong to 4th instead of 3rd category

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.2.2 Association Between Father's Age and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

Five-month-old infants with younger fathers were more likely to coordinate the schemes of visual tracking and to grab an object in their field of vision. Figures 3.2a and 3.2b show the estimates of the odds of being in a given category rather than the next lower one, given the age of the father for the facilitating and misleading situation respectively. For example, for the facilitating situation, infants whose fathers were under 25 years of age were 3.9 times more likely (4.1 for the misleading situation) to be in the fifth rather than the fourth category, compared to those whose fathers were between 25 and 29 years of age.

Figure 3.2a

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Odds of Being in a Given Category Rather Than the Next Lower One Given Father's Age for the Facilitating Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002

Figure 3.2b

3

Odds of Being in a Given Category Rather Than the Next Lower One Given Father's Age for the Misleading Situation, 1998





3.2.3 Association Between Household Income Sufficiency Status and the Growth Rate of Mental-Attentional Capacity in 5-month-old Infants

Five-month-old infants in households with income below the low income cut off were less likely to coordinate the schemes of visual tracking and to grab an object in their field of vision. Figure 3.3a shows the estimates of the odds, for the facilitating situation, of being in a given category rather than the next lower one, given income sufficiency status. Infants whose family income was below the low income cut off were 9.3 times less likely to be in the fifth rather than the fourth category compared to those whose family income was above the cut off. Figure 3.3b shows the odds, for the misleading situation, of being in given category rather than the next lower one, given household income sufficiency status. Fivemonth-old boys in the population whose family income was below the low-income cut off were 29 times less (2.1 times for girls) likely to be in the fifth rather than the fourth category, compared to those whose family income was above the cut off.

Figure 3.3a

5 -

Odds of Being in a Given Category Rather Than the Next Lower One Given Household Income Sufficiency Status for the Facilitating Situation, 1998







Odds of Being in a Given Category Rather Than the Next Lower One Given Household Income Sufficiency Status for the Misleading Situation, 1998



Figure 3.4a

Odds of Being in a Given Category Rather Than the Next Lower One Given Number of Brothers and Sisters for the Facilitating Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.2.4 Association Between Number of Brothers and Sisters and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

Five-month-old infants in the population who had fewer brothers and sisters were more likely to coordinate the schemes of visual tracking and to grab an object in their field of vision. Figures 3.4a and 3.4b present the odds of being in a given category rather than the next lower one, given the number of brothers and sisters for the facilitating and misleading situation respectively. Infants with no brothers and sisters were, for the facilitating situation, 5.6 times more likely (8.0 times for the misleading situation) to be in the fifth rather than the fourth category, compared to those who had a brother or sister.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Figure 3.4b

Odds of Being in a Given Category Rather Than the Next Lower One Given Number of Brothers and Sisters for the Misleading Situation, 1998





Odds of Being in a Given Category Rather Than the Next Lower One Given Mother's Immigrant Status for the Facilitating Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.2.5 Association Between Mother's Immigrant Status and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

Five-month-old infants whose mother was not an immigrant (or immigrant of European origin) were more likely to coordinate the schemes of visual tracking and to grab an object in their field of vision. Figures 3.5a and 3.5b present the estimates of the odds of being in a given category rather than in the next lower one, given the immigrant status of the mother for the facilitating and misleading situation respectively. Five-month-old infants whose mother was not an immigrant were, for the facilitating situation, 8.7 times more likely (13.7 times for the misleading situation) to be in the fifth rather than the fourth category, compared to those whose mother was of European immigrant origin.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Figure 3.5b

Odds of Being in a Given Category Rather Than the Next Lower One Given Mother's Immigrant Status for the Misleading Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.
Conclusion

This study has shown that 5-month-old infants in the Québec population differ in terms of mental-attentional capacity growth rate. It was estimated that 38.1% of 5-month-old infants in Québec did not demonstrate the capacity to coordinate the schemes of visual tracking and to grab an object in their field of vision. However, this finding should be interpreted in light of the fact that the One, Two, Three Hands Task, as with any good screening tool, tends to minimize false negatives, namely those who were not able to coordinate two schemes but not identified as such. Therefore, the above figure is likely an over-estimation of the percentage of 5-month-old infants in the Québec population who are not able to coordinate two schemes in one action directed towards a goal. Following these infants over the coming years in the longitudinal survey will allow researchers to determine whether the infants who presented what appears to be a slower rate of development will eventually catch up to the other infants, or if this differential will remain the same or even become larger.

This study has also shown a link between the rate of growth of mental-attentional capacity of 5-month-old infants in the Québec population and certain family socioeconomic characteristics. These were age of the mother and father, income sufficiency status, number of brothers and sisters, and immigrant status of the mother. No doubt all of these characteristics are inter-related, but several studies suggest that the number of brothers and sisters maybe at the heart of the mechanism behind the observed link (Zajonc, 2001; Zajonc & Markus, 1975). For example, older or immigrant parents generally have more children. In addition, for a given income, the number of children in the family determines in large part income sufficiency status. Five-month-old infants who have fewer brothers and sisters may possibly benefit from greater attention on the part of their parents, which might contribute to accelerated cognitive development (Blake, 1981; Downey, 2001). If this is the case, this socioeconomic characteristic may increase rather than decrease the differences among children in the same family with regards to the growth rate of their mentalattentional capacity. It is still too early to say whether the number of brothers and sisters could have a more or less long-term impact on the mental-attentional capacity of infants. Once again, only longitudinal monitoring will allow for determining whether or not this is the case.

This study was not without limits, however. First, only the coordination of the visual tracking and grasping schemes to grab an object in the field of vision was used to assess the capacity of the infant to coordinate two schemes, whatever they may be, in one action directed towards a goal. Second, visual tracking and grasping coordination, as conceived by Piaget, implies grabbing an object that is not immediately in the child's field of vision. Therefore, this study did not demonstrate that infants who succeeded at grasping an object would have done so if the object had not been in their field of vision.

1. Administering the One, Two, Three Hands Task

1.1 Facilitating Situation

The interviewer presents a coloured ring in front of the infant's nose or mouth at a distance of approximately 12.5 to 15 centimeters from his/her face. The object of this part of the task is for the infant to grab the ring. The procedure is repeated three times with different coloured rings. For each of the three trials, the interviewer notes the infant's behaviour by using the following six descriptions: (a) looks at but does not try to reach for the ring; (b) tries to reach for the ring but neither touches nor grasps it; (c) touches the ring; (d) grasps the ring without having previously opened the hand(s); (e) grasps the ring having previously opened the hand(s); and (f) other (e.g., the test was not administered because the infant was not available).

1.2 Misleading Situation

The interviewer presents a small plastic farm animal in front of the infant's nose or mouth approximately 12.5 to 15 centimeters from the face. The interviewer had previously placed a ring in each of the infant's hands. The object of this part of the task is for the infant to grab the animal. This procedure is repeated three times with different animals. For each trial, the interviewer notes the infant's behaviours using one of the following six descriptions: (a) looks at but does not try to reach for the animal; (b) tries to reach for the animal with his/her hands full but neither touches nor grasps it; (c) tries to reach for the animal with his/her hands full, drops one or both rings to touch the animal; (d) tries to reach for the animal with his/her hands full, drops one or both rings to grasp the animal; (e) drops one/both ring(s) and to grasp the animal; and (f) other (e.g., the test was not administered because the infant was not available).

Administering this task always begins with the facilitating situation. During the entire experiment the infant remains comfortably seated in the arms of an adult, usually the mother, or in a car seat or high chair. The interviewer ensures that the infant has both hands free, except of course in the misleading situation, and as much as possible, nothing in his/her mouth, such as a soother.

2. Latent Class Models Used to Account for the Behaviours of 5-Month-Old Infants in the One, Two, Three Hands Task

- A model with two, so-called latent variables, one for the facilitating situation, and the other for the misleading one. Each comprises a single latent class, i.e. a single category of infant.
- 2. A model with two latent variables, one for the facilitating situation, and the other for the misleading one. The following is a description of the characteristics of this model. First, each of the two latent variables comprise five latent classes: (a) infants who look at but do not try to reach for the object; (b) infants who try to reach for the object but neither touch nor grasp it; (c) infants who touch the object but do not grasp it; (d) infants who grasp the object without having previously opened their hand(s); (e) infants who grasp the object having previously opened their hand(s). Infants in the first latent class tend to look at the object but do not try to reach for it. However, the probability of these infants showing other behaviours is not nil, given that an infant can show behaviours that differ from one trial to another. Second, the cumulative probability of showing a behaviour of a given level of complexity or lower decreases or remains the same from the first to the fifth latent class. For example, the probability of looking at an object but not trying to reach for it decreases or remains the same from the first to the fifth latent class. Third, being in a latent class for the

misleading situation is dependent on latent class membership for the facilitating situation, since the former was administered after the latter. Fourth, the cumulative probability of being in a given latent class or lower for the misleading situation decreases or remains the same from the first to the fifth latent class of the facilitating situation. Fifth, this model's parameters do not vary with the sex of the infants.

3. A model similar to the preceding one, except that the parameters could vary with the infant's sex.

3. Statistical Models Used to Estimate the Possible Relationship Between Socioeconomic Characteristics and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

- 1. A null association model between the family socioeconomic characteristic and the mentalattentional capacity of 5-month-old infants.
- A model of association between the family socioeconomic characteristic and the mentalattentional capacity of 5-month-old infants which does not vary with the sex of the infants.
- A model similar to the preceding, but the association between the family socioeconomic characteristic and the mental-attentional capacity of 5-month-old infants may vary with the sex of the infants.

These last two association models do <u>not</u> vary with the joint conditional distribution region (Clogg & Shihadeh, 1994). This means a single parameter is sufficient to describe the association between the family socioeconomic characteristic and the mental-attentional capacity of 5-month-old infants.

4. Parameters Estimates of the Statistical Models and Evaluation of their Fit with the Survey Data

The parameter estimates of the various statistical models described above were obtained using the IEM program, version 1 (Vermunt, September 18, 1997). For each model, these estimates were obtained from one set of initial values. Unfortunately, the version of IEM used in this study did not provide standard errors for these estimates given the aforementioned constraints (see sections 2 and 3 above). However, IEM did allow for weighting specially designed for the One, Two, Three Hands Task, which made it possible to make inferences about the results for the target population, namely 5-month-old Québec children. Given that SUDAAN does not estimate latent class models, a statistical threshold of 0.25 was adopted to take into account the design effect of the survey.

The fit of the statistical models to the data collected in the survey was assessed using the likelihood-ratio chisquare statistic (L^2). The L^2 follows asymptotically the chi-square distribution with a certain number of degrees of freedom. A high L² value compared to the degrees of freedom indicates that the model is not a good fit to the data. Conversely, a low L² value compared to the degrees of freedom indicates that the model is a good fit to the data. In addition, given that the L² can be precisely partitioned, it can be used to compare the adjustment of two hierarchically related to models (i.e., one model includes a sub-group of the other's parameters) by subtracting the L² and the degrees of freedom associated with the two models in question (Fienberg, 1980). The comparison of models was also conducted using the AIC [Akaike's Information Criterion; AIC: L² - (2 X degrees of freedom)] and the BIC [Bayesian Information Criterion; BIC: L^2 - (degrees of freedom) (log N)). The model with the lowest AIC (BIC) value was considered to be the most parsimonious and was therefore retained (Bollen, 1989).

5. Results of the Three Latent Class Models Used to Analyze the Behaviours of 5-Month-Old Infants in the One, Two, Three Hands Task

The L² associated with the model of the two latent variables each comprising five classes of which the parameters may vary according to infant sex was 3,862.22 with 31,055 degrees of freedom (p = 1.0),²⁵ which suggests that this model is appropriate for describing the behaviours of the 5-month-old infants in the One, Two, Three Hands Task. The L² associated with the model of the two latent variables each class was 12,024.27 with comprising one 31,200 degrees of freedom (p = 1.0). This shows a substantial increase in the L² compared to that of the degrees of freedom (i.e., $L^2 = 12.024.27 - 3.862.22 =$ 8,162.05; degree of freedom = 31,200 - 31, 055 = 145; p = .00). This means that the hypothesis that 5-monthold infants do not differ in terms of the growth rate of their mental-attentional capacity can be discarded. The L² associated with the model of the two latent variables each comprising five classes the parameters of which do not vary with infant sex was 3,955,40 with 31,129 degrees of freedom (p = .07).²⁶ This increase in the L^2 was not a substantial one compared to the increase in the degrees of freedom $(L^2 = 3.955.40 - 3.862.22 =$ 93.19; degree of freedom = 31,129 - 31,055 = 74; p = .07). Moreover, it is this last model that presented the lowest AIC and BIC values. This means, therefore, that the hypothesis that 5-month-old boys and girls in the population do not differ in terms of the growth rate of their mental capacity cannot be discarded.

of Probabilities 6. Cumulative Given of Behaviour Showing а Lower Given Complexity or Membership in a Latent Class for Each of the Six Trials in the One, Two, Three Hands Task

Figures A.1 to A.6 show the cumulative probabilities of showing a behaviour of a given complexity or lower given membership in a latent class for each of the six trials of the One, Two, Three Hands Task. A look at these cumulative probabilities indicates that the five latent classes represent increasing levels of performance:

- The cumulative probability of looking at the object but not trying to reach for it was relatively high in 5month-old infants in the first latent class whereas it was much lower for those in the other four latent classes.
- The cumulative probability of at most attempting to reach for the object but not touching or grasping it was relatively high in 5-month-old infants in the first two latent classes whereas it was much lower for those in the three other latent classes.
- 3. The cumulative probability of at most touching the object but not grasping it was relatively high in 5-month-old infants in the first three latent classes whereas it was much lower for those in the other two latent classes.
- 4. The cumulative probability of at most grasping the object without having previously opened the hand(s) was relatively high in 5-month-old infants who were in the first four latent classes whereas it was much lower for those in the fifth latent class.

^{25.} The probability of obtaining an equal or smaller L² value given that the model is true.

This model explained 67.11% (i.e., 1 - [3,955.40 / 12,024.27]) of the variance observed in the behaviours of the 5-month-old infants in the limitation Sorting Task.

Figure A.1 Cumulative Probability of Showing a Behaviour of a Given Complexity or Lower By Category for the First Trial in the Facilitating Situation, 1998



Figure A.2 Cumulative Probability of Showing a Behaviour of a Given Complexity or Lower By Category for the Second Trial in the Facilitating Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Figure A.3 Cumulative Probability of Showing a Behaviour of a Given Complexity or Lower By Category for the Third Trial in the Facilitating Situation, 1998





Cumulative Probability of Showing a Behaviour of a Given Complexity or Lower By Category for the First Trial in the Misleading Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Figure A.5 Cumulative Probability of Showing a Behaviour of a Given Complexity or Lower By Category for the Second Trial in the Misleading Situation, 1998



Figure A.6

Cumulative Probability of Showing a Behaviour of a Given Complexity or Lower By Category for the Third Trial in the Misleading Situation, 1998



Source: Institut de la statistique du Québec, ÉLDEQ 1999-2002.

7. Results of the Three Statistical Models Used to Estimate the Possible Relationships Between Family Socioeconomic Characteristics and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

Tables A.1 to A.9 show the results of the three statistical models used to estimate the possible relationship between each characteristic of family socioeconomic status and the growth rate of mentalattentional capacity in 5-month-old infants. For both situations, for each characteristic, the L² associated association between the model of the with socioeconomic characteristic and mental-attentional capacity which varied with infant sex was small compared to the degrees of freedom (see Tables A.1 to A.9). Therefore this model was an appropriate one for indicating the association between the socioeconomic characteristic of the family and mental-attentional capacity. For both situations, the model of null association between the socioeconomic characteristic and the mental-attentional capacity showed a substantial increase in the L² compared to that in the degrees of freedom for age of the mother and father, household income sufficiency status,27 number of brothers and sisters, and mother's immigrant status (see Tables A.1 to A.9). Therefore, for these particular characteristics, the hypothesis that there would be no association between socioeconomic status and the mental-attentional capacity of 5-month-old infants was discarded. Indeed, for these characteristics, the model of association between socioeconomic characteristics and mental-attentional capacity which does not vary with infant sex, did <u>not</u> show a substantial increase in the L² compared to that in the degrees of freedom for the two situations, except for income sufficiency status in the misleading situation (see Tables A.1 to A.9). Moreover, it was this model that had the lowest AIC and BIC^{28} values for both situations, except for income sufficiency status in the misleading situation.

^{27.} In the facilitating situation, for household income sufficiency status, it became clear that the hypothesis of no association between household income sufficiency and mental-attentional capacity should be discarded if we compare the null association model to the association model that does not vary with infant sex ($L^2 = 427.57 + 420.26 = 7.31$; degree of freedom = 440 + 439 = 1; p = .01).

^{28.} In the facilitating situation, for income insufficiency status, the BIC suggests that the null association model is the most parsimonious, whereas the AIC and the L² values suggest that the model of association that does <u>not</u> vary with infant sex is a better model, and was therefore the one retained.

Table A.1	
Mother's Age and Mental-Attentional Capacity of 5-Month-Old Infar	nts. 1998

	Facilitating Situation					
	L ²	df	P	AIC	BIC	
Model			• • • • • • • • • • • • • • • • • • •		·////	
1	916.74	1,185	1	- 1,453.26	- 7,997.94	
2	905.83	1,184	1	- 1,462.17	- 8,001.33	
3	905.76	1,183	1	- 1,460.24	- 7,993.88	
1 versus 3	10.99	2	0.004	-	_	
2 versus 3	0.07	1	0.79	-	-	
		Misleading Situation				
	L ²	df	ρ	AIC	BIC	
Model				naansen op de seene aan aan aan aan aan aan aan aan aan	n a chaillean a marchair ann a' nachail ann an ann an ann an ann an ann ann an	
1	1,022.08	1,180	1	- 1,337.92	- 7,854.99	
2	1,010.64	1,179	1	- 1,347.36	- 7,858.91	
3	1,009.78	1,178	1	- 1,346.22	- 7,852.24	
1 versus 3	12.30	2	0.002	_	-	
2 versus 3	0.86	1	0.35		****	

<u>Note for Tables A.1 to A.9</u>: Model 1: Null association between a given socioeconomic characteristic and mentalattentional capacity of 5-month-old infants. Model 2: Association between a given socioeconomic characteristic and mental-attentional capacity of 5-month-old infants which does <u>not</u> vary with infant sex. Model 3: Association between a given socioeconomic characteristic and mental-attentional capacity of 5-month-old infants that varies with infant sex. L²: Likelihood-ratio chi-square statistic. df: degree of freedom. AIC: (Akaike's Information Criterion): $L^2 - (2df)$. BIC (Byesian Information Criterion): $L^2 - (df)$ (log N).

Table A.2

Father's Age and Mental-Attentional Capacity of 5-Month-Old Infants', 1998

		Facilitating Situation					
	L	df	р	AIC	BIC		
Model							
1	869.68	1,183	1	- 1,496.32	- 7,938.25		
2	861.51	1,182	1	- 1,502.45	- 7,938.97		
3	861.07	1,181	1	- 1,500.93	- 7,931.97		
1 versus 3	8.61	2	0.01	-	-		
2 versus 3	0.44	1	0.51	_			
		Misleading Situation					
	L ²	df	p	AIC	BIC		
Model							
1	1,047.12	1,179	1	- 1,310.88	- 7,731.03		
2	1,039.61	1,178	1	- 1,316.39	- 7,731.09		
3	1,037.96	1,177	1	- 1,316.04	- 7,725.29		
1 versus 3	9.15	2	0,01	-	-		
2 versus 3	1.65	1	0,20	-	_		

1. Given that the partial non-response rate was higher than 5% namely 7.51%, these results are for information purposes only

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Table A.3				
Mother's Educational Level and Mental-Attentional	I Capacit	y of 5-Month-Old	I Infants,	1998

		Facilitating Situation				
	L ²	df	р	AIC	BIC	
Model						
1	1,038.22	1,433	1	- 1,827.79	- 9,741.38	
2	1,038.12	1,432	1	- 1,825.88	- 9,733.96	
3	1,038.11	1,431	1	- 1,823.89	- 9,726.44	
1 versus 3	0.10	2	0.95		-	
2 versus 3	0.01	1	0. 93		-	
	Misleading Situation					
	L ²	đf	P	AIC	BIC	
Model						
1	1,291.35	1,428	1	- 1, 564 .65	- 9,450.64	
2	1,288.70	1,426	1	- 1,563.30	- 9,438.24	
3	1,286.84	1,425	1	- 1,563.17	- 9,432.59	
1 versus 3	4.51	2	0.10	-	-	
2 versus 3	1.87	1	0.17	-	-	

Father's Educational	Level and Mental-Attent	ional Capacity of	5-Month-Old i	nfants, 1998 ¹		
		Facilitating Situation				
	L ²	df	P	AIC	BIC	
Model	· · · · · · · · · · · · · · · · · · ·					
1	1,033.10	1,431	1	- 1,828.90	- 9,607.01	
2	1,030.55	1,430	1	- 1,829.45	- 9,602.13	
3	1,030.43	1,429	1	- 1,827.57	- 9,594.81	
1 versus 3	2.67	2	0.26		-	
2 versus 3	0.12	1	0.73		-	
	Misleading Situation					
	L ²	df	Ρ	AIC	BIC	
Model				· · · · · · · · · · · · · · · · · · ·	**************************************	
1	1,248.19	1,427	1	- 1,605.81	- 9,362.18	
2	1,248.04	1,426	1	- 1,603.96	- 9,354.89	
3	1,247.95	1,426	1	- 1,604.05	- 9,354.98	
1 versus 3	0.24	2	0.89		· · · · · · · · ·	
2 versus 3	0.09	1	0.76		-	

 Table A.4

 Father's Educational Level and Mental-Attentional Capacity of 5-Month-Old Infants, 1998

1. Given that the partial non-response rate was higher than 5% namely 8.43%, these results are for information purposes only

Source: Institut de la statistique du Quèbec, ÉLDEQ 1998-2002.

Table A.5	
Type of Family and Mental-Attentional Capacity of 5-Month-Old Infants, 1	998

	Facilitating Situation				
	L ²	df	p	AIC	BIC
Model				•	
1	517.67	689	1	- 860.33	- 4,663,40
2	517.23	688	1	- 858.77	- 4,656.32
3	515.55	687	1	- 858.45	- 4,650.48
1 versus 3	2.12	2	0.3466	-	·
2 versus 3	1.68	1	0.1953	-	
	Misleading Situation				
	L ²	df	P	AIC	BIC
Model	ναι τη προσφοριατική στο στο ποι ποι ποι ποι ποι πολογιστικό το μαθοπολογιστικό πολογιστικό ματά το παραγογραφο Το ποι ποι παραγογραφορία το ποι ποι ποι ποι ποι ποι ποι ποι ποι πο	en dezennen konzen kanal de fanken en en generalen generalen en generalen fanken om de s			an a
1	581.43	683	1	- 784.57	- 4,554,52
2	579.96	681	1	- 782.04	4,540.95
3	579.50	680	1	- 780.50	- 4,533.89
1 versus 3	1,93	2	0.38		-
2 versus 3	0.46	1	0.50	_	

Table A.6 Income Sufficiency Status and Mental-Attentional Capacity of 5-Month-Old Infants, 1998

	Facilitating Situation				
	L ²	df	P	AIC	BIC
Model					
1	427.57	441	0.7	- 454,43	- 2,883.08
2	420.26	440	0.7	- 459.74	- 2,882.88
3	420.25	439	0.7	- 457.76	- 2,875.39
1 versus 3	7.33	2	0.03	_	-
2 versus 3	0.02	1	0.90		***

	Misleading Situation				
	L ²	df	Ρ	AIC	BIC
Model					
1	491.60	436	0.03	- 380.40	- 2,781.51
2	478.60	434	0.07	- 389.40	- 2,779.50
3	470.12	434	0.11	- 397.88	- 2,787.98
1 versus 3	21.48	2	0		-
2 versus 3	8.48	1	0.004		_

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

	Facilitating Situation					
	L²	df	р	AIC	BIC	
Model						
1	762.43	937	1	- 1,111.57	- 6,287.08	
2	751.40	936	1	- 1,120.61	- 6,290.58	
3	750.45	935	1	- 1,119.55	- 6,284.00	
1 versus 3	11.97	2	0.003	-		
2 versus 3	0.94	1	0.33		-	
	Misleading Situation					
	L ²	df	p	AIC	BIC	
Model	an be der Konnen ander an der der Konnen verstenden der Konnen an der Statistischen Bergensteinen an einen Bergensteinen		ALC & C.			
1	810.99	932	1	- 1,053.01	- 6,200.89	
2	791.74	931	1	- 1,070.26	- 6,212.62	
3	791.64	930	1	- 1,068.36	- 6,205.20	
1 versus 3	19.35	2	0	-	-	
2 versus 3	0.10	1	0.76		-	

Table A.7 Number of Brothers/Sisters and Mental-Attentional Capacity of 5-Month-Old Infants, 1998

Table A.8	
Mother's Immigrant Status and Mental-Attentiona	al Capacity of 5-Month-Old Infants, 1998

	Facilitating Situation				
	L²	df	q	AIC	BIC
Model	······································				
1	445.59	689	1	- 932.41	- 4,737.34
2	433.91	688	1	- 942.09	- 4,741.50
3	432.72	6 8 7	1	- 941.28	- 4,735.17
1 versus 3	12.87	2	0.002	_	
2 versus 3	1.18	1	0.28	-	-

	Misleading Situation				
	L ²	df	P	AIC	BIC
Model					
1	533.38	684	1	- 834.62	- 4,611,94
2	511.09	682	1	- 852.91	- 4,619.19
3	510.97	681	1	- 851.04	- 4.611.79
1 versus 3	22.42	2	0	-	-
2 versus 3	0.13	1	0.72		

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

	Facilitating Situation						
	L'	df	Р	AIC	BIC		
Model	***************************************						
1	420.78	441	0.75	- 461.22	- 2,896.83		
2	419.31	440	0.75	- 460.69	- 2,890.79		
3	413.52	438	0.79	- 462.48	- 2,881.53		
1 versus 3	7.27	2	0.03		_		
2 versus 3	5.79	1	0.02	-			
	Misleading Situation						
	L ²	df	p	AIC	BIC		
Model							
1	443.01	436	0.40	- 428.99	- 2,836.99		
2	442.71	435	0.39	- 427.29	- 2,829.77		
3	442.48	434	0.38	- 425.52	- 2,822.48		
1 versus 3	0.53	2	0.77		-		
2 versus 3	0.86	1	0.35	***	-		

Table A.9 Mother's Age at Birth of Firstborn and Mental-Attentional Capacity of 5-Month-Old Infants, 1998

7.1 Association Between Mother's Age and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants in the Québec population

For the facilitating (misleading) situation, 5-month-old infants whose mother was a given age were 4.6 (5.0) times more likely to be in a given latent class than in the next lower one, compared to those whose mother was in the next higher age group (see Figures 3.1a and 3.1b).

7.2 Association Between Father's Age and the Growth Rate of Mental-Attentional Capacity in 5-Month-Oid Infants

For the facilitating (misleading) situation, 5-month-old infants whose father was of a given age were 3.9 (4.1) times more likely to be in a given latent class than in the next lower one, compared to those whose father was in the next higher age group (see Figures 3.2a and 3.2b).

7.3 Association Between Household Income Sufficiency Status and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

For the facilitating situation, 5-month-old infants whose family income was below the low-income cut off, were 9.3 times less likely to be in a given latent class rather than the next lower one (see Figure 3.3a). For the misleading situation, 5-month-old boys whose family income was below the low-income cut off, were 29.0 times less likely to be in a given latent class than the next lower one (see Figure 3.3b). However, this stimuli was only 2.1 for 5-month-old girls (see Figure 3.3b).

7.4 Association Between Number of Brothers and Sisters and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

For the facilitating (misleading) situation, 5-month-old infants who had a given number of brothers and sisters were 5.6 (8.0) times more likely to be in a given latent class than in the next lower one, compared to those who had an additional brother or sister (see Figures 3.4a and 3.4b).

7.5 Association Between Mother's Immigrant Status and the Growth Rate of Mental-Attentional Capacity in 5-Month-Old Infants

For the facilitating (misleading) situation, 5-month-old infants whose mother was not an immigrant (European immigrant origin) were 8.7 (13.7) times more likely to be in a given latent class than in the next lower one lower, compared those whose mother was of European immigrant origin (non-European immigrant origin) (see Figures 3.5a and 3.5b).

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Glossary

Centre de la petite enfance Commission d'accès à l'information du Québec - CAI Conseil québécois de la recherche sociale Direction de la méthodologie et des enquêtes spéciales, ISQ Direction de la santé publique de la Régie régionale de la Santé et des services sociaux de Montréal-Centre Direction de la technologie et des opérations statistiques, ISQ Direction des normes et de l'information, ISQ Direction Santé Québec, ISQ Étude des jumeaux nouveaux-nés au Québec – ÉJNQ Fichier maître des naissances Fonds de la recherche en santé du Québec (FRSQ) Fonds pour la formation de chercheurs et l'aide à la recherche (FCAR) Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP Institut de la statistique du Québec La Politique Familiale Le Rapport Bouchard (1991) « Un Québec fou de ses enfants » Les Priorités nationales de santé publique ministère de l'éducation ministère de la Famille et de l'Enfance ministère de la Justice ministère de la Recherche, Science et Technologie ministère de la Santé et des Services sociaux du Québec (MSSS) ministère de la Sécurité publique ministère de la Solidarité sociale Personne qui connaît le mieux l'enfant (PCM) Politique de la santé et du bien-être Service la recherche Service de support aux opérations de la Régie de l'assurance-maladie du Québec - RAMQ

Child-care centre Québec Access to Information Commission Social Research Council of Québec Methodology and Special Surveys Division, ISQ Public Health Department, Montréal-Centre, **Regional Health Board** Technology and Statistical Operations Division, ISQ Standards and Information Division, ISQ Health Québec Division, ISQ Québec Study of Newborn Twins Master Birth Register Health Research Fund of Québec Researcher Education and Research Assistance Fund **Research Unit on Children's** Psychological Maladjustment Québec Institute of Statistics Policy on Families The Bouchard Report, 1991: A Québec In Love with its Children Priorities for Public Health Ministry of Education Ministry of Family and Child Welfare Ministry of Justice Ministry of Research, Science and Technology Ministry of Health and Social Services of Québec Ministry of Public Security Ministry of Social Solidarity - formerly Income Security (Welfare) Person Most Knowledgeable (PMK) Policy on Health and Well-Being Research services **Operations Support Section of the** Québec Health Insurance Board Institut de la statistique QUÉDEC

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A child's level of motor and social development during infancy is associated with a number of indicators of adjustment later on in life. Although the sequence and the timing of the stages appear to be universal, various factors account for differences in development among infants. The first part of this section examines the motor and social development of infants in Québec. Information provided by mothers allows us to present an overview of the motor and social development of infants who were about 5 months old when data were first collected for the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002). Furthermore, we examine if certain characteristics of the infant's sociodemographic and family context are associated with the fact that he/she has already manifested certain abilities.

The Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) also provides an exceptional opportunity to assess, on an annual basis, early cognitive development in a very large representative sample of five-month-old Québec children. The main objective of this second section is to evaluate the mental capacity of infants at the age of five months. Of specific interest is the developmental pace of mental capacity: 1) Does this pace differ among infants, and 2) Are there links between certain aspects of socioeconomic status and the development pace of mental capacity?

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5-MONTH-OLD INFANTS

Parents' Health and Social Adjustment

Volume I, Number 9

Québec



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May 2000

Similar to what has been observed in the majority of industrialized nations over the past twenty years, Québec and Canada have seen a significant increase in the costs related to maladjustment, particularly in young people. The Longitudinal Study of Child Development in Québec (*l'Étude longitudinale du développement des enfants du Québec*) (ÉLDEQ 1998-2002) being conducted by *Santé Québec* (Health Québec),¹ a division of *l'Institut de la statistique du Québec (ISQ)*² (Québec Institute of Statistics) in collaboration with a group of university researchers, will provide an indispensable tool for action and practitioners in the field, who every day must face maladjustment in children.

More precisely, a major purpose of this longitudinal study of a cohort of newborns is to give Québec a means of preventing extremely costly human and social problems, such as school dropout, delinquency, suicide, drug addiction, domestic violence, etc. Similar to what is being done elsewhere (in the UK, New Zealand, the US), *Santé Québec* and a group of researchers have designed and developed a longitudinal study of children 0 to 5 years of age (2,223 children in this study and 600 twins in a related one). It will help gain a better understanding of the factors influencing child development and psychosocial adjustment.

The general goal of ÉLDEQ 1998-2002 is to learn the PRECURSORS, PATHS and EFFECTS, over the medium and long terms, of children's adjustment to school. ÉLDEQ is the logical extension of the National Longitudinal Study of Children and Youth (NLSCY, Canada). These Québec and Canada-wide longitudinal studies are both comparable and complementary. They employ distinct survey methods, and use different techniques to obtain the initial samples. Though many of the

instruments are practically identical, about a third of those being used in ÉLDEQ are not the same.

This first report casts light on the enormous potential of the data generated by this study. From the descriptive analyses of the results of the first year of the study to the longitudinal analyses of subsequent years, there will be an enormous wealth of data. With updated knowledge on the development of the cohort of young children, the annual longitudinal follow-up will respond to the needs which the *ministère de la Santé et des Services Sociaux du Québec - MSSS* (Ministry of Health and Social Services), who financed the data collection, expressed in both the Report of the Working Group on Youth (*Rapport Bouchard, 1991, Un Québec fou de ses enfants -* the Bouchard Report, 1991, A Québec in Love with its Children) and the policy papers entitled *Politique de la santé et du bien-être, 1992* (Health and Well-Being) and *les Priorités nationales de santé publique 1997-2002* (Public Health Priorities 1997-2002).

Director General

Man Firt

Yvon Fortin

Certain French appellations in italics in the text do not have official English translations. The first time one of these appears, the unofficial English translation is shown immediately after it. Following this, for ease in reading, only the official French name appears in the text in italics, and it is suggested the reader refer to the Glossary for the English translation.

Santé Québec officially became a division of the ISQ on April 1, 1999.

The authors of Volume 1 Number 9 of ÉLDEQ 1998-2002 are:

Part I: Lifestyle Habits and Health Status

Christa Japel, Richard E. Tremblay and Pierre McDuff Groupe de recherche sur l'inadaptation psychosociale chez l'enfant (GRIP), Université de Montréal (Research Unit on Children's Psychosocial Maladjustment, University of Montréal)

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ZOCCOLILLO, M. (2000). "Parents' Health and Social Adjustment, Part II - Social Adjustment" in Longitudinal Study of Child Development in Québec. (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, Vol. 1, No. 9.

This analytical paper is also available in French. Ce numéro et aussi disponible en version française sous le titre :

JAPEL, C., R. E. TREMBLAY et P. McDUFF (2000). « Santé et adaptation sociale des parents, section I - Habitudes de vie et état de santé » dans Étude longitudinale du développement des enfants du Québec (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, vol. 1, n° 9.

ZOCCOLILLO, M. (2000). « Santé et adaptation sociale des parents, section II - Adaptation sociale » dans Étude longitudinale du développement des enfants du Québec (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, vol. 1, nº 9.

Caution:

Unless indicated otherwise, "n" in the tables represents data weighted to the size of the initial sample.

Because the data were rounded off, totals do not necessarily correspond to the sum of the parts.

Unless explicitly stated otherwise, all the differences presented in this report are statistically significant to a confidence level of 95%.

To facilitate readability, proportions higher than 5% were rounded off to the nearest whole unit in the text, and to the nearest decimal in the tables and figures.

Weighting and the complex sample design were taken into account in calculating the results and their precision. The precision of the estimates of proportions was calculated using a mean design effect. This was also used for the chi-square tests, except in questionable cases for which the SUDAAN software program was used. In all other analyses, SUDAAN was used. Basic hypotheses, such as the normality of the data, were verified before applying the selected statistical tests.

Symbols

Abbreviations

	Not applicable (N/A)	CV	Coefficient of variation
	Data not available	Not avail.	Not available
-	Nil or zero	not signif.	Not significant

p < Refers to the threshold of significance

Santé Québec recognizes that the development and implementation of the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) flows directly from the synergy of effort and professionalism of many people throughout the whole process of mounting a survey of this size. Since 1995, individuals, various groups and organizations, a survey firm and the staff of Santé Québec have become indispensable links in making this ambitious project a reality - the first annual longitudinal survey of Québec infants.

A major characteristic of this project is that a pretest and survey are conducted every year. To accomplish this, we must annually: 1) make two sets of instruments (pretest and survey), 2) conduct two data collections, 3) analyze two sets of data, and 4) produce two types of communications materials. The results of each pretest means fine-tuning and developing instruments for the survey, which follows 17 months later. The results are sent to the parents (highlights), published in reports, and communicated to the scientific community and the public at large. The professionals and staff involved in collecting the data, as well as those involved before and after, must put their nose to the grindstone every year. We cannot over-emphasize our profound recognition of the incredible, concerted effort they are putting into this project over an 8-YEAR period, from the first pretest in 1996 to the final report to be published in 2004!

First, it must be said that without Daniel Tremblay, Director of Santé Québec (now part of the ISQ) since 1994, Christine Colin, Assistant Deputy Minister responsible for Public Health 1993-1998, Aline Émond, Director of Santé Québec 1986-1993, Richard E. Tremblay, Director of the ÉLDEQ research project, and Marc Renaud, President of *le Conseil québécois de la recherche sociale - CQRS* 1991-1997. ÉLDEQ 1998-2002, also known as "In 2002...I'll Be 5 Years Old!," would have never seen the light of day. In turn and together, they developed, defended and obtained the financing for this study. Thank you for your indefatigable tenacity.

A warm thanks to all the researchers and the support staff of their respective research groups, whose determination over the years has never wavered. Putting their research grants together every year has contributed to the development of the instruments, analysis of the data and publication of the copious results.

I would like to thank Lyne Des Groseilliers, ÉLDEQ's statistician since 1996, Robert Courtemanche, statistical advisor, and France Lapointe, ÉLDEQ's statistician 1995-1996. These three colleagues in the *Direction de la méthodologie et des enquêtes spéciales* (Methodology and Special Surveys Division) (*ISQ*) managed, with great skill, to set the signposts and navigate the somewhat winding course of this large-scale survey first.

A very special thanks to all the master designers of the National Longitudinal Study of Children and Youth (NLSCY, Canada). Without their expertise, advice and generosity, our survey would never have been accomplished. In many senses of the word "modeling," ÉLDEQ has learnt a lot from the NLSCY.

We would also like to extend out gratitude to the staff of the Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP (Research Unit on Children's Pyschosocial Maladjustment) at the University of Montréal. Without their expertise, some of our survey instruments would have never been computerized to such a high level of quality.

We would like to thank the personnel in the Service de support aux opérations de la Règie de l'assurance-maladie du Québec -RAMQ (Operations Support Section of the Québec Health Insurance Board). Without their efficiency, fewer letters of introduction would have found their way to the correct addresses of respondents.

Our sincerest thanks go to our survey firm, *Bureau* d'interviewers professionnels (*BIP*). Since 1996, this polling company has been responsible for data collection in the pretests and surveys, and follow-up of families both inside and outside of Québec. Lucie Leclerc, President of *BIP*, has set the standard of quality for our numerous and complex data collections. Assisted by Véronique Dorison, she has instilled in her interviewers a great sense of respect for the respondent families, as well as a rigourous regard for all the norms governing this first-of-a-kind survey in Québec. A big thank-you to the directors-general, directors of professional services, and staff of the medical records departments of some 80 hospitals in the province who accepted to collaborate in our study at a time when resources were rare and time was at a premium, and when the medical records departments in many hospitals were merging or in the process of doing so. Their support was exceptional. Birthing centres also graciously accepted to participate in this first Québec longitudinal study of children. A special thanks to Julie Martineau, medical records specialist, who contributed to the analysis of indispensable medical information by ensuring very rigourous coding of the data, which often lay concealed in the medical files of the infants and their mothers.

It goes without saying that the staff of Santé Québec Division directly attached to ELDEQ 1998-2002 are the cornerstone of its success from practically every point of view. Special thanks for their ongoing contribution and constant hard work go to Hélène Desrosiers and Josette Thibault, responsible respectively for analysis of the data and creation of the measurement instruments; Martin Boivin, Rolland Gaudet and Gérald Benoît, who constantly pushed the limits of what computer software can do in terms of programming and data processing; Suzanne Bernier-Messier and Diane Lord, who give meaning to the word versatility, who must organize, code and manage incredible quantities of data to ensure the progress of the study. Not directly attached to the team but who made extremely important contributions are: France Lacoursière, France Lozeau and Thérèse Cloutier, who put the finishing touches to the Santé Québec "look" in the survey instruments, reports and conference publications; Lise Ménard-Godin, who conducted fruitful literature searches and advised on many aspects of the collection instruments. The hard work, constant availability, ability to adapt, and finely-honed skills of the people working on this project match the enthusiasm that all our partners have demonstrated in making this study a resounding success.

Finally, I would like to extend a very special thank-you to the 2,223 families who responded to our survey. Thank you for the trust you have shown in *Santé Québec*, our partners and collaborators. Thanks to your participation, your children have become the veritable stars of ÉLDEQ 1998-2002, and are making it possible, in the short term, to gain a better understanding of psychosocial adjustment in children. In the

medium and long terms, they will likely be in large part responsible for the establishment of early detection programs, better designed prevention programs, and more effective interventions for such an important clientele - all of Québec's children.

mult Jett.

Mireille Jetté Project Coordinator Santé Québec Division, ISQ

It suffices to consider the costs engendered by behavioural problems in children - school dropout, delinquency, alcoholism, drug addiction, family violence, mental disorders and suicide - to conclude that they largely surpass what a modern society can accept, morally and economically. Faced with the enormity of these problems, the first reflex is to provide services to these people which will, ideally, make the problems disappear, or at the very least, lessen their severity. For many years we have tried to offer quality services to children and adults who suffer from antisocial disorders, alcoholism, drug addiction, depression, and physical or sexual abuse. However, in spite of enormous investment, these curative services are far from being able to respond to the demand.

Although the idea of early intervention as a preventive measure can be traced at least as far back as ancient Greece, the second half of the 20th century will certainly be recognized as the dawn of the field of social maladjustment prevention (Coie et al., 1993; Mrazek & Haggerty, 1994). Numerous programs have been developed for adolescents and teenagers to prevent school dropout, delinquency, drug addiction and suicide. Scientific evaluations of these programs have been far too few in number, but they tend to demonstrate that it is extremely difficult to help those most at risk in this age group (Rosenbaum & Hanson, 1998; Rutter, Giller & Hagell, 1998; Tremblay & Craig, 1995). It is becoming increasingly clear that the factors which lead to serious adaptation problems are in place long before adolescence. Hence the idea that the prevention of social adaptation problems should start at least during childhood, and preferably right from pregnancy (Olds et al., 1998; Tremblay, LeMarguand & Vitaro, 1999). These principles are clearly outlined in the objectives of the Politique de la santé et du bien-étre (Policy on Health and Well-Being) and les Priorités nationales de santé publique (Priorities for Public Health) set by the government of Québec (ministère de la Santé et des Services sociaux, 1992; 1997).

The Need to Understand Early Childhood Development

If the field of maladjustment prevention appeared at the end of the 20th century, it has certainly come on the heels of child development. "Émile," by Jean-Jacques Rousseau, needs to be re-read in light of recent studies to realize just to what degree it is impossible to understand the complexity of child development, and therefore the means of preventing deviant paths, simply by reflection or introspection. Although considerable knowledge has been acquired in the neurological, motor, cognitive, affective and social development of children, what really hits home is that Jean-Jacques Rousseau and his followers in education seemed to have had more certainty about the ways of educating children than we do today.

Progress in child development research has made us realize that things are not as simple as we can or would like to imagine. We have obviously all been children, and most of us have become parents, indeed, relatively well-adjusted ones. But we still do not clearly understand when, how and why adjustment problems appear, and above all, how to prevent and correct them.

Our ignorance is obvious when we examine the debates among specialists on the role of parents in the development of maladjustment problems in children. Some suggest that social maladjustment in children is largely determined by genetic factors (Bock & Goode, 1996; Rowe, 1994). Some accentuate economic factors (Duncan & Brooks-Gunn, 1997). Other researchers attribute a determining role to peer influence (Harris, 1998; Harris, 1995; Vitaro *et al.*, 1997). These larger questions lead to narrower ones which focus on particular aspects - the role of fathers in childhood maladjustment, the impact of alcohol and cigarette consumption during pregnancy, the effect of prenatal and birthing problems, the importance of breast feeding and diet; the role of sleep, cognitive development, temperament, and so on.

The majority of these questions are at the heart of the daily concerns of parents, grandparents, educators, family service providers, and legislators. What can we do to maximize the development of our children, to prevent severe psychosocial maladjustment? What should we do when problems begin to appear, when pregnant mothers, or fathers themselves have a long history of disorders? The answers to these questions obviously have an effect on the policies put forth by Québec government Ministries such as *ministères de la Famille et de l'Enfance* (Family and Child Welfare), *de l'Éducation* (Education), *de la Santé et des Services sociaux, de la Solidarité sociale* (Social Solidarity - formerly Income Security (Welfare)), *de la Sécurité publique* (Public Security), *de la Justice* (Justice), and *le ministère de la Recherche, Science et Technologie* (Research, Science and Technology).

The Contribution of ELDEQ 1998-2002

The Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) was conceived in order to contribute to our knowledge of the development of children in their first 5 years of life. The main goal is to gain a better understanding of the factors, in the years of rapid growth, which lead to success or failure upon entry into the school system. The goal of the second phase (if approved) is to better understand development in elementary school, in light of development in early childhood.

We know that this survey cannot be a definitive one on child development in Québec, but it is the first representative study of a provincial cohort of children who will be measured annually from birth to entry into the school system. It specifically aims at understanding the development of basic skills needed for educational success.

Although the effort to set up this study began in 1989, the first data collection coincided with the Québec government's implementation of its *Politique Familiale* (Policy on Families). The policy has virtually the same objectives as our study:

"These services for children 5 years and under should give all Québec children, whatever the socioeconomic status of their parents, the chance to acquire and develop the skills that will allow them to succeed in school (1997, p. 10)."

On March 3 1999, in the speech opening the 36th session of the Québec legislature, Premier Lucien Bouchard confirmed that early childhood development was a priority for the government.

"The theme that will dominate our actions this year, next year, and throughout our mandate, is youth... The priority...with regards to youth in Québec, begins with the family and childhood... This massive investment in early childhood... will give our children the best chance of success in the short, medium and long terms. It is our best asset against alienation and despair. It is our best preparation for personal, social and economic success."

Because of this historic coincidence, ÉLDEQ has the potential of becoming an invaluable tool for monitoring the effects of Québec's massive investment in early childhood which began in 1997. Thanks to the data collected by the federal government's National Longitudinal Study of Children and Youth (NLSCY, Canada), we will be able to compare child development in Québec with that elsewhere in Canada, before and after the implementation of Québec's new policy on the family.

However, our initial objectives are more modest. The 12 or 13 papers in this series present the results of our first annual data collection. They describe the characteristics of the families and children when the latter were 5 months old.³ They cover sociodemographic characteristics, nature of the birthing process, health and social adaptation of the parents, family and couple relations, parent-infant relations, and characteristics of the 5-month-old, such as sleep, diet, oral hygiene, temperament, and motor, cognitive and social development. These data will eventually be compared to those on children the same age collected by the NLSCY in 1994 and 1996.

An Interdisciplinary, Multi-University Team of Researchers

This study saw the light of day because of the collaboration of many people. In the preceding pages, Mireille Jetté thanked a number of them. I would like to take advantage of this introduction to emphasize that the survey was set up and continues forward because of the dedication and hard work of a group of researchers from a variety of disciplines and

^{3.} To simplify the text in this report, the phrase "5-month-old infants" will be used to refer to infants whose <u>mean age</u> was 5 months during data collection in 1998. In section 3.1.3 (Volume 1, Number 1), we explain why the infants were not all exactly the same age. As indicated in no. 2 of this series, 52% of the infants were less than 5 months, and 3.4% were 6 months of age or over.

universities. I would particularly like to thank Michel Boivin, School of Psychology at Laval University, and Mark Zoccolillo. Department of Psychiatry at McGill University, who have been actively involved in this project since 1992. It was in that year that we prepared out first grant application for the Social Sciences and Humanities Research Council of Canada. A second group of researchers joined the team in 1993 and 1994: Ronald G. Barr, pediatrician, Montréal Children's Hospital Research Institute, McGill University; Lise Dubois, dietitian and sociologist, Laval University; Nicole Marcil-Gratton, demographer. University of Montréal and Daniel Pérusse. anthropologist, University of Montréal. Jacques Montplaisir, Department of Psychiatry, University of Montréal, joined the team in 1995. Louise Séguin, Department of Social and Preventive Medicine, University of Montréal and Ginette Veilleux, Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre (Public Health Department, Montréal-Centre Regional Health Board), joined in 1998. Three post-doctoral researchers have also made an important contribution. Raymond Baillargeon developed the task for measuring cognitive development. Christa Japel is the assistant to the scientific director for planning, analysis and presentation of the results. Heather Juby collaborates in the analysis of the data on couple and family history.

A Unique Confluence of Circumstances

A study such as this requires the coordination of many researchers over many years, enormous financial resources, and a long period of preparation. Though in the early 1990s the research team was convinced of the need for the survey, those responsible for the public purse had also to be convinced. We must therefore acknowledge the happy confluence of circumstances that allowed the players to take advantage of the opportunity at hand. When a number of civil servants in the ministère de la Santé et des Services sociaux understood the essential role of prevention, the creation of a committee on children and youth in 1991 led to an increased awareness of the importance of early childhood. At the same time, the president of the CORS, Marc Renaud, had come to the same realization with his colleagues in the Population Health Program at the Canadian Institute for Advanced Research (CIAR). Aline Émond, the Director of Santé Québec, was ready to apply her formidable determination to work for the cause. For their part, Health Minister Jean Rochon and his Assistant Deputy Minister for

Public Health, Christine Colin, aware of the importance and benefit of longitudinal studies on early childhood development, authorized the investment of large sums of money during a period of draconian budget cuts. This occurred at the same time as the federal government decided to create its own longitudinal study of children and youth (NLSCY). It is in this context that ÉLDEQ 1998-2002 materialized. Our survey also came to fruition because Mireille Jetté did everything in her power to make the researchers' dreams a reality, and Daniel Tremblay gave her all the support she needed by making various resources available for the project.

Richard E. Tremblay, Ph.D., M.S.R.C. Chair of Child Development University of Montréal
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This analytical paper is one of a series presenting crosssectional data collected on a large sample of 5-month-old infants surveyed in 1998. It reports on the first of 5 annual data collections on 2,120 children in Québec who will be studied until they are 5 years old. In the first year of data collection, the results on 2.223 infants were retained.⁴

The target population of the survey is Québec babies, singleton births only,⁵ who were 59 or 60 weeks of gestational age⁶ at the beginning of each data collection period, born to mothers residing in Québec, excluding those living in the Northern Québec. Cree, and Inuit regions, and on Indian reserves, and those for whom the duration of pregnancy was unknown. Due to variations in the duration of pregnancy and the 4 or 5 weeks allotted for each data collection wave, the infants were not all exactly the same age (gestational or chronological) at the time of the survey. Therefore, the children in Year 1 (1998) of the survey had a mean gestational age of 61 weeks - about 5 chronological months.

The survey had a stratified, three-stage sampling design, with a mean design effect for the proportions estimated at 1.3. To infer the sample data to the target population, each respondent was given a weight corresponding to the number of people he/she "represented" in the population. ÉLDEQ 1998 comprised eight main collection instruments which obtained data from the person who was closest to the baby (called the Person Most Knowledgeable - PMK), the spouse (married or common-law), the infant and the absent biological parent, if applicable. Given variation in the response rates to each instrument, three series of weights had to be calculated to ensure inferences to the population were accurate. Except for the Self-Administered Questionnaire for the Absent Father (SAQFABS) and a series of

questions in the Computerized Questionnaire Completed by the Interviewer (CQCI) on absent fathers - the overall or partial response rates of which were too high - the results of all the instruments could be weighted. Therefore, the data presented here have all weighted to reduce the biases.

All data that had coefficients of variation (CV) 15% or higher are shown with one or two asterisks to clearly indicate the variability of the estimate concerned. In addition, if the partial nonresponse rate was higher then 5%, there is a note specifying for which sub-group of the population the estimate is less accurate.

Similar to any cross-sectional population study, the Year 1 part (5-month-old infants) of ELDEQ 1998-2002 has certain limits. However, the vast majority of the results are valid and accurate, and provide a particularly detailed portrait, for the first time, of 5-month-old infants in Québec.

Note to the reader: For more details on the methods, see Volume 1, Number 1 in the present series. Detailed information on the sources and justification of the instruments used in Year 1 of ÉLDEQ 1998-2002, and the design of the scales and indices used in this paper, are covered in Number 12, entitled "Concepts, Definitions and Operational Aspects."

^{4.} Though the results for 2,223 children were retained for the first year of data collection, 2,120 will be retained for the rest of the longitudinal study; the extra 103 were part of an over-sample used to measure the effects of the January 1998 ice storm.

^{5.} Twins (twins births) and other multiple births were not targeted by the survey.

Gestational age is defined as the sum of the duration of gestation (pregnancy) and the age of the baby.

Parents' Health and Social Adjustment

Part I Lifestyle Habits and Health Status



The lifestyle habits of the parents and their physical and psychological well-being play a crucial role in child development, particularly in early childhood. For example, excessive consumption of alcohol, the psychotropic substance most consumed by the Québec population (Guyon *et al.*, 1995), affects the parents' capacity to appropriately respond to the needs of their children (Harmer *et al.*, 1999; Pihl *et al.*, 1998). Parental alcoholism puts the children at risk not only of abuse and negligence (Kotch *et al.*, 1999), but also of developing behavior problems such as attention deficit, conduct or anxiety disorder (Kuperman *et al.*, 1999). In Québec, alcohol appears to be associated with 30% of cases of violence towards children, while it is estimated that 50% of the victims of incest come from families affected by alcoholism (MSSS, 1992).

Tobacco smoke in the environment is toxic and can provoke respiratory problems in adults such as asthma (Greer *et al.*, 1993). Passive exposure to cigarette smoke seems to have an even stronger effect on growing children. A number of studies have shown that tobacco smoke in the environment is associated with a higher incidence of respiratory infection, asthma and otitis media in young children (Ilicali *et al.*, 1999; Lister & Jorm, 1998). Furthermore, maternal smoking during pregnancy can increase the risk of behavioural problems in children (Fergusson *et al.*, 1993; Wakschlag *et al.*, 1997).

The psychological well-being of the parents can also be an important risk or protective factor in the psychosocial adjustment of children. Depressed parents, for example, are usually withdrawn, fatigued, defeatist and pessimistic about the future. This can render them less available to respond to the needs of other members of their family. Maternal depression can compromise interaction with the infant and his social and affective functioning (Murray & Cooper, 1997; Weinberg & Tronick, 1998). Moreover, symptoms of depression in the mother are associated with a higher probability that a child will present problems with respect to attachment, behaviour, cognitive and affective development (Cicchetti *et al.*, 1997; Kaplan *et al.*, 1999; Kochanska *et al.*, 1997). However, the influence of paternal depression on the psychosocial adjustment of children remains unclear (Marchand & Hock, 1998; Shiner & Marmorstein, 1998).

The first part of this paper presents a profile of the lifestyle habits, general health status and psychological well-being of the infants' parents. These are examined in relation to various sociodemographic characteristics using chi-square tests. The social adjustment of the parents is the focus of the second part of this paper.

In Year 1 of the Étude longitudinale du développement des enfants du Québec, the person closest to the infant (Person Most Knowledgeable - PMK) responded to the Computerized Questionnaire Completed by the Interviewer (CQCI), part of which was entitled the Adult Health section. This section. targeting both the PMK and her spouse/partner if applicable. contained questions on the general health status of the parent(s) and lifestyle habits such as smoking and alcohol consumption. Questions on psychological well-being were also presented to the PMK, who in virtually all cases (99.7%) was the biological mother of the infant. Information was available on 2.221 mothers and 2,018 fathers/spouses present in the household.⁷ Data on symptoms of depression in the father were gathered from 1,855 fathers or spouses living in the household⁸ who responded to the Well-Being of the Father section in the Self-Administered Questionnaire for the Father (SAQF).9

2.1 Smoking Habits

When parents were asked about their current smoking habits, nearly one in four mothers (24%) stated that they smoked daily, and approximately 4% reported smoking occasionally (see Figure 2.1). Among mothers indicating they smoked daily, about a third reported smoking 10 cigarettes or less a day. More than 4 in 10 (45%) indicated smoking between 11 and 20 cigarettes a day, and 19% reported smoking more than 20 cigarettes a day (data not shown).

2. Lifestyle Habits of the Parents

Figure 2.1





Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

According to the what the PMKs or fathers themselves reported, 3 in 10 fathers smoked every day, whereas 4% smoked only occasionally. As to the quantity of cigarettes smoked by the fathers who reported smoking every day, one in five smoked at least 10 a day. Approximately 40% of fathers smoked between 11 and 20 cigarettes a day, and almost the same percentage (39%) more than 20 cigarettes a day (data not shown).

2.2 Alcohol Consumption

Analysis of the data on parental alcohol consumption revealed that the majority had consumed some in the 12 months preceding the survey. As shown in Figure 2.2, approximately 7 in 10 mothers (72%) and nearly 9 in 10 fathers (88%) had consumed alcohol at one time or another during this period.¹⁰

In most cases, the PMK responded to questions on the father/spouse. One in six fathers, however, responded themselves to the guestions concerning them.

^{8. 99.3%} of these respondents were the biological fathers of the infants.

⁹ These same questions were addressed to biological fathers not living in the household (Self-Administered Questionnaire for the Father Absent - SAQFABS) Given the low percentage of these questionnaires that were returned (less than 50%), the data were not weighted and are not presented here (for more details, see Numbers 1 and 2 in this series of analytical papers).

^{10.} Data on alcohol consumption among the infants' mothers concern the 12 months preceding the survey. They do not indicate, however, if the mothers had consumed any during their pregnancy. Data on lifestyle habits during the pregnancy are presented in Part II of this paper and in No. 3 in this series

Figure 2.2 Alcohol Consumption in Mothers and Fathers in the 12 Months Preceding the Survey, 1998



Source. Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Though it is generally recognized that moderate consumption of alcohol can have beneficial effects on cardiovascular health (Sacco *et al.*, 1999), alcohol abuse is a problem behaviour that affects not only the health of the consumer but also the well-being of his family.

Excessive alcohol consumption is often defined by the number of drinks consumed per week. However, researchers are not in agreement as to the definition of alcohol abuse, a classification which according to various studies, can vary from 10 to 12 to at least 28 drinks a week (see Pihl *et al.*, 1998). The frequency with which an individual consumes five or more glasses on the same occasion seems to be a more reliable measure of ascertaining the presence or absence of an alcohol problem (Conrod *et al.*, 1997).

Information on the frequency of alcohol consumption was obtained from responses to the following questions.

- "During the past 12 months, how often did you drink alcoholic beverages?"
- "How many times in the past 12 months have you had 5 or more drinks on one occasion?"

The responses of the parents to the first question are presented in Figures 2.3 and 2.4. Among mothers who consumed, nearly 8 in 10 (78%) indicated having consumed alcohol less than once a week in the 12 months preceding the survey, whereas less than 2% reported having done so 4 to 7 times a week.

Figure 2.3

Frequency of Alcohol Consumption (%) in Mothers in the 12 Months Preceding the Survey, 1998³



- 1. In mothers who had drunk alcohol.
- Coefficient of variation (CV) between 15% and 25%; interpret with caution

Source: Institut de la statistique du Quebec, ÉLDEQ 1998-2002.

Among fathers who had consumed alcohol in the 12 months preceding the survey, a little more than 4 in 10 (43%) had done so less than once a week. Slightly more than 1 in 20 (6%) had consumed alcohol 4 to 6 times a week, while a somewhat smaller proportion (4%) had done so every day (Figure 2.4).

Figure 2.4





1. In fathers who had drunk alcohol

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Responses of the parents to the second question indicated that the majority of the infants' mothers (85%) had never consumed 5 drinks or more on the same occasion in the 12 months preceding the survey. In contrast, one in two fathers (50%) had had 5 drinks or more on the same occasion at least once in the same period (data not shown). These data suggest that approximately three times more fathers than mothers had consumed excessive amounts of alcohol in the year preceding the survey. They also confirm that excessive alcohol consumption is significantly more frequent in men than in women (Guyon *et al.*, 1995; Santé Canada - Health Canada, 1999), even among parents of infants.

2.3 Lifestyle Habits and Parental Characteristics

The lifestyle habits of parents were not independent of some of their individual characteristics or those of their family environment. Smoking daily at the time of the survey, alcohol consumption in the 12 months preceding the survey and the consumption of five or more drinks on the same occasion at least once in the year preceding the survey are shown in Table 2.1 as they relate to certain parental and family characteristics.

Tableau 2.1

Daily Smoki	ng and Alcohol C	consumption in Mothers a	nd Fathers, by	Certain Sociodemo	praphic Characteristics, 1998
--------------------	------------------	--------------------------	----------------	-------------------	-------------------------------

	Daily sm	Daily smoking ¹		Alcohol consumption ²		tion of 5 or ses on ccasion ²
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
				%		
Age group ³	``		```		``	
Under 20 yrs of age	51.91	· · ·	63.4	l	23.9**	
20-24 yrs	35.8	43.3	74.8	87.0	24.9	64.8
25-29 yrs	20.2	31.6	70.6	90.6	12.9	54.8
30-34 yrs	20.9	26.0	74.2	88.2	11.3	48.8
35-39 yrs	17.9*	27.3	67.8	86.5	11,2*	40.3
40 yrs or +	21.9**	31.3	64.0	84.1	7.5**	40.0
Educational level	•	•		*		
No high school diploma	47.4	50.3	59.8	83.1	17.8	51.3
High school diploma	28.2	32.8	69.8	87.9	14.4	51.8
Vocational/technical diploma	24.4	32.8	76.3	85.9	16.5*	51.6
College (junior) diploma	14.2*	19.5	76.9	93.2	16.2	49.0
University degree	7.6*	11.2	79.4	90.6	11.8	43.5
Type of family						
Intact two-parent	20.5	27.0	72.6'	88.2	13.8	49.3
Step	43.7	48.6	77.3	86.9	18.8	47.9
Single-parent	35.6		60.2		18.3*	
Low-income household ⁴						
Yes	32.8	43.2	55.2	73.8	13.4	39.8
No	21.1	26.3	78.6	92.6	15.6	53.0
Total						
n	2,221	2,018	2,221	2,018	2,220	2,009
%	24.3	29.7	71.9	88.0	14.8	49.2

Note : [†] indicates p < 0.05.

1. At the time of the survey.

2. In the 12 months preceding the survey.

3. Fathers under 25 years of age were grouped into one category because of small numbers.

4. According to the low-income cut-offs set by Statistics Canada for the reference year 1997 (based on 1992) (see No. 2 in this series of papers).

* Coefficient of variation (CV) between 15% and 25%; interpret with caution.

* Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

As Table 2.1 shows, more than half of mothers under 20 years of age (52%) smoked daily, and daily smoking decreased with age. In mothers 25 years of age and over, approximately one in five smoked daily. Compared to fathers 25 years of age and over, those under 25 showed a relatively high percentage of daily smokers (43% vs. 32% or less). In terms of education, the ÉLDEQ 1998 data revealed that approximately half of fathers and mothers with no high school diploma smoked daily, whereas this was the case for only 8% of mothers and 11% of fathers with a university degree. Smoking also varied with the type of family. While only 21% of mothers in intact two-parent families reported smoking daily, the percentage of mothers doing so increased to 44% in stepfamilies and 36% in single-parent families.¹¹ Similarly, smoking daily was significantly more frequent among fathers in stepfamilies (49%) than among those in intact twoparent families (27%).¹² Finally, mothers and fathers in households below the low-income cut-off were significantly more likely to smoke daily than those in households with an income considered sufficient (Table 2.1).

The percentage of parents who had consumed alcohol in the 12 months preceding the survey did not significantly vary with age group. However, more educated mothers and fathers were more likely to have consumed alcohol in this period than less educated ones. As to type of family, the consumption of alcohol seemed more frequent among mothers in intact two-parent families (73%) or stepfamilies (77%) than among those in single-parent families (60%). Alcohol consumption in fathers, however, did not vary with the type of family (intact or step). Nonetheless, the proportion of mothers and fathers having consumed alcohol in the previous 12 months was higher in households with sufficient income than in those below the low-income cut-off.

As shown in Table 2.1, excessive consumption of alcohol (five drinks or more) at least once in the 12 months preceding the survey was more frequent in younger mothers and fathers than in older ones. Approximately one in four mothers under 25 years of age indicated having consumed five or more drinks on one occasion at least once compared to 13% or less in other

mothers. In fathers, a little less than two-thirds (65%) of those under 25 years of age had consumed this quantity of alcohol in a single session, whereas this was the case for 55% or less in older fathers. Although this behaviour seemed less frequent at the upper end of the age scale, it should be noted that the percentage of fathers 40 years of age and over having drunk five drinks or more on the same occasion was still high (40%).

The proportion of mothers and fathers having consumed five drinks or more on the same occasion did not vary with educational level or type of family. However, household income was associated with excessive alcohol consumption, but only in the fathers. The proportion of fathers having drunk five drinks on one or more occasions was relatively higher in low-income households (53% vs. 40%).

Although the percentages differed, the 1998 ÉLDEQ results confirm certain trends reported in the recent Statistical Report on the Health of Canadians (*Santé Canada*, 1999). For example, men most likely to smoke daily were those under 25 years of age and those with no high school diploma. Young mothers and those without a high school diploma also constitute groups at high risk of smoking daily. Consumption of alcohol was more frequent among men and parents with more education or in households above the low-income cut-off. In contrast, mothers and fathers under 25 years of age and fathers in low-income households were more likely to consume excessive quantities of alcohol on the same occasion.

^{11.} However, the difference between stepfamilies and single-parent families was not significant at the threshold of 0.05.

Given the small number of respondent biological fathers who were single parents, only fathers living in two-parent families were included in the analysis.

The physical well-being of the parents was assessed with one question in the Adult Health section of the Paper Questionnaire Completed by the Interviewer (PQCI). The results presented in Figure 3.1 reveal that the majority of mothers (77%) and fathers (80%) considered themselves to be in excellent or very good health. Only a small percentage of parents, approximately 3%, assessed their health as fair or poor. Although the differences were minimal, the fathers presented, on the whole, a more favourable health profile than the mothers (p < 0.001; Figure 3.1). The health status perceived by both parents, however, was strongly associated. Compared to other mothers, those who reported being in excellent or very good health were significantly more likely to be living with a spouse/partner also presenting an optimum health profile (85% vs. 63%, p < 0.001; data not shown).

Figure 3.1

Distribution of Mothers and Fathers by Perceivend Health Status, 1998



 Coefficient of variation (CV) between 15% and 25%; interpret with caution.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Perceived health status was associated with a number of parental characteristics or the family environment. As shown in Table 4.1, only 62% of teenage mothers considered their health status to be excellent or very good, whereas this was the case for 80% of mothers 30 to 34 years of age. However, this percentage decreased to 68% among mothers 40 years of age and over. In contrast, a significantly higher proportion of fathers

under 25 years of age (84%), than those 40 and over (67%) presented an excellent or very good general health status.

Similar to certain results presented in the Statistical Report on the Health of Canadians (*Santé Canada*, 1999), the ÉLDEQ 1998 data suggest that the perception of health status tended to be less favourable in older individuals. This ÉLDEQ result may in part be related to the fact that older mothers and fathers have, on average, a bigger family workload which translates into more fatigue. For example, more than half of mothers between 20 and 24 years of age (59%) were raising only one child, whereas conversely, approximately half (52%) of mothers 40 years of age and over were raising at least three children.¹⁰

It is noteworthy that the percentage of parents who reported having an excellent or very good health status varied with educational level. Among those with no high school diploma, 60% of mothers and 71% of fathers said they were in excellent or very good health, whereas this was the case for 89% of mothers and 86% of fathers who had a university degree. Furthermore, mothers in intact two-parent families (78%) were more likely than single-parent mothers (65%) to have reported being in excellent or very good health. With respect to household income, fewer mothers (64%) and fathers (72%) in households below the low-income cut-off described their health as excellent or very good compared to mothers and fathers (82%) in households with sufficient income (Table 4.1).

ÉLDEQ 1998 also examined long-term health problems in the parents such as migraine, back pain, hypertension and heart disease.¹⁴ These are important problems because they can affect the quality of life of both parents and children, and indirectly, family relationships. Moreover, children of parents with certain chronic health problems such as allergies or asthma are

^{13.} Given the small numbers, the percentage for mothers 40 years of age or over should be interpreted with caution.

^{14.} In ELDEQ, a long-term health problem was defined as one diagnosed by a health professional which had persisted for 6 months or more and would likely continue for another 6 months or more.

more likely to suffer from these themselves in the course of their lives (Borish, 1999; Busse, 1999). According to the 1998 ÉLDEQ data, four in ten mothers and a little more than one in three fathers (34%) were suffering from a chronic health problem. In mothers, the three most frequent problems reported, were allergies (other than food) (19%), asthma or backache (*ex aequo*, 8%) and migraine (7%). In fathers, allergies (other than food) were also predominant (14%), followed by backache (9%) and asthma (5%). As could be expected, parents reporting a chronic health problem were less likely to describe their health as excellent or very good. Nearly two-thirds of mothers and fathers presenting a long-term health problem reported they were in good or excellent health compared to 84% of mothers and 87% of fathers not indicating such a condition. Depression is characterized by a persistent feeling of sadness often accompanied by feelings of helplessness, irritability and despair. A significant proportion of psychiatric hospitalizations and suicides are related to depression (*Santé Canada*, 1994). In Canada in 1996-1997, 8% of the female population 12 years of age and over and 5% of men in this same age group met sufficient criteria to be diagnosed as suffering from depression (*Santé Canada*, 1999).

ELDEQ 1998 collected data on the mental health of the parents, mainly with regards to symptoms of depression. The 12 questions on this topic addressed to the mother were in the Computerized Questionnaire Completed by the Interviewer (CQCI), whereas fathers were asked to respond to these questions in the Self-Administered Questionnaire for the Father (SAQF).

These questions comprised an abridged version of the Depression Scale (CES-D) of the Center for Epidemiological Studies of the National Institute of Mental Health in the U.S. The scale, also used in the National Longitudinal Study of Children and Youth (NLSCY, Canada), was developed to measure the frequency of symptoms of depression in the general population. More specifically, it measured the presence and severity of symptoms associated with depression in the week preceding the survey.

Figure 4.1 presents the distribution of mothers and fathers according to the degree of depression they indicated experiencing in the week preceding the survey. As this Figure illustrates, both distributions are strongly skewed to the left, suggesting that the majority of parents of infants tended to experience few depressive symptoms.

The depression scale used in ÉLDEQ 1998 was not a screening test for clinical depression. However, it is possible to identify parents likely to meet the diagnostic criteria for a depressive disorder by selecting those who reported an elevated number of symptoms. In the following analysis, parents above the

90th percentile on the depression scale¹⁵ were compared to other parents in order to examine if both groups differed with respect to certain characteristics.







Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Table 4.1 shows that the degree of depression did not significantly vary with the age of the parents. The percentage of mothers on the high end of the depression scale was, however, inversely associated with the educational level attained. Mothers with no high school diploma were three times more likely (18%) than those with a university degree (6%) to report a high number of symptoms of depression.

^{15.} Landy & Tam (1996) considered a result of 13 or higher in this abridged version of the CES-D as an indicator of the presence of moderate to severe depression. In ELDEQ 1998, approximately 10% of mothers and 4% of fathers obtained a score equal to or higher than 13 on the scale. Since the low percentage observed in the fathers did not permit further examination of potential associations with the characteristics retained, it was decided to include mothers and fathers above the 90th percentile in this analysis.

Unaracteristics, 1998					
	Perceived he or ver	Perceived health excellent or very good		of symptoms ression ¹	
	Mothers	Fathers	Mothers	Fathers	
		%			
Agegroup ²	· · · · · · · · · · · · · · · · · · ·			`	
Under 20 yrs of age	62.41		19.2**	ļ	
20-24 vrs	73.9 🖌	83.8	14.3	15.5	
25-29 yrs	78.8	81.3	10.8	9.4	
30-34 yrs	79.8	82.7	9.1	11.6	
35-39 yrs	72.7	77.2	10.1*	11.8*	
40 yrs or +	68.2	66.6	18.1**	16.8*	
Educational level					
No high school diploma	60 2 [†]	71.2 [†]	17.7	12.5*	
High school diploma	75.9	79.2	11.9	12.8	
Vocational/technical dinloma	72.8	74.8	12.5*	11.9*	
College (junior) diploma	81.8	86.1	9.6*	13.0*	
University degree	89.1	85.9	6.2*	9.1*	
Type of family					
Intact two-parent	78 3 [†]	80.3	97 ^t	11 7	
Sten	74.3	76.3	11 1*	13.5*	
Single-parent	65.2		24.8		
Low-income household ³					
Yes	64 2 [†]	72 0 [†]	19 N ^T	18.7^{1}	
No	82.0	82.1	8.4	10.0	
Total					
n	2,221	2,018	2,216	1.848	
%	76.7	79.8	11.3	11.9	

Tableau 4.1 Perceived Health Status and Symptoms of Depression in Mothers and Fathers, by Certain Sociodemographic Characteristics 1998

Note : [†] indicates p < 0.05.

1. For a definition of the criterion used, see previous page.

2 Due to small numbers, fathers under 25 years of age were grouped into a single category.

3 According to the low-income cut-offs set by Statistics Canada for the reference year 1997 (based on 1992) (see No. 2 in this series of papers).

Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Single-parent mothers and those in families with an insufficient income were also more inclined to report an elevated level of depressive symptoms. In two-parent families, approximately one in ten mothers declared experiencing psychological distress; however, this was the case for one in four mothers in single-parent families. As illustrated in Table 4.1, compared to other mothers, those in low-income households were twice as likely to report a high number of symptoms of depression (19% vs. 8%).

The level of symptoms of depression reported by the mother was associated with that reported by the father. More than a quarter (27%) of mothers with strong tendencies towards depression were living with a spouse/partner who also declared a high level of psychological distress, whereas this was the case for only 10% of non-depressed mothers (p < 0.001; data not shown). As shown in Table 4.1, few factors were associated with a high number of symptoms in the fathers. The percentage of fathers at the high end of the depression scale did not vary with

their age, educational level or type of family. However, nearly twice as many fathers in households with insufficient income reported a high number of symptoms of depression compared to those in households above the low-income cut-off (19% vs. 10%).

Symptoms of depression observed in the parents were associated with other aspects of the infant's environment such as family functioning. Indeed, 30% of depressed mothers were in families described as dysfunctional¹⁶ in terms of family relationships, compared to 4% of mothers with few symptoms of depression (p < 0.001; data not shown). Fathers who reported a high level of depression were also more likely to live in a dysfunctional family than those who had few symptoms of depression (13% vs. 4%; p < 0.001; data not shown). Finally, depressed mothers were more inclined to smoke daily compared to non-depressed ones (31% vs. 24%; p < 0.05; data not shown), though this was not the case for the fathers.

^{16.} Family functioning was established by using a scale administered to the PMK which contained 12 questions. According to the clinical threshold of family functioning set by researchers at the Chedoke-McMaster Hospital in Hamilton, Ontario (Cadman *et al.*, 1991), families obtaining a score equal to or higher than 15 on this scale can be considered as dysfunctional.

Data from the first year of ÉLDEQ 1998-2002 provide a portrait of the lifestyle habits and physical and psychological well-being of the parents of Québec infants who were 5 months of age in 1998. These data revealed that the majority of parents considered themselves to be in excellent or very good health. Approximately one third of the fathers and a quarter of the mothers were smoking cigarettes daily at the time of the survey, and the majority had consumed alcohol, to varying degrees, during the 12 months preceding the survey. In terms of their psychological well-being, the majority of parents seemed to experience few symptoms of depression.

Several factors increased the risk of a parent being in poor physical or psychological health or consuming more alcohol or tobacco products. For example, younger parents, those with less education or low household income, and single mothers were particularly at risk of being in poorer health or smoking daily. Younger parents and fathers in low-income households were more likely to consume excessive quantities of alcohol. With respect to the parents' psychological well-being, a tendency towards depression was more often observed in less educated mothers, single parent mothers and parents in low-income households.

The mental health of the parents is known to be associated with the developmental trajectory of children. Depression in the parent, for example, can significantly increase the risk of a child presenting internalizing and externalizing disorders (Bergeron et al., 1997; Offord et al., 1989). Moreover, other studies have revealed a higher prevalence of depression in single-parent families and socioeconomically disadvantaged circumstances (Beaudet, 1996; Santé Canada, 1999). Just like parental depression, poverty and single-parenthood are also risk factors associated with affective and behavioural adjustment in children (Lipman et al., 1996; Offord & Lipman, 1996). The links between socioeconomic status, type of family, parental psychological well-being and the adjustment of children seem therefore The influence of parental socioeconomic complex. characteristics on child adjustment is probably indirect and mediated mostly by the parents' psychological stress, their mental health, the couple's relationship and the parent/child relationship (Jensen et al., 1990; Offord, 1990). For example,

living in a father-absent household, a family situation strongly associated with low-income and stress in the single parent (Santé Canada, 1999), may increase the likelihood that problems in the parent/child relationship exist and consequently be associated with the onset of adjustment problems in the child. Although, household income and type of family are often related. they appear, however, to have differential effects on the adjustment of the child. In accounting for these two risk factors, Pagani et al. (1997) showed that poverty may be more strongly associated with educational achievement in the child, whereas the type of family may be a better predictor of behavioural adjustment in the child. Moreover, poverty and the type of family are not independent of certain parental characteristics present before the birth of the child. The social adjustment of the parents in adolescence, for example, a subject of the second part of this paper, may be an important precursor of their future financial and family situation.

The longitudinal data of ÉLDEQ 1998-2002 will help identify how these multiple risk factors interact and influence child development. Furthermore, they will also provide a means of examining which characteristics of the child or his environment can protect against psychosocial maladjustment in a family context likely to compromise his development.

Parents' Health and Social Adjustment

Part II Social Adjustment



One of the major goals of the Étude longitudinale du développement des enfants du Québec (ÉLDEQ) (Quebec Longitudinal Study of Child Development in Québec) is to examine risk factors for the development of behavior problems from early infancy to school-entry and beyond. Another major and related goal is to examine risk and protective factors for school readiness.

Examining risk factors for the development of behavior problems. in children is complicated by two factors. First, children who develop antisocial behaviors are at greatly increased risk for a number of poor adult outcomes. These include alcohol and drug use disorders, adolescent pregnancy, and dropping out of high school (Cassidy et al., 1996; Robins, 1966; Robins & Price, 1991; Serbin et al., 1991; Woodward & Fergusson, 1999; Zoccolillo et al., 1992; Zoccolillo & Rogers, 1991). However, these poor adult outcomes are themselves risk factors for behavior or other problems in their own children. Second, transmission from biologic parent to child can occur through genes, family environment, or a combination of the two (Cadoret et al., 1995; Langbehn et al., 1998; Rutter et al., 1990; Silberg et al., 1996). Understanding familial resemblance for a behavior problem (for example, delinquency seen in the son of a father with a criminal record in a family living in poverty) requires a design that can tease apart genetic and environmental contributions.

To better determine risk factors for behavior problems in children it is therefore critical to have measures of the parents' own history of antisocial behavior, for two reasons. First, such a measure can be used to control for genetic transmission. For example, children born to teen mothers are more likely to exhibit antisocial behavior (Coley & Chase-Lansdale, 1998), but conduct problems in childhood are a risk factor for becoming a teen mother. Moreover, teen mothers have much higher rates of conduct problems than expected (Cassidy *et al.*, 1996; Serbin *et al.*, 1991; Woodward & Fergusson, 1999). However, not all teen mothers have a history of conduct problems. Examining if the children of teen mothers (and fathers) without a history of conduct problems, who are presumably at a lower genetic risk than children of teen parents who also have conduct problems, have increased behavior problems may help to tease apart genetic and environmental contributions. To do so, it is critical to have measures of antisocial behavior in both parents and a sizable sample of antisocial and non-antisocial teen mothers and adult mothers for comparisons.

Second, very little is known about the family environment of infants of parents with a history of behavior problems. The few studies addressing this issue have been longitudinal studies examining the parenting abilities of antisocial children who become parents themselves or comparing parents of antisocial children to those of children without conduct symptoms (Robins, 1966; Serbin *et al.*, 1998). No birth cohort epidemiologic study has assessed the antisocial history of both parents. In the absence of data on the family environment of parents with conduct problems it is difficult to plan specific intervention or prevention programs for these families.

In the ELDEQ study, parental history of antisocial behavior in childhood/adolescence and in adulthood was measured by self-report questionnaires separately for mothers (SAQM) and fathers or partners (SAQF). These questionnaires are described below along with the association between maternal and paternal conduct symptoms and potential risk factors for adverse child development when the infants were 5 months old. Only data on biologic parents (almost all of those who answered the SAQF or SAQM questionnaires) are presented.

There were several guiding principles for the questions for antisocial behavior in the parents. First, the study was interested in identifying those parents most likely to have a pattern of persistent and pervasive antisocial behavior. Previous research has shown that it is the number of child/adolescent antisocial behaviors rather than presence of any one behavior that is the best predictor of persistent and pervasive antisocial behavior in adulthood (Robins, 1966; Robins & Price, 1991; Robins & Regier, 1991). Therefore, several questions were asked and it is the sum of the number of child/adolescent behaviors that is of interest.

Second, classifying parents as "not conduct disordered" is as important as classifying those who clearly did have significant antisocial histories. Therefore, the behaviors asked about focused on symptoms with a mix of severity. Previous research has shown scaling in conduct disorder symptoms, such that less severe behaviors occur commonly in most 'conduct disordered" subjects with more severe behaviors added on (Robins, 1966; Robins & Regier, 1991). Therefore, by including less severe symptoms in the ÉLDEQ questionnaires, it is more likely that those parents who deny all symptoms do not have conduct disorder.

Third, epidemiologic studies have shown that most women and a large minority of men with pervasive and persistent antisocial behavior severe enough to meet the DSM-III criteria for Antisocial Personality Disorder do not have significant criminal histories. Furthermore, a significant proportion of men with arrest records are not persistently and pervasively antisocial (Robins & Regier, 1991). The symptoms presented in the ÉLDEQ questionnaires did therefore not focus exclusively on criminality.

Fourth, the symptoms and questions chosen were modified from the most commonly used structured psychiatric interview in the world: the NIMH-Diagnostic Interview Schedule (Helzer & Robins, 1988), and are based on the DSM-III (American Psychiatric Association, 1980) criteria. These symptoms also reflect current DSM-IV criteria for the diagnosis of Conduct Disorder and Antisocial Personality Disorder (American Psychiatric Association, 1994). It should be stressed, however, that it is not a goal of this study to obtain DSM-IV prevalence rates of disorder. Lastly, previous work has suggested some gender differences in the manifestation of antisocial behavior and so behaviors were chosen separately for fathers and mothers (Zoccolillo, 1993)

The measurement of child/adolescent and adult antisocial behaviors in the ÉLDEQ was limited by financial and time constraints to (1) self-reported questionnaires and (2) eight questions for men and nine for women. Because it is important to clearly distinguish between child and adult behaviors, the questions asking about child/adolescent behaviors were prefaced by "Before the end of high school did you...." Adult behaviors were prefaced by "Since leaving or finishing school...."

For the mothers, the following five child/adolescent antisocial behaviors were asked about: stealing more than once; having been in more than one fight; having been arrested by police or in trouble with Youth Protection because of misbehavior; truancy at least twice in one year; and having run away from home overnight. For the fathers, there were four questions about child/adolescent antisocial behaviors stealing more than once; having often started fights; having been arrested by police or in trouble with Youth Protection because of misbehavior; and having been suspended or expelled from school. The four adult antisocial behaviors mothers were asked about are: having been fired from a job; arrested for non-traffic offense, or in trouble at work, with the police, or family; having hit or thrown things at spouse;¹ and having had an accident due to drugs or alcohol. Fathers were asked the following five questions about adult antisocial behavior: having been fired from a job more than once: arrested for non-traffic offense; or in trouble at work, with the police, or family; having more than once got into a fight or attacked or injured someone; and having had an accident due to drugs or alcohol.

In a pilot study, both men and women were asked the more general question on aggression "more than once got into a fight or attacked or injured someone." However, very few women answered positively to such a question so the question on aggression towards the spouse was substituted for the mothers.

3.1 Maternal Antisocial Behaviors.

Of 2,219 biologic mothers² living in the household,³ 2,137 (96.3%) returned the self-administered questionnaire. Of these 2,137 mothers, 2,105 answered all 5 of the conduct (child/adolescent) symptoms; 14 answered 4 of the 5, 3 answered 3 of the 5, and 15 did not answer any. The sum of the number of conduct symptoms is based on the 2,119 who answered at least 4 out of the 5 questions. Results are shown in Table 3.1 and indicate that, with the exception of truancy, which was very common (48%), and the behavior of "stealing more than once" (18%), all of the other behaviors were relatively infrequent, that is reported by 10% or less of the mothers. The prevalence of having 3 or more conduct symptoms (similar to the DSM-IV cut-off for conduct disorder) was 6%, which is within the range of prevalence rates found in other epidemiologic studies (Zoccolillo, 1993).

The adult antisocial behaviors are also shown in Table 3.1. The prevalence rate of the adult behaviors is much lower than the one observed for conduct symptoms. Whereas only 19% of the mothers declared having experienced at least one of the adult antisocial symptoms, more than half of the mothers (55%) had at least on of the child/adolescent conduct symptoms. The prevalence rate of 3 or 4 adult behaviors is very low (0.3%).

A key check of the validity of the conduct symptoms is whether they are associated with adult symptoms. Previous studies have shown 1) adults with multiple adult antisocial behaviors are highly likely to have a history of conduct problems; 2) children with conduct problems are more likely to show adult antisocial symptoms, but many do not (Robins, 1966; Robins, 1978; Robins & Price, 1991; Zoccolillo *et al.*, 1992).

Table	3.	1
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Conduct and Adult Antisocial Symptoms in Mothers, 1998

	n	%
Conduct symptoms (before the end of high school)		
Steal more than once	378	17.8
Been in more than one fight that she started	70	3.3
Involved with Youth Protection or the police because of own misbehavior	85	40
Skip school more than twice in one year	1,006	47.6
Runaway from home overnight	204	9.6
Number of conduct symptoms.		
None	955	45.1
One	759	35.8
Two	276	13.0
Three	93	44
Four or five	35	1.7*
Total	2,118	100.0
Adult antisocial behaviors (after finishing or outling school)		
Fired from a job	19 9	9.5
Arrested'	31	1.5*
Hit or threw objects at husband/partner	223	10.6
Trouble at work, with police, with family, or traffic accident due to drugs or alcohol	28	1.3*
Number of adult antisocial symptoms		
None	1,711	80 9
One	338	16 0
Two	61	2.9
Three or four	6	0.3**
Total	2,116	100.0

1. Excluding traffic offenses.

 Coefficient of variation (CV) between 15% and 25%: interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec. ÉLDEQ 1998-2002.

Table 3.2 shows the relationship between the number of conduct problems and the number of adult antisocial symptoms. The association is significant and follows the pattern noted above. More precisely, 85% of the mothers having reported 2 to 4 adult antisocial symptoms had experienced at least one child/ dolescent conductsymptom whereas the latter was only the case of half of the mothers with no adult antisocial symptoms. Similarly, 41% of mother with 3 to 5 conduct symptoms reported one or more adult antisocial symptoms whereas only 11% of mothers with no conduct symptoms did so.

^{2.} The data presented here in this Number were weighted to represent the initial sample size.

Among the 2,223 infants in the ÉLDEQ study, a very small percentage (0.2%) were living in foster families or with the father only, at the time of the survey.

	Conduct symptoms ²			Tota	1	
	0	1	2	3-5	n	%
		0	6			
Adult antisocial symptoms ³						
0	49.5	34.7	11.4	4.3	1,705	100.0
	88.7	78.4	70.3	58.6		80.8
1	28.8	43.0	19.0	9.2*	337	100.0
	10.2	19.2	23.2	24.2*	**	16.0
2-4	14 7**	26.5**	26.5**	32.4*	68	100.0
	1.1**	2.4**	6.5**	17.2*		3.2
Total						
n ~	951	755	276	128	2,110	
7/0	45.1	35.8	13.1	6.1		100.0

Table 3.2 Conduct Symptoms by Number of Adult Antisocial Symptoms for the Mothers, 1998¹

1. p < 0.001

2. To obtain 100%, add up the 2nd row of each category vertically.

3. To obtain 100%, add up the 1st row of each category horizontally.

* Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.2 Paternal Antisocial Symptoms

Of the 2,015 biologic fathers living in the household,⁴ 1,842 (91.4%) returned a self-administered questionnaire. Of these, 1826 answered all the conduct symptoms, another 9 answered 3 of the 4, and 7 answered 2 or less. The sum of the number of conduct symptoms is based on the 1,835 biologic fathers who answered at least 3 out of the 4 questions. Results are shown in Table 3.3. The majority of the fathers had no symptoms (58%), and the prevalence of having 3 or 4 conduct symptoms (4.1% and 1,5% respectively) is in the range of, or even somewhat lower than figures reported in previous epidemiologic studies (Zoccolillo, 1993).

If the 1,842 fathers living in the household and having returned the self-complete questionnaire, 1,824 answered all 4 of the adult antisocial symptoms, 10 answered 3 of the 4, and 8 answered only one or none. The sum of the number of adult symptoms is based on data provided by the 1,834 biologic fathers who answered at least 3 out of the 4 questions. Results for the adult antisocial symptoms are shown in Table 3.3. Having multiple adult antisocial symptoms was relatively uncommon in these fathers: only 1,9% of the fathers reported 3 or 4 of the measured symptoms.

^{4.} Biologic fathers not living in the home (9%) but who had contact with the infant at least once a month were also eligible for completion of the SAQF. However, because less than 50% of these fathers returned a SAQF, their responses cannot be weighted and are not presented here.

Table 3.3 Conduct and Adult Antisocial Symptoms in Fathers in Two-Parent Families, 1998

	n	%
Conduct symptoms (before the end of high school)		
Steal more than once	496	27.1
Often in fights that he started	184	10.0
Involved with Youth Protection or the police because of your own misbehavior	159	8.7
Expelled or suspended from school	368	20.0
Number of conduct symptoms:		
None	1,067	58.2
One	457	24 9
Two	208	11.3
Three	75	4.1
Four	28	1.5*
Total	1,835	100.0
Adult antisocial behaviors (after finishing or quitting school):		
Fired from a job more than once	105	5.7
Arrested	190	10.4
More than once was in fights, or attacked someone	132	7.2
Trouble at work, with police, with family, or traffic accident due to drugs or alcohol	106	5.8
Number of adult antisocial symptoms		
None	1,463	79.7
One	251	13.7
Two	84	4.6
Three	30	1.6*
Four	6	0.3**
Total	1,834	100.0

1. Excluding traffic offenses

 Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Table 3.4 shows the relationship between conduct symptoms and adult symptoms. It follows the same expected pattern as for the mothers.

Table 3.4

Number of Conduct Symptoms by Number of Adult Antisocial Symptoms for Fathers in Two-Parent Families, 1998¹

	C	Conduct behaviors ²				Total		
	0	1	2	3 or 4	n	%		
			%					
Adult antisocial behaviors ³								
0	64.5	22.7	9.6	3.1	1,461	100.0		
	88.5	73.0	67.3	45.1	-	79.8		
1	38.6	33.9	15.9*	11.6**	251	100.0		
	9.1	18.7	19.2*	28.4**	**	13.7		
2	25.0*	31.0*	22.6*	21.4*	84	1 0 0.0		
	1,9*	5.7*	9.1*	17.6*		4.6		
3 or 4	14.3**	34.3**	25.7**	25.7**	35	100.0*		
	0.5**	2.6**	4.3**	8.8**		1.9*		
Total								
n	1,066	455	208	102	1,831			
%	58.2	24.8	11.4	5.6	-	100.0		

1. p < 0.001.

2. To obtain 100%, add up the 2nd row of each category vertically.

3. To obtain 100%, add up the 1st row of each category horizontally.

* Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.3 Parental Antisocial Behavior and Certain Risk Factors for Child Development.

A key question is which combination of the 9 antisocial behaviors for women and 8 for men should be used to define parents as "antisocial." In the section below, the number of conduct symptoms during childhood and adolescence was used rather than the adult symptoms as the measure of parental antisociality, for several reasons. First, all subjects have passed through the age of risk for these conduct symptoms, but many are still young adults and still at risk for the adult symptoms. Second, studies have documented that most pervasively and persistently antisocial adults have had significant behavior problems in childhood. Subjects who have passed through childhood and adolescence without developing conduct symptoms are therefore very unlikely to develop persistent and pervasive adult antisocial behavior (Robins, 1966; Robins, 1978; Zoccolillo, 1993). Third, pregnancy and parenthood may affect the likelihood of adult symptoms. For example, mothers may have no work experience and are thus not at risk for being fired from a job. Fourth, there were far fewer subjects with several adult symptoms than with several child/adolescent conduct symptoms. Lastly, with respect to intervention or prevention programs, it is much easier to select subjects with a past history of conduct symptoms than to select subjects on adult symptoms, which may occur after the birth of the first child.

3.3.1 Maternal and Paternal Conduct Symptoms and Certain Risk Factors for Child Development

The mothers

The relationship between the number of maternal conduct symptoms and various risk factors for child development is shown in Table 3.5. Several conclusions can be drawn from the data. For example, the family environment of infants with mothers with 3 to 5 conduct symptoms (around 6% of infants) appears to be clearly more adverse than the one of infants in families where the mother had no conduct symptoms. These infants are more likely to be born to a young or teenage mother (38% vs. 16%); to have been exposed to cigarette smoke in-utero (50% vs. 15%) and currently (41% vs. 15%); to have been exposed to illegal drugs in-utero (6% vs. 0.2%); to have no biologic father present (19% vs. 7%); to have a mother with less than a high school education (32% vs. 14%); to be living in families with a low income (42% vs. 25%); and to have a mother who reports more alcohol (32% drunk in past year vs. 9%) and illegal drug use (13% vs. 1.2%) in the 12 months preceding the survey. Furthermore, as Table 3.5 shows, the prevalence of certain behaviors such as smoking (prenatally and afterwards) increases significantly with the presence of even only one conduct symptom: almost twice as many mothers with one conduct symptom reported smoking during pregnancy compared to those without conduct symptoms (29% vs. 15%).

Table 3.5

Risk Pactors Among Mothers (%) by the Number of Material Conduct Symp	Number of conduct symptoms				X ²
	0	1	2	3-5	
Sociodemographic characteristics					
Current age <20	1.6**	3.5*	2.9**	11.6**	p < 0.01
Current age<25	16.2	25.8	32.0	37.7	p < 0.001
Had first child when age 19 or younger	7.3	12.9	13.4*	24.7*	p < 0.001
No high school degree	13.5	18.5	18.8	32.2	p < 0.001
Biologic father no longer in the home	7.1	86	10.2*	19.3*	p < 0.05
Low-income household ¹	24,5	24.0	28.4	41.7	p < 0.01
Substance use					
Currently daily smoker	14.7	29.1	37.1	40.5	p < 0.001
Used illegal drugs in the past 12 months ²	1.2**	3.7	4.2**	13.0*	p < 0.001
Excessive alcohol consumption (5 or more drinks on one occasion) in past 12 months	9.2	16.2	23.5	31.8	p < 0.001
Lifestyle habits during pregnancy					
Smoked	15.0	29.4	38.8	50.2	n < 0.001
Used illegal drugs	0.2**	2.1**	2.0**	5.9**	n < 0.001

1 According to the low-income cut-offs set by Statistics Canada for the reference year 1997 (based on 1992) (see No. 2 in this series of papers).

 From the following list inhalants; marijuana; cocaine; amphetamines; heroin; opiates; hallucinogens; tranquilizer drugs without a prescription such as barbiturates. Ativan, or Valium; extasy.

* Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

There were some interesting and significant differences on the Parental Perceptions Behaviours Regarding the Infant Scale (PPBS) for the coercive scale items by the number of maternal conduct behaviors.⁵ For each item of the PPBS, mothers were asked to respond on an 11-point scale. An examination of the mothers' responses revealed that mothers tended to generally use the scale point "Not at all what I did" for coercive behaviors. However, the proportion of mothers using this scale point appears to decrease as the number of conduct symptoms increases (Table 3.6). For example, 63% of mothers with no conduct symptoms chose the response "I have left my baby alone in his/her bedroom when he/she was particularly fussy," whereas this answer was chosen by only 42% of mothers with 3 to 5 conduct disorder symptoms. As Table 3.6 shows, one question (lost temper) showed a similar trend but the differences were not significant. The other two items (spanking baby; shaking baby) were rarely endorsed by any of the mothers.

However, when examining several items of the PPBS reflecting maternal warmth such as: "I take a really great pleasure in "talking" (babbling, using baby-talk) with my baby;" "I often feel the urge to kiss my baby;" "I usually feel very great pleasure when holding my baby in my arms;" "I feel a very intense joy and I sort of "melt down" whenever my baby smiles at me," there were no differences by the number of conduct symptoms (data not shown). There was also no significant relationship between maternal conduct symptoms and the maternal score on the difficult temperament infant scale (data not shown).

Table 3.6

Percent of Mothers Reporting "Not at all what I did" on the Coercive Parenting Scale Items (PPBS)¹ by the Number of Conduct Symptoms, 1998

	Number of conduct symptoms				77	
	0	1	2	3-5		
I have been angry with my baby when he/she was particularly fussy	47.0	39.3	39.7	33.2	p < 0.01	
When my baby cries, he gets on my nerves	53.0	47.6	47.2	40.2	p < 0.05	
I have raised my voice or shouted at my baby when he/she was particularly fussy.	63.1	58.6	56.8	47.2	p < 0.01	
l have spanked my baby when he/she was particularly fussy	95.8	97.3	98.0	96.7	not signif.	
I have lost my temper when my baby was particularly fussy	77.3	75.2	71.6	67.0	not signif.	
I have left my baby alone in his/her bedroom when he/she was particularly fussy.	62.6	54.5	54.0	41.6	p < 0.001	
have shaken my baby when he/she was particularly fussy	92.1	94.6	92.7	95.4	not signif.	

1. Parental Perceptions and Behaviours Regarding the Infant Scale (PPBS).

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

· The fathers

The association between paternal conduct symptoms and certain risk factors present in the infant's environment is shown in Table 3.7. The association of child/adolescent conduct symptoms with adult symptoms is also shown.

The findings are similar to those observed among the mothers. Fathers with at least 3 conduct symptoms, relative to fathers with no conduct symptoms, were more likely to be younger, less educated, unemployed, to smoke cigarettes concurrently, and to have higher rates of drunkenness and illegal drug use in the 12 months preceding the survey. With respect to the association between conduct symptoms and adult antisocial behaviors, the data indicate that, for example, only about 3% of

For more details on this scale, which was part of the selfadministered questionnaire (SAQM) for the mother, see number 10 in the present collection.

fathers with no conduct symptoms compared to 35% of those with 3 to 4 conduct symptoms reported having been involved in a fight more than once or attacked or injured someone. Similar findings emerged for other adult symptoms such as having been arrested other than for traffic violations (5% vs. 32%).

The fathers also completed the PPBS and infant temperament scale. There was no consistent interpretable relationship between the scores on the coercive items for the PPBS and the number of paternal conduct symptoms. The perception of fathers concerning the temperament of their infant also did not differ significantly by the number of paternal conduct symptoms (data not shown).

Table 3.7

Risk Factors (%) by the Number of Paternal Conduct Symptoms in Two-Parent Families, 1998

	Number of conduct symptoms				χ2
	0	1	2	3-4	
Sociodemographic characteristics					
Current age<25	6.9	6.6*	15.0*	17.1*	p < 0.01
No high school degree	13.2	17.6	24.6	25.6*	p < 0.001
Unemployed	11.6	11.4	18.0*	20,3*	p < 0.05
Low-income household ¹	19.6	20,4	25.2	30.7	not signif.
Substance use					_
Currently daily smoker	21.5	33.8	42.8	55.3	p < 0.001
Used illegal drugs in the past 12 months ²	4.6*	7.6*	11.0*	20.6*	p < 0.001
Excessive alcohol consumption (5 or more drinks on one occasion) in past 12 months	44.3	56.2	57.1	68.4	p < 0.001
Adult antisocial behaviors					
Fired more than once from a job	3.3*	8.6*	8.3*	13.4*	p < 0.001
Arrested ³	5.3	12.6	21.1	31.6	p < 0.001
Involved in a fight, or attacked or injured someone more than once	2.8*	9.1*	12.6*	34.5	p < 0.001
Trouble at work, with police, with family or traffic accident due to drugs or alcohol	3.0*	8.0*	11.0*	13.8**	p < 0.001
Mother had 2 or more conduct symptoms	12.9	20.0	30.8	30,7*	p < 0.001

1. According to the low-income cut-offs set by Statistics Canada for the reference year 1997 (based on 1992) (see No. 2 in this series of papers).

2. From the following list: inhalants; marijuana; cocaine; amphetamines; heroin; opiates; hallucinogens; tranquilizer drugs without a prescription such as barbiturates; Ativan, or Valium; extasy.

Excluding traffic offenses.

* Coefficient of variation (CV) between 15% and 25%; interpret with caution,

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.4 Assortative Mating

A number of studies have found that parents with antisocial behaviors are more likely to mate with other antisocial parents (Krueger et al., 1998). In this sample, examining this association is complicated because the greater the number of conduct symptoms of the mother the more likely that the father was not living in the household and did not return the SAQF. However, mothers who declared that the father was no longer in the home were asked to complete a questionnaire on the father's antisocial behaviors, with questions identical to those in the questionnaire filled out by fathers in the home. Unfortunately, analyses of this data is more complicated because of the high rates of missing data (see number 1 in this series of papers) and for this reason will be undertaken at a later date. At the present, however, the data can be examined by asking whether there exists a relationship between the number of conduct symptoms in fathers and maternal conduct symptoms in two-parent families. The data presented in Table 3.7 provide clear evidence for assortative mating: fathers with 2 or more conduct symptoms were much more likely to mate with women who had at least 2 conduct symptoms than fathers with no conduct symptoms.
4. Conclusion

At around 5 months of age, infants of parents with multiple conduct symptoms are much more at risk for adverse outcomes than infants with parents with no or 1 conduct symptoms. There are several implications of these findings.

First, by measuring maternal and paternal conduct symptoms along with other risk factors it is possible to better control for genetic effects within families with antisocial parents in order to examine a number of putative risk factors for conduct symptoms, such as smoking, poverty, and coercive parenting practices. Furthermore, the questionnaires used are simple and selfadministered and can be incorporated at little expense in other longitudinal studies.

Second, the risk carried by parental conduct symptoms is multifaceted. This multi-faceted risk may explain some of the comorbid non-antisocial behaviors often seen in association with conduct problems. For example, the association of maternal conduct symptoms with prenatal smoking may explain associations between conduct problems in their offspring and their learning problems or neuropsychologic dysfunction, both of which have been associated with prenatal smoking (Fried, 1995; Olds, 1997). This also suggests that intervention programs need to cover multiple risks. While this study has found that maternal conduct symptoms are associated with coercive parenting, an intervention program that focuses only on such parenting may have considerable difficulty overcoming other effects such as prenatal smoking and assortative mating.

Third, the association of maternal conduct symptoms with coercive parenting but not warmth or perception of infant temperament has two implications. On the one hand, for at least some mother-infant dyads, it may not be infant difficult temperament that begins a cycle of coercive interactions but rather maternal irritability or intolerance of normal infant behavior. On the other hand, as antisocial mothers, whose infants are presumably the most at risk, did not differ from others with respect to the degree of affection expressed for the infant, evaluations of maternal competence should include items measuring intolerance for infant behaviors such as crying. Lastly, the ÉLDEQ data indicate that 6% of the 5-month-old infants have a mother with at least 3 conduct symptoms. An equivalent proportion of infants living in two-parent families have a father presenting an antisocial profile. It is noteworthy that 29% of the children with non-missing fathers had at least one parent with 2 or more conduct symptoms (data not shown). This is a substantial proportion of the population. At present, no intervention or prevention program has specifically targeted parents with conduct symptoms, even though their children are clearly at high risk. This study provides specific information that can be used for planning intervention and prevention studies.

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Glossary

Centre de la petite enfance	Child-care centre
Commission d'accès à l'information du Québec - CAt	Québec Access to Information Commission
Conseil québécois de la recherche sociale (CQRS)	Social Research Council of Québec
Direction de la méthodologie et des enquêtes spéciales, ISQ	Methodology and Special Surveys Division, ISQ
Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre	Public Health Department, Montréal-Centre Regional Health Board
Direction de la technologie et des opérations statistiques, ISQ	Technology and Statistical Operations Division, ISQ
Direction des normes et de l'information, ISQ	Standards and Information Division, ISQ
Direction Santé Québec, ISQ	Health Québec Division
Étude des jumeaux nouveaux-nés au Québec - ÉJNQ	Québec Study of Newborn Twins
Fichier maître des naissances	Master Birth Register
Fonds de la recherche en santé du Québec (FRSQ)	Health Research Fund of Québec
Fonds pour la formation de chercheurs et l'aide à la recherche (FCAR)	Researcher Education and Research Assistance Fund
Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP	Research Unit on Children's Pyschosocial Maladjustment
Institut de la statistique du Québec, ISQ	Québec Institute of Statistics
La Politique Familiale	Policy on Families
Le Rapport Bouchard (1991) « Un Québec fou de ses enfants »	The Bouchard Report, 1991: A Québec in Love with its Children
Les Priorités nationales de santé publique	Priorities for Public Health
ministère de l'Éducation	Ministry of Education
ministère de la Famille et de l'Enfance	Ministry of Family and Child Welfare
ministère de la Justice	Ministry of Justice
ministère de la Recherche, Science et Technologie	Ministry of Research, Science and Technology
ministère de la Santé et des Services sociaux du Québec (MSSS)	Ministry of Health and Social Services of Québec
ministère de la Sécurité publique	Ministry of Public Security
ministère de la Solidarité sociale	Ministry of Social Solidarity - formerly Income Security (Welfare)
Politique de la santé et du bien-être	Policy on Health and Well-Being
Service de la recherche	Research services
Service de support aux opérations de la Régie de l'assurance-maladie du Québec - RAMQ	Operations Support Section of the Québec Health Insurance Board

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Act respecting the Institut de la statistique du Québec (S.Q. 1998, c. 44), passed by the National Assembly of Québec on 19 June 1998.

Parents' lifestyle habits as well as their physical and psychological well-being play a significant role in child development. The first part of this paper describes the prevalence of smoking and alcohol consomption among parents of Quebec infants and provides a profile of their health and mental status. Associations of these characteristics with various sociodemographic characteristics such as family type and age, educational level and income of the parents are then examined.

The second part of this publication presents previously unpublished data on the social adaptation of parents in Québec. Antisocial behaviors dring childhood, adolescence and/or adulthood are examined to estimate the number of parents presenting an antisocial profile. Families with mothers or fathers who themselves had conduct problems are compared to families where parents did not have a history of antisocial symptoms on a number of risk factors in the child's environment known to compromise child development. Results from this study will be useful for intervention strategies aimed at 1) reducing the inter-generational transmission of problem behavior; 2) decreasing the risk of adverse outcomes in children of parents with a history of conduct problems; and 3) promoting healthy parenting behaviors in at-risk adolescents.



Institut de la statistique du Québec





LONGITUDINAL STUDY OF CHILD DEVELOPMENT IN QUÉBEC (ÉLDEQ 1998-2002)

5-MONTH-OLD INFANTS

COLLECTION Health and Well-Being

Parenting and Family Relations

Volume I, Number I0

Québec



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Québec

For further information on the Institut de la statistique du Québec (ISQ) (Québec Institute of Statistics) and the statistics available in its databases, contact:

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May 2000

Similar to what has been observed in the majority of industrialized nations over the past twenty years, Québec and Canada have seen a significant increase in the costs related to maladjustment, particularly in young people. The Longitudinal Study of Child Development in Québec (*l'Étude longitudinale du développement des enfants du Québec*) (ÉLDEQ 1998-2002) being conducted by *Santé Québec* (Health Québec),¹ a division of *l'Institut de la statistique du Québec (ISQ)*² (Québec Institute of Statistics) in collaboration with a group of university researchers, will provide an indispensable tool for action and prevention on the part of government, professionals and practitioners in the field, who every day must face maladjustment in children.

More precisely, a major purpose of this longitudinal study of a cohort of newborns is to give Québec a means of preventing extremely costly human and social problems, such as school dropout, delinquency, suicide, drug addiction, domestic violence, etc. Similar to what is being done elsewhere (in the UK, New Zealand, the US), *Santé Québec* and a group of researchers have designed and developed a longitudinal study of children 0 to 5 years of age (2,223 children in this study and 600 twins in a related one). It will help gain a better understanding of the factors influencing child development and psychosocial adjustment.

The general goal of ÉLDEQ 1998-2002 is to learn the PRECURSORS, PATHS and EFFECTS, over the medium and long terms, of children's adjustment to school. ÉLDEQ is the logical extension of the National Longitudinal Study of Children and Youth (NLSCY, Canada). These Québec and Canada-wide longitudinal studies are both comparable and complementary. They employ distinct survey methods, and use different techniques to obtain the initial samples. Though many of the

instruments are practically identical, about a third of those being used in ÉLDEQ are not the same.

This first report casts light on the enormous potential of the data generated by this study. From the descriptive analyses of the results of the first year of the study to the longitudinal analyses of subsequent years, there will be an enormous wealth of data. With updated knowledge on the development of the cohort of young children, the annual longitudinal follow-up will respond to the needs which the *ministère de la Santé et des Services Sociaux du Québec - MSSS* (Ministry of Health and Social Services), who financed the data collection, expressed in both the Report of the Working Group on Youth (*Rapport Bouchard, 1991, Un Québec fou de ses enfants* - the Bouchard Report, 1991, A Québec in Love with its Children) and the policy papers entitled *Politique de la santé et du bien-être, 1992* (Health and Well-Being) and *les Priorités nationales de santé publique 1997-2002* (Public Health Priorities 1997-2002).

Director General

Man Fit

Yvon Fortin

Certain French appellations in italics in the text do not have official English translations. The first time one of these appears, the unofficial English translation is shown immediately after it. Following this, for ease in reading, only the official French name appears in the text in italics, and it is suggested the reader refer to the Glossary for the English translation.

Santé Québec officially became a division of the ISQ on April 1, 1999.

The authors of Volume 1 Number 10 of ELDEQ 1998-2002 are:

Part I: Parenting Perceptions and Behaviours

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ÉLDEQ 1998-2002 is supervised by:

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JAPEL, C., R. E. TREMBLAY and P. McDUFF (2000). "Parenting and Family Relations, Part II - Family Environment" in Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, Vol. 1, No. 10.

This analytical paper is also available in French. Ce numéro est aussi disponible en version française sous le titre :

BOIVIN, M., D. PÉRUSSE, V. SAYSSET, N. TREMBLAY et R. E. TREMBLAY (2000). « Conduites parentales et relations familiales, section I - Les cognitions et les conduites parentales » dans Étude longitudinale du développement des enfants du Québec (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, vol. 1, nº 10

JAPEL, C., R. E. TREMBLAY et P. McDUFF (2000) « Conduites parentales et relations familiales, section II - Le milieu familial » dans Étude longitudinale du développement des enfants du Québec (ÉLDEQ 1998-2002), Québec, Institut de la statistique du Québec, vol. 1, nº 10.

Caution:

Unless indicated otherwise, "n" in the tables represents data weighted to the size of the initial sample

Because the data were rounded off, totals do not necessarily correspond to the sum of the parts.

Unless explicitly stated otherwise, all the differences presented in this report are statistically significant to a confidence level of 95%.

To facilitate readability, proportions higher than 5% were rounded off to the nearest whole unit in the text, and to the nearest decimal in the tables and figures.

As expected, certain data characterizing various phenomena in the study did not follow a normal distribution. This non-normality, indeed the asymmetry of certain variables measuring child development or the infants family environment, makes it difficult to interpret the results of certain parametric tests (Student's t test, Fisher test, ANOVA) In spite of this, the authors, similar to their peers working on longitudinal studies, have calculated and presented associations using estimators such as means, linear regressions and correlations. For these data, caution is recommended when interpreting the results. In annual longitudinal monitoring, trends are important and not each cross-sectional measurement taken in isolation.

Symbols		Abbreviations	
	Not applicable (N/A) Data not available Nil or zero	CV Not avail. Not signif	Coefficient of variation Not available
ρ<	Refers to the threshold of significance	Not orgini.	nocaignnicant

Symbole

Santé Québec recognizes that the development and implementation of the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) flows directly from the synergy of effort and professionalism of many people throughout the whole process of mounting a survey of this size. Since 1995, individuals, various groups and organizations, a survey firm and the staff of *Santé Québec* have become indispensable links in making this ambitious project a reality - the first annual longitudinal survey of Québec infants.

A major characteristic of this project is that a pretest and survey are conducted every year. To accomplish this, we must annually: 1) make two sets of instruments (pretest and survey), 2) conduct two data collections, 3) analyze two sets of data, and 4) produce two types of communications materials. The results of each pretest means fine-tuning and developing instruments for the survey, which follows 17 months later. The results are sent to the parents (highlights), published in reports, and communicated to the scientific community and the public at large. The professionals and staff involved in collecting the data, as well as those involved before and after, must put their nose to the grindstone every year. We cannot over-emphasize our profound recognition of the incredible, concerted effort they are putting into this project over an 8-YEAR period, from the first pretest in 1996 to the final report to be published in 2004!

First. it must be said that without Daniel Tremblay, Director of Santé Québec (now part of the ISQ) since 1994. Christine Colin, Assistant Deputy Minister responsible for Public Health 1993-1998, Aline Émond, Director of Santé Québec 1986-1993. Richard E. Tremblay, Director of the ÉLDEQ research project, and Marc Renaud, President of *le Conseil québécois de la recherche sociale - CQRS* 1991-1997. ÉLDEQ 1998-2002, also known as "In 2002. I'll Be 5 Years Old!," would have never seen the light of day. In turn and together, they developed, defended and obtained the financing for this study. Thank you for your indefatigable tenacity.

A warm thanks to all the researchers and the support staff of their respective research groups, whose determination over the years has never wavered. Putting their research grants together every year has contributed to the development of the instruments, analysis of the data and publication of the copious results.

I would like to thank Lyne Des Groseilliers, ÉLDEQ's statistician since 1996, Robert Courtemanche, statistical advisor, and France Lapointe, ÉLDEQ's statistician 1995-1996. These three colleagues in the *Direction de la méthodologie et des enquêtes spéciales* (Methodology and Special Surveys Division) (*ISQ*) managed, with great skill, to set the signposts and navigate the somewhat winding course of this large-scale survey first.

A very special thanks to all the master designers of the National Longitudinal Study of Children and Youth (NLSCY, Canada). Without their expertise, advice and generosity, our survey would never have been accomplished. In many senses of the word "modeling," ÉLDEQ has learnt a lot from the NLSCY.

We would also like to extend out gratitude to the staff of the Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP (Research Unit on Children's Pyschosocial Maladjustment) at the University of Montréal. Without their expertise, some of our survey instruments would have never been computerized to such a high level of quality.

We would like to thank the personnel in the Service de support aux opérations de la Régie de l'assurance-maladie du Québec -RAMQ (Operations Support Section of the Québec Health Insurance Board). Without their efficiency, fewer letters of introduction would have found their way to the correct addresses of respondents.

Our sincerest thanks go to our survey firm, Bureau d'interviewers professionnels (BIP). Since 1996, this polling company has been responsible for data collection in the pretests and surveys, and follow-up of families both inside and outside of Québec. Lucie Leclerc, President of BIP, has set the standard of quality for our numerous and complex data collections. Assisted by Véronique Dorison, she has instilled in her interviewers a great sense of respect for the respondent families, as well as a rigourous regard for all the norms governing this first-of-a-kind survey in Québec. A big thank-you to the directors-general, directors of professional services, and staff of the medical records departments of some 80 hospitals in the province who accepted to collaborate in our study at a time when resources were rare and time was at a premium, and when the medical records departments in many hospitals were merging or in the process of doing so. Their support was exceptional. Birthing centres also graciously accepted to participate in this first Québec longitudinal study of children. A special thanks to Julie Martineau, medical records specialist, who contributed to the analysis of indispensable medical information by ensuring very rigourous coding of the data, which often lay concealed in the medical files of the infants and their mothers.

It goes without saying that the staff of Santé Québec Division directly attached to ELDEQ 1998-2002 are the cornerstone of its success from practically every point of view. Special thanks for their ongoing contribution and constant hard work go to Hélène Desrosiers and Josette Thibault, responsible respectively for analysis of the data and creation of the measurement instruments; Martin Boivin, Rolland Gaudet and Gérald Benoît, who constantly pushed the limits of what computer software can do in terms of programming and data processing; Suzanne Bernier-Messier and Diane Lord, who give meaning to the word versatility, who must organize, code and manage incredible quantities of data to ensure the progress of the study. Not directly attached to the team but who made extremely important contributions are: France Lacoursière, France Lozeau and Thérèse Cloutier, who put the finishing touches to the Santé Québec "look" in the survey instruments, reports and conference publications; Lise Ménard-Godin, who conducted fruitful literature searches and advised on many aspects of the collection instruments. The hard work, constant availability, ability to adapt, and finely-honed skills of the people working on this project match the enthusiasm that all our partners have demonstrated in making this study a resounding success.

Finally, I would like to extend a very special thank-you to the 2,223 families who responded to our survey. Thank you for the trust you have shown in *Santé Québec*, our partners and collaborators. Thanks to your participation, your children have become the veritable stars of ÉLDEQ 1998-2002, and are making it possible, in the short term, to gain a better understanding of psychosocial adjustment in children. In the medium and long terms, they will likely be in large part

responsible for the establishment of early detection programs, better designed prevention programs, and more effective interventions for such an important clientele - all of Québec's children.

Mull Jett

Mireille Jetté Project Coordinator Santé Québec Division, ISQ

Preventing Social Maladjustment

It suffices to consider the costs engendered by behavioural problems in children - school dropout, delinquency, alcoholism, drug addiction, family violence, mental disorders and suicide - to conclude that they largely surpass what a modern society can accept, morally and economically. Faced with the enormity of these problems, the first reflex is to provide services to these people which will, ideally, make the problems disappear, or at the very least, lessen their severity. For many years we have tried to offer quality services to children and adults who suffer from antisocial disorders, alcoholism, drug addiction, depression, and physical or sexual abuse. However, in spite of enormous investment, these curative services are far from being able to respond to the demand.

Although the idea of early intervention as a preventive measure can be traced at least as far back as ancient Greece, the second half of the 20th century will certainly be recognized as the dawn of the field of social maladjustment prevention (Coie et al., 1993; Mrazek & Haggerty, 1994). Numerous programs have been developed for adolescents and leenagers to prevent school dropout, delinguency, drug addiction and suicide. Scientific evaluations of these programs have been far too few in number, but they tend to demonstrate that it is extremely difficult to help those most at risk in this age group (Rosenbaum & Hanson, 1998; Rutter, Giller & Hagell, 1998; Tremblay & Craig, 1995). It is becoming increasingly clear that the factors which lead to serious adaptation problems are in place long before adolescence. Hence the idea that the prevention of social adaptation problems should start at least during childhood, and preferably right from pregnancy (Olds et al., 1998; Tremblay, LeMarquand & Vitaro, 1999). These principles are clearly outlined in the objectives of the Politique de la santé et du bien-être (Policy on Health and Well-Being) and les Priorités nationales de santé publique (Priorities for Public Health) set by the government of Québec (ministère de la Santé et des Services sociaux, 1992; 1997).

The Need to Understand Early Childhood Development

If the field of maladjustment prevention appeared at the end of the 20th century, it has certainly come on the heels of child development. "Émile," by Jean-Jacques Rousseau, needs to be re-read in light of recent studies to realize just to what degree it is impossible to understand the complexity of child development, and therefore the means of preventing deviant paths, simply by reflection or introspection. Although considerable knowledge has been acquired in the neurological, motor, cognitive, affective and social development of children, what really hits home is that Jean-Jacques Rousseau and his followers in education seemed to have had more certainty about the ways of educating children than we do today.

Progress in child development research has made us realize that things are not as simple as we can or would like to imagine. We have obviously all been children, and most of us have become parents, indeed, relatively well-adjusted ones. But we still do not clearly understand when, how and why adjustment problems appear, and above all, how to prevent and correct them.

Our ignorance is obvious when we examine the debates among specialists on the role of parents in the development of maladjustment problems in children. Some suggest that social maladjustment in children is targely determined by genetic factors (Bock & Goode, 1996; Rowe, 1994). Some accentuate economic factors (Duncan & Brooks-Gunn, 1997). Other researchers attribute a determining role to peer influence (Harris, 1998; Harris, 1995; Vitaro *et al.*, 1997). These larger questions lead to narrower ones which focus on particular aspects - the role of fathers in childhood maladjustment, the impact of alcohol and cigarette consumption during pregnancy, the effect of prenatal and birthing problems, the importance of breast feeding and diet; the role of sleep, cognitive development, temperament, and so on.

The majority of these questions are at the heart of the daily concerns of parents, grandparents, educators, family service providers, and legislators. What can we do to maximize the development of our children, to prevent severe psychosocial maladjustment? What should we do when problems begin to appear, when pregnant mothers, or fathers themselves have a long history of disorders? The answers to these questions obviously have an effect on the policies put forth by Québec government Ministries such as *ministères de la Famille et de l'Enfance* (Family and Child Welfare), *de l'Éducation* (Education), *de la Santé et des Services sociaux, de la Solidarité sociale* (Social Solidarity - formerly Income Security (Welfare)). *de la Sécurité publique* (Public Security), *de la Justice* (Justice), and *le ministère de la Recherche, Science et Technologie* (Research, Science and Technology).

The Contribution of ÉLDEQ 1998-2002

The Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) was conceived in order to contribute to our knowledge of the development of children in their first 5 years of life. The main goal is to gain a better understanding of the factors, in the years of rapid growth, which lead to success or failure upon entry into the school system. The goal of the second phase (if approved) is to better understand development in elementary school, in light of development in early childhood.

We know that this survey cannot be a definitive one on child development in Québec, but it is the first representative study of a provincial cohort of children who will be measured annually from birth to entry into the school system. It specifically aims at understanding the development of basic skills needed for educational success.

Although the effort to set up this study began in 1989, the first data collection coincided with the Québec government's implementation of its *Politique Familiale* (Policy on Families). The policy has virtually the same objectives as our study.

"These services for children 5 years and under should give all Québec children, whatever the socioeconomic status of their parents, the chance to acquire and develop the skills that will allow them to succeed in school (1997, p. 10)."

On March 3 1999, in the speech opening the 36th session of the Québec legislature, Premier Lucien Bouchard confirmed that early childhood development was a priority for the government "The theme that will dominate our actions this year, next year, and throughout our mandate, is youth... The priority...with regards to youth in Québec, begins with the family and childhood... This massive investment in early childhood... will give our children the best chance of success in the short, medium and long terms. It is our best asset against alienation and despair. It is our best preparation for personal, social and economic success."

Because of this historic coincidence, ÉLDEQ has the potential of becoming an invaluable tool for monitoring the effects of Québec's massive investment in early childhood which began in 1997. Thanks to the data collected by the federal government's National Longitudinal Study of Children and Youth (NLSCY, Canada), we will be able to compare child development in Québec with that elsewhere in Canada, before and after the implementation of Québec's new policy on the family.

However, our initial objectives are more modest. The 12 or 13 papers in this series present the results of our first annual data collection. They describe the characteristics of the families and children when the latter were 5 months old.³ They cover sociodemographic characteristics, nature of the birthing process, health and social adaptation of the parents, family and couple relations, parent-infant relations, and characteristics of the 5-month-old, such as sleep, diet, oral hygiene, temperament, and motor, cognitive and social development. These data will eventually be compared to those on children the same age collected by the NLSCY in 1994 and 1996.

An Interdisciplinary, Multi-University Team of Researchers

This study saw the light of day because of the collaboration of many people. In the preceding pages, Mireille Jetté thanked a number of them. I would like to take advantage of this introduction to emphasize that the survey was set up and continues forward because of the dedication and hard work of a group of researchers from a variety of disciplines and

^{3.} To simplify the text in this report, the phrase "5-month-old infants" will be used to refer to infants whose <u>mean_age</u> was 5 months during data collection in 1998. In section 3.1.3 (Volume 1, Number 1), we explain why the infants were not all exactly the same age. As indicated in no 2 of this series, 52% of the infants were less than 5 months, and 3.4% were 6 months of age or over.

universities. I would particularly like to thank Michel Boivin, School of Psychology at Laval University, and Mark Zoccolillo. Department of Psychiatry at McGill University, who have been actively involved in this project since 1992. It was in that year that we prepared out first grant application for the Social Sciences and Humanities Research Council of Canada. A second group of researchers joined the team in 1993 and 1994: Ronald G. Barr, pediatrician, Montréal Children's Hospital Research Institute, McGill University, Lise Dubois, dietitian and sociologist, Laval University; Nicole Marcil-Gratton, demographer, University of Montréal and Daniel Pérusse, anthropologist. University of Montréal, Jacques Montplaisir, Department of Psychiatry, University of Montréal, joined the team in 1995. Louise Séguin, Department of Social and Preventive Medicine, University of Montréal and Ginette Veilleux, Direction de la santé publique de la Règie régionale de la santé et des services sociaux de Montréal-Centre (Public Health Department, Montréal-Centre Regional Health Board), joined in 1998. Three post-doctoral researchers have also made an important contribution. Raymond Baillargeon developed the task for measuring cognitive development. Christa Japel is the assistant to the scientific director for planning, analysis and presentation of the results. Heather Juby collaborates in the analysis of the data on couple and family history.

A Unique Confluence of Circumstances

A study such as this requires the coordination of many researchers over many years, enormous financial resources, and a long period of preparation. Though in the early 1990s the research team was convinced of the need for the survey, those responsible for the public purse had also to be convinced. We must therefore acknowledge the happy confluence of circumstances that allowed the players to take advantage of the opportunity at hand. When a number of civil servants in the ministère de la Santé et des Services sociaux understood the essential role of prevention, the creation of a committee on children and youth in 1991 led to an increased awareness of the importance of early childhood. At the same time, the president of the CQRS, Marc Renaud, had come to the same realization with his colleagues in the Population Health Program at the Canadian Institute for Advanced Research (CIAR). Aline Émond, the Director of Santé Québec, was ready to apply her formidable determination to work for the cause. For their part, Health Minister Jean Rochon and his Assistant Deputy Minister for

Public Health, Christine Colin, aware of the importance and benefit of longitudinal studies on early childhood development, authorized the investment of large sums of money during a period of draconian budget cuts. This occurred at the same time as the federal government decided to create its own longitudinal study of children and youth (NLSCY). It is in this context that ÉLDEQ 1998-2002 materialized. Our survey also came to fruition because Mireille Jetté did everything in her power to make the researchers' dreams a reality, and Daniel Tremblay gave her all the support she needed by making various resources available for the project.

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This analytical paper is one of a series presenting crosssectional data collected on a large sample of 5-month-old infants surveyed in 1998. It reports on the first of 5 annual data collections on 2,120 children in Québec who will be studied until they are 5 years old. In the first year of data collection, the results on 2,223 infants were retained.⁴

The target population of the survey is Québec babies, singleton births only.⁵ who were 59 or 60 weeks of gestational age⁶ at the beginning of each data collection period, born to mothers residing in Québec, excluding those living in the Northern Québec. Cree, and Inuit regions, and on Indian reserves, and those for whom the duration of pregnancy was unknown. Due to variations in the duration of pregnancy and the 4 or 5 weeks allotted for each data collection wave, the infants were not all exactly the same age (gestational or chronological) at the time of the survey. Therefore, the children in Year 1 (1998) of the survey had a mean gestational age of 61 weeks - about 5 chronological months.

The survey had a stratified, three-stage sampling design, with a mean design effect for the proportions estimated at 1.3. To infer the sample data to the target population, each respondent was given a weight corresponding to the number of people he/she "represented" in the population. ÉLDEQ 1998 comprised eight main collection instruments which obtained data from the person who was closest to the baby (called the Person Most Knowledgeable - PMK), the spouse (married or common-law), the infant and the absent biological parent, if applicable. Given variation in the response rates to each instrument, three series of weights had to be calculated to ensure inferences to the population were accurate. Except for the Self-Administered Questionnaire for the Absent Father (SAQFABS) and a series of

questions in the Computerized Questionnaire Completed by the Interviewer (CQCI) on absent fathers - the overall or partial response rates of which were too high - the results of all the instruments could be weighted. Therefore, the data presented here have all weighted to reduce the biases.

All data that had coefficients of variation (CV) 15% or higher are shown with one or two asterisks to clearly indicate the variability of the estimate concerned. In addition, if the partial nonresponse rate was higher then 5%, there is a note specifying for which sub-group of the population the estimate is less accurate.

Similar to any cross-sectional population study, the Year 1 part (5-month-old infants) of ÉLDEQ 1998-2002 has certain limits. However, the vast majority of the results are valid and accurate, and provide a particularly detailed portrait, for the first time, of 5-month-old infants in Québec.

Note to the reader: For more details on the methods, see Volume 1, Number 1 in the present series. Detailed information on the sources and justification of the instruments used in Year 1 of ÉLDEQ 1998-2002, and the design of the scales and indices used in this paper, are covered in Number 12, entitled "Concepts, Definitions and Operational Aspects."

^{4.} Though the results for 2,223 children were retained for the first year of data collection, 2,120 will be retained for the rest of the longitudinal study; the extra 103 were part of an over-sample used to measure the effects of the January 1998 ice storm.

^{5.} Twins (twins births) and other multiple births were not targeted by the survey.

Gestational age is defined as the sum of the duration of gestation (pregnancy) and the age of the baby.

Parenting and Family Relations

Part I Parenting Perceptions and Behaviours



1. Introduction

Being a parent is certainly one of the most demanding social roles in terms of the mental, physical and emotional involvement. It requires a significant commitment on the part of adults to not only feed, protect, care for, instruct and rear, but also listen to, reassure, comfort and entertain their child for whom they are responsible, and do this for many years. It is a job that requires time and energy, and has become more complicated and difficult to achieve given the demands of current societal organization. These demands are associated with unprecedented access of both spouses to the labour market and increasing instability in conjugal unions, which translate into the growth of single parenthood and new configurations of the family.

In spite of the demands and complexity of parenting, most parents have the physical and psychological capacity to not only face the challenge of caring for one or more children, but also to derive great pleasure from it. However, a minority of parents encounter difficulties in adequately fulfilling their role. Their behaviours may therefore be less appropriate for the development of their children. They may find themselves overwhelmed by the weight of the responsibility, or certain personal, family or external situations may present significant constraints to fulfilling their role as parent. Some parents may also lack parenting skills or perceive themselves as having little impact on their child's development. Inasmuch as these parenting behaviours can have a positive or negative influence on child development, it is necessary to document these as early as possible in the child's life in order to better understand the mechanisms involved and intervene in an appropriate manner. Therefore it appeared pertinent to examine certain parenting perceptions and behaviours as part of this longitudinal survey.

Parenting behaviours are generally perceived as the cornerstone of socio-emotional development in young children (Bornstein, 1995). In fact, various theories have been advanced to describe and explain the mechanisms through which these behaviours, particularly those of the mother, contribute to child development (Bugenthal & Goodnow, 1998; Parke & Buriel, 1998; Thompson, 1998). In the course of early childhood, parental sensitivity, namely the capacity of the parent to detect the child's needs and respond to them promptly and appropriately, likely contributes to the establishment of a secure parent/child relationship (attachment) during the second year of life, thereby creating a context that fosters the future socio-emotional development of the child (Bowlby, 1982; Bretherton & Waters, 1985; De Wolff & Van Ijzendoorn, 1997; Isabella, 1995). Inconsistency in parental responses, as well as a tendency to adopt strongly restrictive and punitive strategies, is likely associated with the development of an insecure attachment and future behavioural problems in the child (Crittenden, 1988; Lyons-Ruth *et al*, 1990, 1991).

Studies conducted on older children suggest that inconsistent parenting behaviours characterized by intrusiveness and overprotection can contribute to the development of a feeling of absence of control and create anxiety in the child (Chorpita & Barlow, 1998). A cold, "controlling" rearing style may play a role in the development of depression, agoraphobia and social phobia (Arrindell et al., 1989; Parker, 1984; Parker & Lipscombe. 1981), while inconsistency and rigidity in discipline, along with inadequate punishment for inappropriate behaviour, may induce the young child to adopt aggressive behaviours (Patterson et al., 1992). In contrast, a warm, non-intrusive, yet firm approach to discipline is likely associated with healthy emotional, social and cognitive development, particularly in boys (Baumrind, 1997, 1991). In brief, it seems that many aspects of parenting behaviours may be involved in socio-emotional development in early childhood and that certain practices, especially those involving punishment and overprotection, may be associated with developmental problems in children.

Furthermore, parents' perceptions of their role, notably beliefs concerning their ability to accomplish their task as a parent and expectations as to the impact of their actions (Bandura, 1989), may be at the heart of parenting competence and parent-child dynamics in early childhood (Parke & Buriel, 1998; Teti & Gelfand, 1991; Thompson, 1998). Bandura (1989) emphasizes that an individual's beliefs in self-efficacy and expectation of positive outcomes of his actions are the primary determinants of accomplishing a given task. These concepts have been successfully applied to the context of parenting behaviours.

In general, current research considers well-founded the association between parental self-efficacy and specific parenting skills such as the capacity to understand and respond to infant

signals (Donovan et al., 1990), sensitive, stimulating and nonpunitive parenting behaviours (Donovan & Leavitt, 1985) and a more direct and active involvement with the infant (Mash & Johnston, 1983) Self-efficacy has also been associated with behavioural competence observed in parents, independent of sociodemographic characteristics, maternal depression, spousal support and child temperament (Teti & Gelfand, 1991). Parents who believe they can influence the development of their child and can successfully accomplish certain tasks tend to be more involved in interacting with their child (Parks & Smeriglio, 1986; Smeriglio & Parks, 1983; Tulkin & Cohler, 1973). Conversely, parents who have lower feelings of self-efficacy tend to perceive the infant as being difficult (Bugenthal & Shennum, 1984; Gibaud-Wallson & Waudersman, cited in Johnston & Mash, 1989; Halpern et al., 1994) and become irritated when they interact with a child who responds less to stimulation (Bugenthal & Shennum, 1984). They feel more depressed (Cutrona & Troutman, 1986; Teti & Gelfand, 1991) and less competent as parent (Donovan et al., 1990). They also tend to be more passive (Wells-Parker et al., 1990) and use punitive strategies with the child (Bugenthal & Shennum, 1984). Finally, it has been observed that abusive and negligent mothers have unrealistic expectations of their child (Azar et al., 1984) and report less satisfaction and efficacy as a parent compared to those who are not abusive (Mash et al., 1983).

It is clear that parenting perceptions and behaviours are at the core of current knowledge on the socialization of children. Many of the aforementioned studies used direct observations of mother-child interactions, often coded in minute detail (*i.e.* frequency and duration of precisely-defined behaviours), to study various aspects of parenting behaviours. This type of approach is impossible in a large-scale population study such as ÉLDEQ 1998-2002. This is why the Parental Perceptions and Behaviours Regarding the Infant Scale (PPBS) was developed.

The scale is based on statements of the parents regarding certain perceptions and behaviours which reflect the quality of their interaction with their 5-month-old infant. Its goal is to assess the dimensions likely associated with actual parenting behaviours, and to study their role in the development of internalized and externalized problems in children over the course of the longitudinal study.⁷ Ideally, this scale should also be sensitive to the context of within family relationships, that is, likely to vary according to which infant is being measured in the family.⁸ Though many self-administered questionnaires have been used to measure parenting perceptions and/or behaviours (Abidin, 1986, Deutsch *et al.*, 1988; Dumka *et al.*, 1996; Thomasgard *et al.*, 1995; Wells-Parker *et al.*, 1990), they were often concerned with parental behaviours towards older children or covered a wide range of ages. In other cases, these questionnaires covered subjects which were too general and quite different from the dimensions judged to be relevant for ÉLDEQ.

Six cognitive and behavioural dimensions were measured by the scale. These were parental self-efficacy, perception of impact of parenting behaviours, tendency to coercion, tendency to be overprotective, parental affection and perception of the general qualities of the infant. The first two dimensions cover parents' beliefs regarding their role in caring for the baby, while the second two refer to self-reported parenting behaviours. The fifth, parental affection, reflects the pleasure and warmth parents feel and show in their interactions with the child. The sixth dimension concerns the parent's perception of the infant's qualities, namely physical attractiveness and intelligence.

⁷ Externalizing problems are manifested themselves in the form of aggressive behaviours, violence or other disturbing behaviours that are easily observable, such as attention deficit disorder with hyperactivity, defiance and conduct disorder. Internalized problems rather refer to internal forms of distress, such as feelings of depression, anxiety, somatic complaints and non-communication.

^{8.} Parenting perceptions and behaviours can vary with respect to the parents, that is by family unit (between-family variation). They can also vary within the family, as a function of the children concerned (within family variation). It is important to distinguish these two sources of variation in order to separate factors associated to the infant from those associated with the parents and family as a unit. In a study being conducted in parallel with ÉLDEQ, the *Étude des jumeaux nouveau-nés du Québec* (Québec Study of Newborn Twins), parents responded to the PPBS questions for each 5-month-old twin, which allowed separating the sources of explanation.

The current version of the scale is the result of a process of selecting relevant items.⁹ The 32 items used in Year 1 (1998) of ÉLDEQ were part of the SAQM (Self-Administered Questionnaire for the Mother) and SAQF (Self-Administered Questionnaire for the Father), filled out separately by both parents of the 5-month-old infant. For each statement, the parent responded on a 10-point Likert-type scale ("0 = Not at all" to "10 = Exactly") according to the degree of what he/she did, thought or felt with regards to his/her infant.

This paper presents a portrait of parenting perceptions and behaviours as measured in ELDEQ 1998, when the infants were 5 months of age. First the chosen dimensions will be described, then the profiles of the parents with regards to each one. Secondly, the degree to which the parents' attitudes and behaviours were associated with certain characteristics of the household, parents, and infant will be examined. Most of the characteristics retained, which are described and justified later in this paper, have been previously identified as risk factors associated with the quality of parenting and the development of behavioural problems in children. It should be emphasized that the expected associations were quite modest, since it is possible

2. Constructing the PPBS

that at 5 months of age. infants' characteristics as well as parental perceptions and behaviours have not yet crystallized. It should also be noted that a significant proportion of the mothers were still at home, and therefore in a very different context from the one they will be in when they have returned to work.

^{9.} An initial list of 52 items was produced. Those related to self-efficacy were adapted from the scale created by Teti and Gelfand (1991) They were slightly modified to make them more relevant to the context of 5-month-old infants. The content validity of the items was evaluated by 15 experts - clinical and developmental psychologists, with considerable experience in parent/child interactions in the first year of life. They assessed the relevance of the contents of each item for the expected dimensions. Following this process, 26 items were retained. Six new ones on coercive behaviours and several others were added. A first version of 40 items was produced and presented to the first sample of mothers in the Étude des jumeaux nouveau-nes du Québec (Québec Study of Newborn Twins). It was aujckly reduced to 37, since some items were poorly understood by the mothers and presented ceiling effects (thereby demonstrating weak sensitivity). It was then administered to more than 500 mothers in a pilot study (Boivin et al., 1997). A factor analysis confirmed the presence of the five anticipated dimensions. The affection dimension was not considered in this first version. Four of the dimensions - self-efficacy, coercion, overprotection and perception of the infant's qualities - presented an acceptable level of reliability (Cronbach alpha > 0.70); however, perceived impact was less reliable (Cronbach alpha = 0.51). Based on these results, a new version containing 32 items was developed for the actual study. The perceived impact scale was reconstructed and five items related to affection were added.
A factor analysis conducted on the data collected from the mothers (the number of respondents varied between 2,097 and 2,138 according to the questions, for a total of 2,223 households visited.) revealed six dimensions.¹⁰ However, three items related to affection presented significant loadings (> 0.30) on the factor of parental self-efficacy.

The analysis conducted on data gathered from the fathers (the number of respondents varied between 1,819 and 1,849 according to the questions, for a total of 2,223 households visited) provided the same pattern of convergence, except for the items related to affection that were more strongly associated with parental self-efficacy than for the mothers.¹¹

The six dimensions are described in Table 3.1. Parental selfefficacy refers to the ability to accomplish tasks related to fulfilling the role of parent (the items retained were formulated on the basis of those suggested by Teti and Gelfand, 1991). Perceived parental of impact refers to the parent's evaluation of the effect of his behaviour on the development of his child. The tendency to coercion refers to the proclivity to respond in a hostile and restrictive manner to difficult behaviours in the baby, revealing a lack of sensitivity to his needs and moods. Affection refers to the pleasure and warmth feit and shown by the mother or father when interacting with the infant. Overprotection refers to behaviours reflecting excessive concern for the safety and protection of the child, which can lead to intrusive behaviours fostering dependency. Finally, the perception of the general qualities of the infant refers to the parent's perception of his physical attractiveness and cognitive abilities.

Table 3.1

Dimensions -	of the	Parental	Perceptions	and	Behaviours
Regarding th	e Infan	t Scale (I	PPBS), 1998		

Dimensions	Questions
Feeling of	+ I feel that I am very good at keeping my baby
self-efficacy	amused.
	• I feel that I am very good at calming my baby down
	when he/she is upset, fussy or crying.
	I feel that I am very good at keeping my baby busy
	while I am doing other things.
	I feel that I am very good at attracting the attention of
	my baby
	• I feel that I am very monthat feeding my hahv
	changing his/her diapers, and giving him/her a bath
	 In general, do you think you are "a good mother/a.
	nood father*2
Porcontion of	My hohevieur has little affect on the nerronal
import	development of my boby
impaci	Development of my baby.
	• Regardless of what I do, my baby will develop on
	nis/ner own.
	• My behaviour has little effect on the intellectual
	development of my baby.
	My behaviour has little effect on the development of
	emotions (for example, happiness, fear, anger) in my
	baby.
	 My behaviour has little effect on how my baby will
	interact with others in the future.
Tendency to	· I have been angry with my baby when he/she was
Coercion	particularly fussy.
	When my baby cries, he/she gets on my nerves.
	I have raised my voice with or should at my baby
	when he/she was particularly fussy
	· I have spanked my baby when he/she was
	particularly fussy.
	 I have lost my temper when my baby was particularly.
	fussy
	 I have left my hahy alone in his/her bedroom when
	holeho was natioularly fusey
	 I have shaken my haby when he/she was particularly.
	fuer
Alfortion	
Allection	• I take really great pleasure in "talking" (babbling,
	using baby-talk) with my baby.
	· I often play with my baby. For example, I regularly
	take the time to amuse him/her or make him/her
	laugh when I change his/her diaper.
	 I often feel the urge to kiss my baby.
	• I usually feel great pleasure when holding my baby in
	my arms.
	· I feel a very intense joy and I sort of "melt down"
	whenever my baby smiles at me.

see at the next page ...

A principal component analysis with VARIMAX rotation was conducted. The factor loadings observed were higher than 0.30 for the anticipated factor and lower than 0.30 for the other factors (data not shown).

^{11.} On the whole, the six dimensions had an acceptable level of reliability (Cronbach alphas varied from 0.68 to 0.78 in mothers and 0.69 to 0.79 in fathers).

Dimensions	Questions
Overprotection	 Linsist upon keeping my baby close to me at all times, within my eyesight and in the same room as Lam. Lonsider myself a "real mother hen." Lonsider my baby sleeps in the same room as me at night When Lleave my baby with a baby-sitter. Limits
	 I can never bring myself to leave my baby with a baby-sitter
Perception of the child's qualities	 Left the impression that my baby is particularly curous compared with other children his/her age Left the impression that my baby is particularly endearing compared with other children his/her age Left the impression that my baby is particularly cute compared with other children his/her age. Left the impression that my baby is particularly intelligent compared with other children his/her age.

Source : Institut de la statistique du Québec, ÉLDEO 1998-2002.

The distribution of the scores (data not shown) indicates that of the six dimensions retained, only the tendency to overprotection had a normal distribution, with a mean of 4.9 (s.d. = 2.3) for the mothers and 3.82 (s.d. = 2.3) for the fathers. All the other dimensions had distributions characterized by a positive bias, such as parental self-efficacy, or a negative bias, such as the tendency to coercion. However, in nearly all of these distributions, the range and variability of the scores put the vast majority of respondents inside the limits of the scale, namely between 0 and 10. Only parental affection was the exception. Indeed, 60% percent of the mothers and 29% of the fathers obtained a maximum mean of 10 on the affection scale, which indicates a level peaking of the scores and the low sensitivity of the scale.

The means observed for the mothers and fathers are presented in Figure 3.1. On the whole, both perceived themselves as rather effective parents, believed their behaviours were having a significant impact on the development of their child, reported that they only rarely resorted to coercive behaviours, indicated feeling and showing a lot of affection towards their child, and tended to perceive their child as being more physically attractive and more intelligent than other children the same age. With regards to the tendency to overprotection, mothers and fathers presented less polarized scores overall, demonstrating that they occasionally had overprotective behaviours. It is noteworthy that mothers were significantly different from fathers in most of the dimensions. They reported higher self-efficacy, more affection, overprotection and less coercive behaviours than the fathers. There was no difference between mothers and fathers in terms of perception of impact or perception of the infant's qualities.¹²





1. p < 0.001.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The correlations among the six dimensions of parenting perceptions and behaviours are presented in Table 3.2. Two aspects draw attention here: the correlations between mother and father assessments located on the diagonal, and the subscale correlations for the mothers above the diagonal and for the fathers below the diagonal. Moderate correlations were observed between mothers and fathers in terms of overprotection (r = 0.48) and coercion (r = 0.33), perception of the infant's qualities (r = 0.36) and perception of impact (r = 0.34; in all cases p < 0.001). Significant, but weaker correlations were

^{12.} The data from a number of ÉLDEQ scales did not show a normal distribution. In all cases where mean comparison tests were applied, chi-square tests were conducted to confirm the results. These categorized the variables related to the scales into three relatively equal categories (tertiles). The analyses confirmed the trends observed by comparing the means. In general, the level of significance observed in the mean companion tests were close to those obtained in the chi-square tests.

obtained for affection (r = 0.27; p < 0.001) and self-efficacy (r = 0.22; p < 0.001).¹³

Table 3.2

Correlations Among the PPBS Dimensions for the Mothers (above the diagonal) and Fathers (below the diagonal), and Between the Mothers and Fathers (on the diagonal), 1998¹

	Self- Efficacy	Impact	Coercion	Affection	Overprotection	Qualities
Self-Efficacy	0.22	0.7	-0.23	0.54	0.12	0.38
Impact	0.16	0.34	-0.16	0.13	-0.23	0.08
Coercion	-0.23	-0.16	0.33	-0.15	-0.10	-0.02
Affection	0.65	0.20	-0.21	0.27	0.10	0.37
Overprotection	0.18	0.19	-0.15	0.22	0.48	0.15
Qualities	0.40	0.10	-0.12	0.40	0.19	0.36

1. All correlations higher than 0.07 were significant at the 0.05 threshold. The weighted sample varied from 2,117 to 2,138 for the mothers (above the diagonal), 1,826 to 1846 for the fathers (below the diagonal) and 1,807 to 1,834 for the mother/father correlations (on the diagonal).

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

In general, the subscale correlations indicated that the scores were weakly or moderately related (Table 3.2). However, strong correlations were observed between affection and parental self-efficacy (r = 0.54 and 0.65; p < 0.001). Parents who saw themselves as more effective showed more pleasure and affection in their interactions with the infant. These strong correlations were consistent with the factor analyses presented earlier. Moderate correlations were also found between affection and perception of the infant's qualities (r = 0.37 and 0.40; p < 0.001), between perception of the infant's qualities and self-efficacy (r = 0.38 and 0.40; p < 0.001), and to a lesser degree, between self-efficacy and coercion (r = -0.23 and -0.23; p < 0.001). The more the parents highly perceived the qualities of their infant compared to other infants the same age, the more

they derived pleasure and felt affection in their interactions with him. The more they perceived themselves as effective parents, the more they perceived high qualities in their infant, and the less they revealed resorting to hostile and restraining behaviours when confronted with difficult behaviour on his part.

On the whole, the results of this study confirm the utility of the PPBS. It provided a coherent factor structure and the scores showed a good degree of reliability. Although the correlations were weak or moderate, the general pattern of results was not only coherent theoretically, but also comparable across parent. Furthermore, with the exception of the strong correlation between affection and parental self-efficacy, there was little redundancy among the scales. Given the limited sensitivity of the affection scale and its very strong relation with self-efficacy, it was not included in the following analyses.

3.1 Factors Associated with Parenting Perceptions and Behaviours

To clearly understand the role of parental perceptions and behaviours in the dynamics of the parent/child system, it is necessary to disentangle the complex web of their determinants and the relations among these determinants. Through the longitudinal study of these children, it will be possible to not only identify the main factors associated with parental perceptions. and behaviours, but more importantly, to understand the mechanisms by which these factors, perceptions and behaviours interact to influence child development. For example, economic hardship and negative life experiences have been associated with punitive, inconsistent and inappropriate parental behaviours as well as behavioural problems in children (Conger et al., 1992, 1993; Dix. 1991; McLovd, 1998). However, very little is known about the mechanisms that account for these associations. Can they be explained by certain characteristics of the parents such as educational level, or are they rather the product of a mechanism of influence by which socioeconomic hardship leads to psychological distress, which in turn affects parental behaviours and child development? Are there factors which can moderate this influence, such as social support or infant temperament?

In order to test such explanatory models, it is necessary to consider a variety of factors associated with parenting perceptions and behaviours - those related to the infant's and

^{13.} Tests on the Pearson correlation coefficients were conducted even though many scores on the PPBS presented abnormal and strongly biased distributions. In addition, given the very large number of correlations and linear regressions calculated (see the following sections), the basic assumptions associated with using linear regression analyses were not systematically verified. Consequently, the coefficients with weak values are presented for descriptive purposes only.

parents' characteristics, and those derived from the family and socioeconomic context. Infants can differ in temperament and parents may adopt certain behaviours in response to the characteristics they perceive (Lytton, 1990). Hyperactivity in the child can result in a high level of irritability, excessive crying and poor distress management. The disorganized character of these behaviours and the additional demand for attention generated is more likely to irritate some parents (Frodi *et al.*, 1978; Rubin *et al.*, 1990), especially in stressful situations, affect their perceived parental competence, and lead them to behaviours that limit the child's his autonomy and exploration of the environment

The affective state of parents can also influence the quality of parent/child relationships (Conger *et al.*, 1994; Dix, 1991). Psychological distress, maternal depression in particular, has been correlated with physical abuse, coercive strategies, a lack of maternal sensitivity and parental dissatisfaction (McLoyd, 1998). The stress associated with psychological distress may restrict a parent's capacity for attention and reduce his/her ability to process information (Whaler & Dumas, 1989). Because they are preoccupied, depressed parents may have a tendency to lack attentiveness and ignore their children's demands for attention, who then increase the intensity of their demands (Cox *et al.*, 1992; Dix, 1991).

Adolescent parenthood may be another risk factor associated with dysfunctional parenting behaviours (Brooks-Gunn & Chase-Landsdale, 1995), notably in terms of controlling affect and emotional availability (Osofsky *et al.*, 1993). Furthermore, since they engage the parents' belief system and their socialization goals, parenting perceptions and behaviours may vary with cultural factors and educational level.

Moreover, many studies show associations between negative life situations and events and psychological distress manifested in the form of depression, anxiety, hostility, eating and sleep disorders in parents and children (for a review, see McLoyd, 1998). A restrictive, punitive and emotionally distant parenting style has been associated with stressful and undesirable life experiences such as divorce and conjugal conflict (Patterson & Capaldi, 1991). Mothers undergoing stressful experiences are less attentive to their children, and in the case of single parents, are less comfortable and spontaneous, and less likely to respond appropriately to the demands of their children (Weinraub & Wolf, 1983). Socioeconomic status has often been used as a general "marker" for a range of disadvantaged circumstances (low educational level, single parenthood, frequent changes in family structure, unstable employment), which in addition to insufficient income, negatively affect the psychological well-being of parents and their parenting behaviours (Conger *et al.*, 1992, 1994). Indeed, many studies have shown that parents of low SES families are more likely than those with higher SES to use excessive and restrictive disciplinary techniques and resort more often to disapproval and punishment as a means of enforcing discipline. They place a high value on obedience, and give no support to the child (Hart & Risley, 1995; Kelley *et al.*, 1993; McLoyd, 1998).

In summary, it is clear that a comprehensive study of parenting perceptions and behaviours should take into account a variety of factors related to the infant, the parent and the family context. Therefore, the scores were submitted to a series of univariate analyses, namely t tests and ANOVAS, followed by multiple comparison tests and Pearson correlations, to examine variations according to certain characteristics of the household, parent and infant. However, caution should be observed here. Since the analyses were exploratory, a rather liberal strategy was used in choosing the criterion for statistical significance, namely p < 0.05. In such a large sample, a correlation as weak as 0.06 is considered statistically significant. In addition, the multiple use of univariate tests increases the probability of error. These choices therefore suggest prudence in interpreting the results, particularly when the associations observed are weak.

3.2 Variations in Parenting Perceptions and Behaviours Related to Family Characteristics

Five family characteristics were included in the analysis: insufficient income, socioeconomic status, type of family, spousal/partner support and birth order. Insufficient income was calculated according to a procedure suggested by *la Direction Santé Québec* of the *Institut de la statistique du Québec*. It was based on the low-income cut-off (LICO) set by Statistics Canada for the reference year 1997. It takes into account the size of the household and the region where it is located. Socioeconomic status is an indicator which combines the occupational prestige,

educational level and financial situation of the infant's parents.¹⁴ Families were classified into quintiles by their rank on the socioeconomic index. The type of family distinguishes singleparent, intact two-parent and stepfamilies. Spousal/partner support measures the degree of emotional support perceived by the mother, but also that involved in taking care of the baby and doing household chores (see No. 11 in this series of papers). Finally, families were categorized by whether the infant was or was not the only child in the family.

As shown in Figure 3.2, mothers in families with insufficient income reported having less impact on their infant's development, reported resorting more frequently to overprotective behaviours, and had a lower perception of the physical and cognitive qualities of their infant compared to mothers with higher incomes. No difference was found with regards to self-efficacy and coercive behaviours. Except for the perception of the infant's qualities, the same trends were observed in the fathers (data not shown).

Figure 3.2





Sufficient income B Insufficient income

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1. p < 0.001.
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2. p < 0.01.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Similar trends were found with respect to the socioeconomic status. This was not surprising given the strong correlation between this variable and insufficient income (r = -0.57;

p < 0.001). As revealed in Figure 3.3, the most important variations emerged for parental impact and overprotection. Mothers in households in the lower quintiles perceived having less impact on the development of their child and reported more overprotective behaviours than those in the higher quintiles, the differences following a rather uniform gradient. Other significant, though more marginal, differences were also observed. Mothers in the lowest quintile felt slightly more effective as parents than those in the highest quintiles (4th and 5th), whereas those in the highest tended to perceive the physical and cognitive qualities of their infants slightly more than those in the lowest quintiles (1st and 2nd). It is interesting to note that the mothers at the two extremities of the SES indicator showed no difference in coercive behaviours. Only mothers in the highest quintile were slightly different from the second and third in terms of this variable. It is important to note that some of these results may be associated with employment status. Mothers in the lower quintiles were less likely than those in the higher ones to be working at the time of the survey (data not shown). It will be interesting to verify if these same trends will be found after the next round of data collection, when a larger number of mothers will be returning to the labour market.

It is noteworthy that the same analyses conducted on the fathers' perceptions and behaviours confirmed clear SES differences in terms of perceived parental impact and overprotection. In contrast, no difference was observed with regards to self-efficacy and coercion. Fathers in the highest quintile had a more favourable perception of the qualities of their child than those in the second quintile, but this was the only difference revealed (data not shown).

^{14.} For more details on this and the preceding measurement, see Numbers 2 and 12 in this series of analytical papers.

Figure 3.3 Mean Scores of Mothers for Each Dimension of the PPBS by Socioeconomic Status of the Family, 1998



1. p≤0.001.



Compared to mothers in intact two-parent families, single-parent mothers perceived having less impact on the development of their child and showed more overprotective behaviours (the three types of families differed here) (figure 3.4). In addition, compared to mothers in intact two-parent families, single mothers perceived themselves as slightly more efficient and saw higher physical and cognitive qualities in their infants. No significant difference was observed, however, in coercive behaviour.





1 p < 0.001.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Correlations between mother's perception of spousal/partner support and the perception and behaviour scores revealed a positive association between perceived spousal support and maternal self-efficacy (r = 0.22; p < 0.001) and paternal selfefficacy (r = 0.32; p < 0.001). It is of note that spousal support perceived by the mother had a stronger association with paternal self-efficacy than with maternal self-efficacy. This possibly reflects a stronger commitment on the part of some fathers to caregiving for their infant, which translates into a feeling of greater parental efficacy, and in turn, perception of better spousal support on the part of the mother. Other significant correlations emerged, although weaker. Spousal/partner support was positively associated with the perception of the infant's qualities (r = 0.10; p < 0.001 for the mothers and r = 0.11; p < 0.001 for the fathers) and negatively correlated with coercive behaviours (r = -0.09; p < 0.001 for the mothers and fathers). Perception of spousal support was also correlated, though weakly, with the perception of impact (r = 0.08; p < 0.001) and overprotection (r = 0.07; p < 0.01) in the fathers (data not shown).

Mothers and fathers of a singleton infant perceived greater physical and cognitive qualities in him than those who had more than one child (data not shown; mothers: 8.2 vs. 7.7; p < 0.001; fathers: 8.2 vs. 7.6; p < 0.001). Furthermore, the fact that the infant, for the moment at least, was the sole child in the family,¹⁵ was associated with maternal behaviours which were slightly more coercive (1.2 vs. 1.0; p < 0.01) and overprotective (5.0 vs. 4.8; p < 0.05), a higher self-efficacy (8.2 vs. 7.8; p < 0.001) and, in the father, with a slightly higher perception of impact (8.4 vs. 8.2; p < 0.01) (data not shown).

3.3 Variations in Parenting Perceptions and Behaviours by Parental Characteristics

Four characteristics of the parents were retained - age of the mother, educational level of the parents, psychological distress measured by the CES-D depression scale, and immigrant status. For the purposes of analysis, mothers were divided into three age groups -under 20 years of age, (3% of the target

^{15.} Specifically, the only infant living with the mother and/or father, a low percentage of parents having other children who were not living in the household (see No. 2 in this series).

population), 20-34 years of age, comprising the majority (83%), and 35 years of age and over (14%). Compared to mothers in the mid-age group, those under 20 perceived themselves as having less impact on their infant's development (M = 7.3 vs. M = 8.3; p < 0.001), but were clearly more overprotective (M = 5.7 vs. M = 4.8; p < 0.01) and perceived more qualities to their infant (M = 8.4 vs. M = 7.9; p < 0.05). It is noteworthy that mothers under 20 years of age did not show more coercive behaviours (M = 1.4 vs. M = 1.1; p = 0.11). Older mothers differentiated themselves from the mid-age group by perceiving themselves as having less impact (M = 7.9 vs. M = 8.3; p < 0.05) and had a greater tendency to be overprotective (M = 5.3 vs. M = 4.8; p < 0.001), although they were less coercive (M = 0.9 vs. M = 1.1; p < 0.05). No difference among the mothers' age groups was observed with regards to self-efficacy (data not shown).

Educational level of the mothers and fathers was defined by using the highest level of education attained as the base category. Five categories were considered - no high school diploma, high school diploma or some high school completed, vocational/technical diploma, college (junior) diploma, university degree. As illustrated in Figure 3.5, perceived impact and overprotection varied with the mother's educational level.

Figure 3.5





1. p < 0.001.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The more educated the mother, the more she perceived having an impact on the child's development and the less she showed overprotective behaviours. It is of note that the same trends were found in the fathers (see Figure 3.5). One other difference related to the educational level of the mother was observed. Mothers with the highest educational level (university degree, M = 8.1) attributed more qualities to their infant than the least educated ones (no high school diploma, M = 7.7 vs. high school diploma, M = 7.6; p < 0.001) (data not shown).

Immigrant status was categorized by the birthplace of the parents - non-immigrant (born in Canada), "European" immigrant and non-"European" immigrant (see Chen *et al.*, 1996 and No. 2 in this series of papers). As illustrated in Figure 3.6, non-"European" immigrant mothers differed in many dimensions. Compared to those born in Canada, they perceived themselves as having less impact on their infant's development, revealed overprotective behaviours and attributed less qualities to their infant. "European" immigrant mothers were different from nativeborn Canadian mothers in having a slightly less positive perception of the infant's qualities. Analyses conducted on the fathers' responses revealed the same trends as those of the mothers (data not shown).



Mean Scores of Mothers for Each Dimension of the PPBS by their Immigrant Status, 1998



1. p < 0.001.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Pearson correlations between depression scores and each of the five parental perception and behaviour dimensions showed weak, but significant correlations between depressive symptoms in the fathers or mothers and four of the five dimensions. The higher the feeling of depression, the lower the feeling of parental self-efficacy (mother: r = -0.13; p < 0.001; father: r = -0.24; p < 0.001), the lower the impact they felt they were having on their child's development (mother: r = -0.14; p < 0.001, father: r = -0.19; p < 0.001), and the more they reported coercive (mother: r = 0.22; p < 0.001; father: r = 0.22; p < 0.001; father: r = 0.22; p < 0.001; and the more they reported coercive (mother: r = 0.22; p < 0.001; father: r = 0.15; p < 0.001; though significant, very weak for the father: r = 0.05; p < 0.001; though serve the father infant's qualities in the fathers (r = -0.10; p < 0.001), but not in the mothers (data not shown).

3.4 Variations in Parenting Perceptions and Behaviours Related to the Characteristics of the Infant

No significant difference was observed in the five dimensions of parenting perceptions and behaviours by sex of the infant, for both parents. Two sources of information were used for evaluating the infant's temperament - the mothers and fathers.

Pearson correlations between the perception and behaviour scales and infants' difficult temperament (as reported by the parents) are shown in Table 3.3. The correlation between the two evaluations of temperament was r = 0.59; p < 0.001. Selfefficacy in both mothers and fathers was negatively associated with difficult temperament in the infant as perceived by the parents. The more they perceived their infant as difficult, the less they felt they were effective as a parent. The tendency to coercion in mothers and fathers was positively associated with perceived difficult temperament in the infant. The more the child was perceived as difficult by the parents, the more they reported resorting to coercive behaviours. The perception of the general qualities of the infant was inversely, though marginally, associated with difficult temperament. The perception of impact and overprotection were not associated with difficult temperament, except very weakly in the mothers.

Table 3.3

Correlations Among t	he PPBS Dimensions and	Difficult Temperament of	the Infant as Perceived	by the Parents, 1998 ¹
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	PPBS Dimensions				
	Self- Efficacy	Impact	Coercion	Overprotection	Qualities
Difficult temperament according to the mother				999 999 999 999 999 999 999 999 999 99	
Mother's PPBS	-0.22***	0.01	0.21	0.04	-0.07
Father's PPBS	-0.13	0.03	0.19	0.02	-0.05 [†]
Difficult temperament according to the father					
Mother's PPBS	-0.26	0.01	0.31	-0.05	-0.12
Father's PPBS	-0.21	0.03	0.19	-0.03	-0.05

Note : 1 indicates p < 0.05; 11 p < 0.01; 111 p < 0.001.

1. Weighted n varied from 2,112 to 2,124 (1st line), 1,821 to 1,839 (2nd line), 1,798 to 1,816 (3rd line), 1,786 to 1,799 (4th line).

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.5 Contribution of Risk Factors Retained to the Results of the PPBS

The risk factors retained in this study were not mutually exclusive. To evaluate the respective contributions of these factors to the results of the PPBS, multiple regression analyses were conducted for each dimension of maternal perceptions and behaviours. In order, the predictors for the mother were difficult temperament of the infant (the mean of the evaluations of the mother and father), mother's age (under 20 yrs vs. 20 yrs or over), mother's depression score, mother's educational level, being an immigrant (non-"European" vs. "European" immigrant or non-immigrant), mother's perception of spousal/partner support, type of family (single-parent vs. two-parent, insufficient income (rather than socioeconomic status, with which it was strongly associated) and the number of children living in the household (one, or more than one child).

The risk factors retained accounted for 12% of the variance in maternal self-efficacy, the essential predictors being difficult temperament of the infant (Beta = -0.23; p < 0.001), perceived spousal/partner support (Beta = 0.18; p < 0.001), and more marginally, mother's feeling of depression (Beta = -0.07; p < 0.01) and being a non-"European" immigrant (Beta = -0.09; p < 0.01) (data not shown).

In all, 13% of the variance in the perception of impact was explained by the contribution of the factors retained. Two characteristics made unique and strong contributions - being a non-"European" immigrant (Beta = -0.24; p < 0.001) and educational level of the mother (Beta = 0.18; p < 0.001). Also associated, to a lesser degree, was the feeling of depression in the mother (Beta = -0.07; p < 0.01) and insufficient income (Beta = -0.07; p < 0.05).

With regards to behaviours reported by the parents, 10% of the variance in the tendency to coercion was explained by the factors retained, mainly by difficult temperament of the infant (Beta = 0.19; p < 0.001) and feeling of depression in the mother (Beta = 0.19; p < 0.001). The fact of being a singleton child in the family (Beta = 0.07; p < 0.01) and single parenthood (Beta = 0.05; p < 0.01) seemed also to make modest contributions to coercive behaviour.

Fifteen percent of the variance observed in the tendency to everprotection was explained by the factors considered. Many made unique contributions - being a non-"European" immigrant (Beta = 0.22; p < 0.001), educational level of the mother (Beta = 0.20; p < 0.001), insufficient income (Beta = 0.13; p < 0.001), and to a lesser degree, being a singleton child (Beta = 0.09; p < 0.001) and the feeling of depression in the mother (Beta = 0.07; p < 0.01).

Finally, only 5% of the variance of the perception of the infant's qualities could be explained by the factors retained, mainly the fact of being the only child in the family (Beta = 0.12; p < 0.001), but also to a lesser degree spousal support (Beta = 0.09; p < 0.001), mother's educational level (Beta = 0.08; p < 0.001), absence of difficult temperament (Beta = -0.07; p < 0.01) and not being a non-"European" immigrant (Beta = -0.08; p < 0.05).

The same analyses were conducted on the parenting perceptions and behaviours of the fathers, with the exception of single parenthood, which could not be used as a factor given the lack of information on absent fathers. These analyses are not presented here. However, it is important to underline that overall, they revealed the same trends observed in the mothers.

A variety of factors were associated with different dimensions of parenting perceptions and behaviours. Difficult temperament of the infant, parental depression, spousal/partner support, educational level and immigrant status were factors which played a role in this regard. It is interesting to note that these differed according to the dimension retained. The fact that the infant was perceived by his parents as having a difficult temperament was significantly associated with the feeling of selfefficacy and coercive behaviour reported by the parents, However, this factor did not seem to be associated with the perception of impact or overprotection. While perceived spousal/partner support seemed to be associated with selfefficacy, the affective status of the parent (symptoms of depression) emerged as a factor associated with coercion, and to a lesser extent, to self-efficacy and overprotection. It therefore seems that infant characteristics combined with family factors or parental characteristics to explain parental self-efficacy and coercive behaviours. However, causality should not be interpreted too hastily, given the nature of correlations and the absence of a temporal sequence in these data.

Insufficient income, which appeared as an important determinant of perception of impact and overprotection in univariate analyses, seems to have made a more modest contribution when the other factors were included. These preliminary data suggest that the association between these dimensions and insufficient income can be explained in part by factors associated with characteristics of the mother, notably educational level and being a non-"European" immigrant. The latter two seemed to have made the most important contributions. The non-"European" variable deserves some reflection and should be scrutinized more in depth, since it suggests that cultural determinants may be involved in the reporting of, or actual behaviours of parents.

The fact that the negative poles of the dimensions retained characterized only a part of the target population, as indicated by the frequency distributions of four of the five, may explain the modest nature of the results. It is also possible that certain perceptions and behaviours had not yet crystallized, given that the newborn child had only recently arrived. It will be interesting to re-examine the scale in the coming rounds of data collection. planned for the ages of 17 and 29 months, when a greater number of mothers will have returned to the labour market, and the children will be at developmental stages marked by more motor autonomy and the testing of this with the parents.

The longitudinal nature of the survey will help ascertain to what degree parental perceptions and behaviours play a role in the emergence of adjustment problems in the children. This should help gain a better understanding of the mechanisms by which certain adverse conditions can affect child development. It is probable that these factors interact according to the rules of the mediation and moderation of effects. Therefore, it is possible to think that maternal perceptions and behaviours play a mediating role as to certain environmental factors. In fact, it is likely that adverse environmental factors can affect child development, but the effect is mediated by their impact on parental perceptions and behaviours (mediating effect), the parents being the most proximate environment of the child in his first year of life. It is also possible that parental perceptions and behaviours may moderate the potential impact of adverse environmental factors (moderation effect). Whatever the case, this longitudinal study will undoubtedly help identify children in problematic developmental trajectories and suggest the most promising intervention paths.

Parenting and Family Relations

Part II Family Environment



Parents play an essential role in the creation of a positive environment for the psychological and social development of their children, particularly in early childhood. The first part of this paper presented an overview of Québec parents' perceptions and behaviours regarding their 5-month-old infants and shed light on their associations with certain infant and parental characteristics. The Étude longitudinale du développement des enfants du Québec (ÉLDEQ 1998-2002) (Longitudinal Study of Child Development in Québec) includes additional measurements of the quality of the interaction amongst family members permitting eventually to better understand in what way the family environment contributes to increasing or decreasing the risk that the child will present future adjustment problems (Rutter, 1990; Werner & Smith, 1992). These measures include an assessment of family functioning and positive parenting practices by the person who knows the infant best (Person Most Knowledgeable - PMK) and an evaluation of the parent/infant relationship by a third party, namely the interviewer. These aspects of the family environment are the subject matter of this paper.¹

Researchers generally agree upon the fact that the quality of family relationships, particularly the quality of communication between the parents, is strongly associated not only with their degree of satisfaction with the relationship (Rogge & Bradbury; 1999) and the risk of the couple separating (Devine & Forehand, 1996), but also directly with the well-being of the children. Disagreements and conflicts between the parents may therefore contribute to the genesis of mental health problems in the children (Bergeron *et al.*, 1997; Offord *et al.*, 1989a).

A number of epidemiological studies have revealed significant associations between the quality of the parent/child relationship and affective and behavioural problems in youth (Bergeron *et al.*, 1997; Landy & Tam, 1996). Hostile parenting practices, for example, increase the risk that a child will adopt maladjusted behaviours, whereas positive parenting practices are an important protective factor against psychosocial disorders in children living in multiple-risk environments (Landy & Tam, 1998; Werner, 1993).

Furthermore, the degree of stimulation the child receives in his family environment has been shown to be associated with a variety of developmental indicators (Joseph, 1999). It has been observed that the capacity of the mother to detect the needs of her child, respond to them appropriately and provide a stimulating environment is positively associated with the child's health, his physical, language and cognitive development as well as his social skills and temperament (Bradley, 1993; Murray & Hornbaker, 1997; Smith *et al.*, 1996; Strauss & Knight, 1999; Wallace *et al.*, 1998).

However, the quality of interactions amongst family members varies with certain characteristics of the family environment. Family dysfunction is more prevalent in low-income families and those in which the parents are suffering from depression (Fiscella, 1999; Friedemann & Webb, 1995; Keitner *et al.*, 1995). Parenting practices and the quality of stimulation the child is provided with in his family environment also seem to be associated with the mental health of the parents (Bradley, 1993; White & Barrowclough, 1998). Nevertheless, socioeconomic status of the family appears to be more closely linked to the degree of stimulation the child receives in the family environment than positive parenting practices (Bradley, 1993; Chao & Willms, in press).

The data collected in ÉLDEQ 1998 provide a portrait of the family environment in which Québec infants are evolving and a means of verifying whether the quality of family relationships vary with certain characteristics of the parents or the baby's environment. Variables examined in relation to certain aspects of the family environment for this second part of the paper were sufficiency of household income, age and educational level of the parents, mother's immigration status, mother's employment status at the time of the survey, type of family and birth order of the infant. Other factors studied in terms of their association with the family environment were variables pertaining to the adjustment of the parents or the couple's relationship such as symptoms of depression in the mother or father, and spousal support perceived by the mother.

Another measurement of the quality of family relationships, namely the support the mother perceived she was receiving from her spouse/partner, is examined in No. 11 in this series of papers.

With the exception of information on symptoms of depression in the father derived from the Self-Administered Questionnaire for the Father (SAQF) and the measurement of conjugal support perceived by the mother derived from the Self-Administered Questionnaire for the Mother (SAQM), the data were taken from the Computerized Questionnaire Completed by the Interviewer (CQCI) administered to the PMK. ÉLDEQ included the family functioning scale used in the Ontario Child Health Study (Offord et al., 1989b) and the National Longitudinal Study of Children and Youth (NLSCY, Canada), In the Computerized Questionnaire Completed by the Interviewer (CQCI), the PMK had to respond to 12 questions on 6 dimensions reflecting the quality of family relationships, such as problem-solving, communication, roles, affective responsiveness, affective involvement and behaviour control. For each item, the PMK had to indicate on a scale of 1 (strongly agree) to 4 (strongly disagree) to what degree the statement corresponded with her perception of the quality of intra-family relationships. Among the statements presented to the PMK were: "We express feelings to each other." "We don't get along well together," and "We feel accepted for what we are." The family functioning scale therefore was designed to assess the quality of the relationships among all members of the immediate family

Information on their family functioning was provided by 2,188 PMKs, who in virtually all cases (99.7%) were the biological mothers of the infant. Figure 2.1 shows the distribution of infants according to the results obtained on the family functioning scale.

As illustrated, the distribution has a strong bias to the left, which indicates that the majority of PMKs perceived their families as being very functional. Based on the clinical threshold of family functioning established by researchers at the Chedoke-McMaster Hospital in Hamilton, Ontario (Cadman *et al.*, 1991), more than 90% of the infants were living in well-functioning families (result between 0 and 14). Only 7% of the families could be considered dysfunctional (result higher than 15).

Figure 2.1





Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

2.1 Sociodemographic Characteristics

When families with an income considered sufficient were compared with those whose family income was below the low-income cut-off, the quality of family relationships was lower in the latter. The mean score obtained on the family functioning scale was higher in the low-income families, suggesting they reported more problems or less satisfactory family relationships (7.9 vs. 5.8; see Figure 2.2).²

^{2.} The data from a number of ÉLDEQ scales did not show a normal distribution. In all cases where mean comparison tests were applied, chi-square tests were conducted to confirm the results. These categorized the variables related to diverse scales into three relatively equal categories (tertiles). The analyses confirmed the trends observed by comparing the means. In general, the threshold of significance observed in the mean comparison tests were close to those obtained in the chi-square tests.

Figure 2.2 Evaluation of Family Functioning by the PMK³ by Level of Household Income, 1998²



- Note: The level of sufficient income was defined according to the lowincome cut-off set by Statistics Canada. For more details, see No. 2 in this series of papers.
- 1. A higher score on the family functioning scale indicates a higher level of family dysfunction.
- 2. p≤0.001.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The degree of family functioning was also associated with the mother's educational level. As shown in Figure 2.3, there were more indicators of family dysfunction in mothers who had no high school diploma compared to those with higher educational levels. In fact, the differences in the assessment of family functioning by education of the mother were progressive and showed a gradient. Only households in which the mother had a (junior) college diploma showed no difference from those in which the mother had a vocational/technical diploma. There was also an association observed between family functioning and educational level of the father. Although the gradient was less accentuated, fathers with no high school diploma were significantly more likely to live in less functional households in terms of intra-family relationships than those who had successfully completed high school, college (junior) or university (p < 0.001; data not shown). Variations were also observed related to employment status of the mother; mothers who worked at the time of the survey generally reported fewer indices of family dysfunction than those who did not work (5.6 vs. 6.5; p < 0.01; data not shown). This result may reflect in part the effect of income or educational level of the parents indicated above. It will be interesting to pursue other analyses to better

understand the link between working mothers and family functioning.

Figure 2.3

Evaluation of Family Functioning by the PMK by Educational Level of the Mother, 1998¹



1. p < 0.001

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The ELDEQ 1998 data also reveal that perceived family functioning varied with the age of the mother. Infants with a teenage mother were more likely to be in a family with lower quality relationships than those with an older mother (p < 0.001; data not shown). In comparison, the relationship between family functioning perceived by the PMK and the age of the father appeared to be less clear. The quality of family relationships in which the father was under 25 years of age showed no significant difference from that reported in families where the father was 25 or over. Only families in which the father was between 25 and 34 years of age presented fewer indicators of family dysfunction that those with fathers age 35 and over (p < 0.001; data not shown).

Ethnocultural characteristics of the infant also seemed related to family functioning. The quality of family relationships was less favourable in families in which the mother was a non-"European" immigrant than in those in which the mother was a "European" immigrant or native-born Canadian (8.6 vs. 5.2 and 6.1 respectively; p < 0.001; data not shown).

On the whole, family functioning did not seem to be significantly associated with the infant's birth order. Only families with three or more children tended to show a lower level of family functioning than those with only one child (6.8 vs. 6.1; p = 0.05; data not shown). As shown in Figure 2.4, greater variations were observed according to the type of family. Single-parent PMKs reported more indicators of family dysfunction than PMKs in two-parent families, intact or step. However, it should be emphasized that all of these characteristics were strongly associated among themselves. For example, mothers in single-parent families were more likely to be younger, less educated, unemployed or to live in a low-income household (see No. 2 in this series of papers).

Figure 2.4 Evaluation of Family Functioning by the PMK by Type of Family, 1998¹



1. p < 0.001.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

2.2 Parental and Family Characteristics

The ELDEQ data revealed that the quality of family relationships was associated with the degree of depression symptoms reported by the mother, and to a lesser degree, by the father (r = 0.46; p < 0.001 and r = 0.24; p < 0.001, respectively). More specifically, the scores on the family functioning scale of approximately 30% of depressed mothers³ were in the dysfunctional range (higher than 14), whereas only 4% of non-

depressed mothers were in dysfunctional families (p < 0.001). In terms of the fathers, 13% of depressed fathers, namely those in the upper 10th percentile of the depression scale, versus 5% of non-depressed fathers, were in families described by the PMK as dysfunctional in intra-family relationships (p < 0.01; data not shown). Moreover, in two-parent families, the quality of intra-family relationships was significantly correlated with the degree of spousal/partner support perceived by the mother (r = -0.44; p < 0.001; data not shown).

^{3.} Mothers and fathers were considered 'depressed' if their score on the depression scale used in ÉLDEQ was above the 90th percentile. Landy & Tam (1996) considered a result of 13 or higher obtained in this abridged version of the CES-D as indicating the presence of moderate to severe depression. In ÉLDEQ 1998, slightly more than one in ten mothers (11%) and 4% of fathers obtained a score equal to or higher than 13.

Several aspects of the parent/infant relationship were measured in ÉLDEQ 1998. In this section, we will examine the data related to positive behaviours of parents towards their infant. Adapted from the Parenting Practices Scale developed by Strayhorn & Weidman (1988) and also used in the NLSCY, the positive parenting practices scale was weakly correlated (correlation coefficients varying from - 0.05 to 0.18) with the sub-scales of the PERBEHAVRIS presented in Part 1 of this paper. This suggests that these scales measured different dimensions of the parent/child relationship. With respect to positive parenting practices, five questions were presented to the PMK, who had to indicate on a scale of 1 (never) to 5 (many times a day) the frequency of certain interactions with the infant. Among these questions were: "How often do you praise (the child)," "How often do you and the baby talk and play with each other...," and "How often do you and the baby laugh together?"

A total of 2,214 PMKs responded to the questions on positive parenting practices in the Computerized Questionnaire Completed by the Interviewer (CQCI). The data were combined to form a scale of positive interactions, the results of which are shown in Figure 3.1.

Figure 3.1





Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The distribution of infants according to the parents' responses shows a clear bias to the right. This suggests that the majority of

infants were in a family environment characterized by frequent positive interactions with their parents.

3.1 Sociodemographic Characteristics

The frequency of positive parenting practices did not vary with most of the sociodemographic characteristics examined. Hence, neither the income level of the household, age, educational level or immigrant status of the mother, nor type of family were significantly associated with the frequency of positive interactions reported by the PMK. The frequency of positive interactions between mother and baby, however, was linked to the number of children in the family. PMKs reported more positive interactions with the infant if he was the sole child in the family compared to families with more than one child. Moreover, infants who had only one sibling seemed to benefit from more positive interactions than those in families with three or more children (17.8 vs. 17.3; p < 0.01).

Figure 3.2

Positive Interactions between the PMK and Infant by Number of Children Living in the Household, 1998¹



1. p < 0.001

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

3.2 Parental and Family Characteristics

Positive parenting practices varied to a certain yet small degree according to characteristics of the parents or family such as the degree of depression symptoms reported by the mother (r = -0.10; p < 0.001), spousal/partner support perceived by the mother (r = 0.09; p < 0.001) and family functioning (r = -0.14; p < 0.001). Although statistically significant, the associations were rather weak and should be interpreted with caution.⁴ Subsequent waves of ÉLDEQ 1998-2002 data will permit to examine to what extend these trends are maintained. Lastly, the frequency of positive parenting practices reported by the PMK did not vary with the employment status of the mothers or the level of depression symptoms reported by the father.

Tests on the correlation coefficients were conducted even if many scores on the scale showed abnormal or strongly biased distributions. Consequently, coefficients with weak values are shown for descriptive purposes only.

In addition to obtaining information from parents on their attitudes and behaviours regarding their infant, ÉLDEQ 1998 included a questionnaire completed by the interviewer which aimed at assessing various aspects of family life and the parent/infant relationship. This questionnaire, entitled Observation of Family Life, is an abridged and adapted version of the Home Observation for Measurement of the Environment Inventory (HOME; Caldwell & Bradley, 1984). This questionnaire was developed to measure the quality and quantity of stimulation and support given to the child in the family environment. HOME has been used in hundreds of studies and its association with cognitive and social development in children has been well documented (Bradley, 1993; Hurt *et al.*, 1998).

In ELDEQ 1998, 2,221 Observations of Family Life were filled out by the interviewers. Two scales from this questionnaire were retained for this study, one on the emotional and verbal capacities of the PMK and one on infant stimulation.⁵ The first scale contained 10 items which measured both the quality of verbal exchanges between the mother (PMK) and her baby (e.g., "The mother's speech with the baby is distinct, clear and audible") and the mother's verbal skills observed during the interview (e.g., "The mother easily and freely expresses her ideas, and her responses during a conversation are of appropriate length"). The second scale comprised five items measuring the frequency, during the interview, with which the mother talked to her infant while working or going about her business, consciously encouraged the progress of his development, and gave him toys which stimulated him to develop new skills. For the 15 items of these scales, the scores the interviewer attributed to the PMK varied between 1 (never) to 5 (always).

Figure 4.1 illustrates the distribution of PMKs (in virtually all cases, 99.7%, the biological mother of the child) on the scale of emotional and verbal skills according to what was observed by the interviewer. It follows a rather normal distribution, grouped

around a mean score of 36. The distribution, which is slightly biased to the right, suggests that most mothers demonstrated adequate emotional and verbal capacities during the interviewer's visit.

Figure 4.1





Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The distribution of mothers on the stimulation scale is presented in Figure 4.2. It bears a strong resemblance to a normal curve in which some high and low values are observed, but where most are located around the mean, in this case 14.







Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002

Several interviewers could not respond to all the questions in the OFL because, in some cases, the infant was not present or awake. The analysis of the verbal communication scale was therefore based on the responses of 1,996 interviewers, whereas a stimulation score could be calculated for 1,957 PMKs of ÉLDEQ.

The two Observation of Family Life scales were strongly correlated (r = 0.58; p < 0.001). Therefore, a person with good verbal communication skills and who expressed positive feelings to her baby seemed, according to the interviewer, to also provide a more stimulating environment for him/her.

4.1 Sociodemographic Characteristics

The scores attributed to the PMKs by the interviewers on the two OFL scales varied according to family income. PMKs in lowincome families had lower emotional and verbal communication capacities that those observed in families with sufficient income. The level of stimulation the infant received during the visit was also lower in families below the low-income cut-off (Figure 4.3).







Emotional and verbal capacities 1 B Degree of infant stimulation 1

Note : The level of sufficient income was defined according to the lowincome cut-off set by Statistics Canada. For more details, see No. 2 in this series of papers.

1. p < 0.001.

Source: Institut de la statistique du Québec, ELDEQ 1998-2002.

As shown in Figure 4.4, the educational level of the mother was also associated with the two aspects of the family environment examined in this study. The data revealed that the emotional and verbal capacities and level of infant stimulation were lower in mothers who did not have a high school diploma. Similar effects were noted related to the mother's age. More precisely, compared to older mothers, those under 25 years of age were perceived as exhibiting lower emotional and verbal communication capacities as well as a lower level of infant stimulation (p < 0.001; data not shown).6







1. p < 0.001

Source. Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The dimensions measured also varied with the type of family. Emotional and verbal communication capacities were lower in single-parent families than in intact two-parent families or stepfamilies (33.4 vs. 36.0; see Figure 4.5).

Figure 4.5

Emotional and Verbal Capacities of the PMK and Degree of Infant Stimulation by Type of Family, 1998



^{1.} p < 0.001.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Note that mothers between 25 and 29 years of age also had lower verbal communication skills than mothers 40 years of age or over.

^{2.} p≤0.01.

Moreover, mothers in intact two-parent families were providing a more stimulating environment for their child than single-parent mothers (14.5 vs. 13.4). However, no significant difference was observed in this regard between stepfamilies and the other types of families.

It is noteworthy that the emotional and verbal communication capacities of the mother and stimulation of the infant were also associated with the immigrant status of the mother. According to the observations of the interviewer, born in Canada had better emotional and verbal capacities than non-"European" immigrants. Moreover, just as mothers of European origin, nonimmigrant mothers also seemed to provide a more stimulating environment for their baby than non-"European" immigrants (p < 0.001; data not shown).

Furthermore, certain aspects of the family environment measured by the OFL varied with the number of children in the household. Only children seemed to benefit from a more stimulating environment than infants in families comprising two or more children (p < 0.05; data not shown).

4.2 Parental and Family Characteristics

The analyses revealed that depressed mothers were perceived by the interviewer as being less stimulating and presenting lower emotional and verbal communication capacities.⁷ For example, 18% of depressed mothers⁸ versus 8% of non-depressed ones were perceived by the interviewer to show very weak verbal and emotional capacities⁹. Similarly, about 18% of depressed mothers compared to 8% of those with fewer depressive symptoms obtained a result below the 10th percentile on the stimulation scale of the OFL (p < 0.001; data not shown). However, there was no significant association between the scales of the OFL and the degree of support the mother perceived she was receiving from her spouse/partner, or the employment status of the mother at the time of the survey.

An interesting result was that the assessment of the family environment by the interviewer was significantly associated with the PMK's perception of family functioning. Approximately 16% of the mothers in dysfunctional families (according to ELDEQ's definition) were perceived by the interviewers as showing weak emotional and verbal communication skills, whereas this was the case for only 9% of mothers in families with better interpersonal relationships (p < 0.05; data not shown). The level of stimulation provided by the mother to her child was also associated, though very weakly, with family functioning as well as with certain maternal perceptions and behaviours (PPBS) such as perception of impact, tendency to overprotection and evaluation of the physical and cognitive qualities of the infant.¹⁰ There were also weak correlations between the mother's responses to PPBS and the emotional and verbal communication capacities observed during the interview. Mothers who, according to the interviewer, showed good emotional and verbal capacities were more likely to perceive they were having a greater impact on their child's development (r = 0.15; p < 0.001), to show fewer tendencies to coercive behaviours (r = -0.09; p < 0.001) or overprotection (r = -0.09; p < 0.001), or to have a more favourable perception of their infant's qualities (r = 0.06; p < 0.01) (data not shown). As previously noted, although significant, the weak associations between the OFL and the PPBS scales suggest that these scales were in large part measuring different facets of the infant's family environment.

In a similar way, there was also a positive but weak association between the emotional and verbal communication skills and a high level of stimulation of the infant on the one hand, and positive parenting practices reported by the mother on the other ($r \approx 0.16$; p < 0.001; and r = 0.15; p < 0.001 respectively; data not shown).

This analysis excluded PMKs (n = 7) who were not the biological mother of the infant.

These mothers reported a high number of symptoms of depression, putting them above the 90th percentile on the depression scale (see Note 3).

As an index of very weak capacities, the score retained here was below the 10th percentile on the emotional and verbal communications skills scale (OFL).

Although significant at the threshold of 0.01, the correlations observed were very weak, namely - 0.07 for family functioning and between 0.07 and 0.09 for the various dimensions of PPBS examined.

The results of the analyses conducted on the first year data of ÉLDEQ 1998-2002 suggest that a large majority of Québec infants were living in families functioning well in terms of communication and problem solving. In general, the parents reported a high level of positive behaviours with their 5-monthold infant. Moreover, according to the observations of a third party, the majority of PMKs (virtually all biological mothers) demonstrated adequate emotional and verbal communication capacities and were capable of giving a sufficient level of stimulation to their infant.

However, it should be noted that a number of infants were growing up in less favourable contexts with regards to the quality of interpersonal relationships in the family or other characteristics of the environment that were studied. These unfavourable conditions were associated with several parental characteristics. As reported in other studies (Fiscella, 1999; Friedmann & Webb, 1995; Keitner *et al.*, 1995), families appeared to function less well in low-income households and in those where the mother was depressed. In addition, the results showed that intra-family relationships seemed less satisfactory in families where the mother had little education, was very young, a single-parent, a non-"European" immigrant or perceived a low level of spousal/partner support.

Positive parenting practices, in contrast, were not explained by the sociodemographic characteristics of the family. This has also been observed by Chao & Willms (in press). Nevertheless, certain factors such as the presence of several children in the household, depression in the mother and weak spousal support seemed to reduce the frequency of positive parent/child interactions.

The analyses also confirmed that the characteristics of family life measured by the OFL varied with certain sociodemographic and individual characteristics of the parents (Bradley, 1993). The verbal and emotional capacities observed in the mother and the degree of stimulation she provided the infant were associated with sufficiency of household income, type of family as well as maternal age, education, immigration status and level of depression. The degree of infant stimulation was also associated with the number of children in the family. However, neither employment status of the mother at the time of the survey nor perceived conjugal support was associated with these aspects of family life.

The results of all the analyses conducted suggest there is a complex system of associations among various aspects of the family environment and variables related to sociodemographic, family and individual characteristics of the parents. Not only are family functioning, positive parenting practices and the quality of family life associated, to varying degrees, amongst themselves, but each factor in itself appears to be related to many other environmental characteristics, which could represent a risk factor for the child's future development. An interesting observation was that whereas certain perceptions and behaviours presented in the first part of this paper were associated with a difficult temperament in the infant, none of the family aspects examined here seemed to be associated with this characteristic, recognized as likely contributing to the psychosocial adjustment of the child (see No. 7 in this series of paper).

Child development can be compromised when there is more than one risk factor such as low household income, a teenage mother who has little education, single parenthood or parental depression (Brooks-Gunn & Duncan, 1997; Florsheim *et al.*, 1998). The influence of these risk factors on the adjustment of a child may partially manifest itself through family functioning and the parent/child relationship (Spieker *et al.*, 1999; Wyman *et al.*, 1999). The longitudinal data of ÉLDEQ 1998-2002 will provide a means of examining the complex relationships among child development and factors such as socioeconomic status of the parents, individual parental characteristics and the quality of interactions amongst all members of the family.

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Glossary

Centre de la petite enfance Child-care centre Commission d'accès à l'information du Québec - CAI Québec Access to Information Commission Conseil québécois de la recherche sociale (CQRS) Social Research Council of Québec Direction de la méthodologie et des enquêtes spéciales, ISQ Methodology and Special Surveys Division, ISQ Direction de la santé publique de la Régie régionale Public Health Department, Montréal-Centre de la santé et des services sociaux de Montréal-Centre **Regional Health Board** Direction de la technologie et des opérations statistiques, ISQ Technology and Statistical Operations Division, ISQ Direction des normes et de l'information, ISQ Standards and Information Division, ISQ Direction Santé Québec, ISQ Health Québec Division Étude des jumeaux nouveaux-nés au Québec - ÉJNQ Québec Study of Newborn Twins Fichier maître des naissances Master Birth Register Fonds de la recherche en santé du Québec (FRSQ) Health Research Fund of Québec Fonds pour la formation de chercheurs et l'aide Researcher Education and Research à la recherche (FCAR) Assistance Fund Groupe de recherche sur l'inadaptation Research Unit on Children's psychosociale chez l'enfant - GRIP Pyschosocial Maladjustment Institut de la statistique du Québec, ISQ Québec Institute of Statistics Policy on Families La Politique Familiale The Bouchard Report, 1991: A Québec Le Rapport Bouchard (1991) in Love with its Children « Un Québec fou de ses enfants » Priorities for Public Health Les Priorités nationales de santé publique Ministry of Education ministère de l'Éducation Ministry of Family and Child Welfare ministère de la Famille et de l'Enfance ministère de la Justice Ministry of Justice Ministry of Research, Science and Technology ministère de la Recherche, Science et Technologie Ministry of Health and Social Services of Québec ministère de la Santé et des Servíces sociaux du Québec (MSSS) ministère de la Sécurité publique Ministry of Public Security Ministry of Social Solidarity - formerly ministère de la Solidarité sociale Income Security (Welfare) Politique de la santé et du bien-être Policy on Health and Well-Being Research services Service de la recherche Service de support aux opérations de la Régie Operations Support Section of the de l'assurance-maladie du Québec - RAMQ Québec Health Insurance Board
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Being a parent constitutes one of the most demanding social roles, particularly in the first year of a child's life, when parenting behaviours are generally recognized as the cornerstone of the infant's socio-emotional development. The first part of this paper presents an overview of how mothers and fathers in Québec perceive and behave toward their infant. This is followed by an examination of the extent to which these perceptions and behaviours are related to specific infant, parent and family characteristics.

Family relationships and other facets of the parent/infant relationship are the subject of the second part of this paper. More precisely, it describes family functioning in the home environments of Québec infants. Various measures of the quality of parent/child interactions are presented, as evaluated by the person who knows the infant best and a third party. These dimensions of the family environment of Québec infants age 5 months in 1998 are then examined in relation to various sociodemographic and parental characteristics.





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May 2000

Similar to what has been observed in the majority of industrialized nations over the past twenty years, Québec and Canada have seen a significant increase in the costs related to maladjustment. particularly in young people. The Longitudinal Study of Child Development in Québec (*l'Étude longitudinale du développement des enfants du Québec*) (ÉLDEQ 1998-2002) being conducted by *Santé Québec* (Health Québec),¹ a division of *l'Institut de la statistique du Québec (ISQ)*² (Québec Institute of Statistics) in collaboration with a group of university researchers, will provide an indispensable tool for action and prevention on the part of government, professionals and practitioners in the field, who every day must face maladjustment in children.

More precisely, a major purpose of this longitudinal study of a cohort of newborns is to give Québec a means of preventing extremely costly human and social problems, such as school dropout, delinquency, suicide, drug addiction, domestic violence, etc. Similar to what is being done elsewhere (in the UK, New Zealand, the US), *Santé Québec* and a group of researchers have designed and developed a longitudinal study of children 0 to 5 years of age (2,223 children in this study and 600 twins in a related one). It will help gain a better understanding of the factors influencing child development and psychosocial adjustment.

The general goal of ÉLDEQ 1998-2002 is to learn the PRECURSORS, PATHS and EFFECTS, over the medium and long terms, of children's adjustment to school. ÉLDEQ is the logical extension of the National Longitudinal Study of Children and Youth (NLSCY, Canada). These Québec and Canada-wide longitudinal studies are both comparable and complementary. They employ distinct survey methods, and use different techniques to obtain the initial samples. Though many of the

instruments are practically identical, about a third of those being used in ÉLDEQ are not the same.

This first report casts light on the enormous potential of the data generated by this study. From the descriptive analyses of the results of the first year of the study to the longitudinal analyses of subsequent years, there will be an enormous wealth of data. With updated knowledge on the development of the cohort of young children, the annual longitudinal follow-up will respond to the needs which the *ministère de la Santé et des Services Sociaux du Québec - MSSS* (Ministry of Health and Social Services), who financed the data collection, expressed in both the Report of the Working Group on Youth (*Rapport Bouchard*, 1991, *Un Québec fou de ses enfants* - the Bouchard Report, 1991, A Québec in Love with its Children) and the policy papers entitled *Politique de la santé et du bien-être*, 1992 (Health and Well-Being) and *les Priorités nationales de santé publique 1997-2002* (Public Health Priorities 1997-2002).

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Santé Québec officially became a division of the ISQ on April 1, 1999.

The authors of Volume 1 Number 11 of ELDEQ 1998-2002 are:

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Caution:

Unless indicated otherwise, "n" in the tables represents data weighted to the size of the initial sample.

Because the data were rounded off, totals do not necessarily correspond to the sum of the parts.

Unless explicitly stated otherwise, all the differences presented in this report are statistically significant to a confidence level of 95%.

To facilitate readability, proportions higher than 5% were rounded off to the nearest whole unit in the text, and to the nearest decimal in the tables and figures.

Weighting and the complex sample design were taken into account in calculating the results and their precision. The precision of the estimates of proportions was calculated using a mean design effect. This was also used for the chi-square tests, except in questionable cases for which the SUDAAN software program was used. In all other analyses, SUDAAN was used. Basic hypotheses, such as the normality of the data, were verified before applying the selected statistical tests.

Coefficient of variation Not available

Not significant

Symbols

Abbreviations

CV

Not avail.

not signif.

- ... Not applicable (N/A)
- ... Data not available
- -- Nil or zero

p < Refers to the threshold of significance

Santé Québec recognizes that the development and implementation of the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) flows directly from the synergy of effort and professionalism of many people throughout the whole process of mounting a survey of this size. Since 1995, individuals, various groups and organizations, a survey firm and the staff of *Santé Québec* have become indispensable línks in making this ambitious project a reality - the first annual longitudinal survey of Québec infants.

A major characteristic of this project is that a pretest and survey are conducted every year. To accomplish this, we must annually: 1) make two sets of instruments (pretest and survey), 2) conduct two data collections, 3) analyze two sets of data, and 4) produce two types of communications materials. The results of each pretest means fine-tuning and developing instruments for the survey, which follows 17 months later. The results are sent to the parents (highlights), published in reports, and communicated to the scientific community and the public at large. The professionals and staff involved in collecting the data, as well as those involved before and after, must put their nose to the grindstone every year. We cannot over-emphasize our profound recognition of the incredible, concerted effort they are putting into this project over an 8-YEAR period, from the first pretest in 1996 to the final report to be published in 2004!

First, it must be said that without Daniel Tremblay, Director of Santé Québec (now part of the ISQ) since 1994, Christine Colin, Assistant Deputy Minister responsible for Public Health 1993-1998, Aline Émond, Director of Santé Québec 1986-1993, Richard E. Tremblay, Director of the ÉLDEQ research project, and Marc Renaud, President of *le Conseil québécois de la recherche sociale - CQRS* 1991-1997. ÉLDEQ 1998-2002, also known as "In 2002...I'll Be 5 Years Old!," would have never seen the light of day. In turn and together, they developed, defended and obtained the financing for this study. Thank you for your indefatigable tenacity.

A warm thanks to all the researchers and the support staff of their respective research groups, whose determination over the years has never wavered. Putting their research grants together every year has contributed to the development of the instruments, analysis of the data and publication of the copious results.

I would like to thank Lyne Des Groseilliers, ÉLDEQ's statistician since 1996, Robert Courtemanche, statistical advisor, and France Lapointe, ÉLDEQ's statistician 1995-1996. These three colleagues in the *Direction de la méthodologie et des enquêtes spéciales* (Methodology and Special Surveys Division) (*ISQ*) managed, with great skill, to set the signposts and navigate the somewhat winding course of this large-scale survey first.

A very special thanks to all the master designers of the National Longitudinal Study of Children and Youth (NLSCY, Canada). Without their expertise, advice and generosity, our survey would never have been accomplished. In many senses of the word "modeling," ÉLDEQ has learnt a lot from the NLSCY.

We would also like to extend out gratitude to the staff of the Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP (Research Unit on Children's Pyschosocial Maladjustment) at the University of Montréal. Without their expertise, some of our survey instruments would have never been computerized to such a high level of quality.

We would like to thank the personnel in the Service de support aux opérations de la Régie de l'assurance-maladie du Québec -RAMQ (Operations Support Section of the Québec Health Insurance Board). Without their efficiency, fewer letters of introduction would have found their way to the correct addresses of respondents.

Our sincerest thanks go to our survey firm, *Bureau d'interviewers professionnels (BIP)*. Since 1996, this polling company has been responsible for data collection in the pretests and surveys, and follow-up of families both inside and outside of Québec. Lucie Leclerc, President of *BIP*, has set the standard of quality for our numerous and complex data collections. Assisted by Véronique Dorison, she has instilled in her interviewers a great sense of respect for the respondent families, as well as a rigourous regard for all the norms governing this first-of-a-kind survey in Québec. A big thank-you to the directors-general, directors of professional services, and staff of the medical records departments of some 80 hospitals in the province who accepted to collaborate in our study at a time when resources were rare and time was at a premium, and when the medical records departments in many hospitals were merging or in the process of doing so. Their support was exceptional. Birthing centres also graciously accepted to participate in this first Québec longitudinal study of children. A special thanks to Julie Martineau, medical records specialist, who contributed to the analysis of indispensable medical information by ensuring very rigourous coding of the data, which often lay concealed in the medical files of the infants and their mothers.

It goes without saying that the staff of Santé Québec Division directly attached to ELDEQ 1998-2002 are the cornerstone of its success from practically every point of view. Special thanks for their ongoing contribution and constant hard work go to Hélène Desrosiers and Josette Thibault, responsible respectively for analysis of the data and creation of the measurement instruments; Martin Boivin, Rolland Gaudet and Gérald Benoît, who constantly pushed the limits of what computer software can do in terms of programming and data processing; Suzanne Bernier-Messier and Diane Lord, who give meaning to the word versatility, who must organize, code and manage incredible quantities of data to ensure the progress of the study. Not directly attached to the team but who made extremely important contributions are: France Lacoursière, France Lozeau and Thérèse Cloutier, who put the finishing touches to the Santé Québec "look" in the survey instruments, reports and conference publications; Lise Ménard-Godin, who conducted fruitful literature searches and advised on many aspects of the collection instruments. The hard work, constant availability, ability to adapt, and finely-honed skills of the people working on this project match the enthusiasm that all our partners have demonstrated in making this study a resounding success.

Finally, I would like to extend a very special thank-you to the 2,223 families who responded to our survey. Thank you for the trust you have shown in *Santé Québec*, our partners and collaborators. Thanks to your participation, your children have become the veritable stars of ÉLDEQ 1998-2002, and are making it possible, in the short term, to gain a better understanding of psychosocial adjustment in children. In the medium and long terms, they will likely be in large part

responsible for the establishment of early detection programs, better designed prevention programs, and more effective interventions for such an important clientele - all of Québec's children.

mail fith

Mireille Jetté Project Coordinator Santé Québec Division, ISQ

It suffices to consider the costs engendered by behavioural problems in children - school dropout, delinquency, alcoholism, drug addiction, family violence, mental disorders and suicide - to conclude that they largely surpass what a modern society can accept, morally and economically. Faced with the enormity of these problems, the first reflex is to provide services to these people which will, ideally, make the problems disappear, or at the very least, lessen their severity. For many years we have tried to offer quality services to children and adults who suffer from antisocial disorders, alcoholism, drug addiction, depression, and physical or sexual abuse. However, in spite of enormous investment, these curative services are far from being able to respond to the demand.

Although the idea of early intervention as a preventive measure can be traced at least as far back as ancient Greece, the second half of the 20th century will certainly be recognized as the dawn of the field of social maladiustment prevention (Coie et al., 1993; Mrazek & Haggerty, 1994). Numerous programs have been developed for adolescents and teenagers to prevent school dropout, delinguency, drug addiction and suicide. Scientific evaluations of these programs have been far too few in number, but they tend to demonstrate that it is extremely difficult to help those most at risk in this age group (Rosenbaum & Hanson, 1998; Rutter, Giller & Hagell, 1998; Tremblay & Craig, 1995). It is becoming increasingly clear that the factors which lead to serious adaptation problems are in place long before adolescence. Hence the idea that the prevention of social adaptation problems should start at least during childhood, and preferably right from pregnancy (Olds et al., 1998; Tremblay, LeMarquand & Vitaro, 1999). These principles are clearly outlined in the objectives of the Politique de la santé et du bien-être (Policy on Health and Well-Being) and les Priorités nationales de santé publique (Priorities for Public Health) set by the government of Québec (ministère de la Santé et des Services sociaux, 1992; 1997).

The Need to Understand Early Childhood Development

If the field of maladjustment prevention appeared at the end of the 20th century, it has certainly come on the heels of child development. "Émile," by Jean-Jacques Rousseau, needs to be re-read in light of recent studies to realize just to what degree it is impossible to understand the complexity of child development, and therefore the means of preventing deviant paths, simply by reflection or introspection. Although considerable knowledge has been acquired in the neurological, motor, cognitive, affective and social development of children, what really hits home is that Jean-Jacques Rousseau and his followers in education seemed to have had more certainty about the ways of educating children than we do today.

Progress in child development research has made us realize that things are not as simple as we can or would like to imagine. We have obviously all been children, and most of us have become parents, indeed, relatively well-adjusted ones. But we still do not clearly understand when, how and why adjustment problems appear, and above all, how to prevent and correct them.

Our ignorance is obvious when we examine the debates among specialists on the role of parents in the development of maladjustment problems in children. Some suggest that social maladjustment in children is largely determined by genetic factors (Bock & Goode, 1996; Rowe, 1994). Some accentuate economic factors (Duncan & Brooks-Gunn, 1997). Other researchers attribute a determining role to peer influence (Harris, 1998; Harris, 1995; Vitaro *et al.*, 1997). These larger questions lead to narrower ones which focus on particular aspects - the role of fathers in childhood maladjustment, the impact of alcohol and cigarette consumption during pregnancy, the effect of prenatal and birthing problems, the importance of breast feeding and diet; the role of sleep, cognitive development, temperament, and so on.

The majority of these questions are at the heart of the daily concerns of parents, grandparents, educators, family service providers, and legislators. What can we do to maximize the development of our children, to prevent severe psychosocial maladjustment? What should we do when problems begin to appear, when pregnant mothers, or fathers themselves have a long history of disorders? The answers to these questions obviously have an effect on the policies put forth by Québec government Ministries such as *ministères de la Famille et de l'Enfance* (Family and Child Welfare), *de l'Éducation* (Education), *de la Santé et des Services sociaux, de la Solidarité sociale* (Social Solidarity - formerly Income Security (Welfare)). *de la Sécurité publique* (Public Security), *de la Justice* (Justice), and *le ministère de la Recherche, Science et Technologie* (Research, Science and Technology)

The Contribution of ELDEQ 1998-2002

The Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) was conceived in order to contribute to our knowledge of the development of children in their first 5 years of life. The main goal is to gain a better understanding of the factors, in the years of rapid growth, which lead to success or failure upon entry into the school system. The goal of the second phase (if approved) is to better understand development in elementary school, in light of development in early childhood.

We know that this survey cannot be a definitive one on child development in Québec, but it is the first representative study of a provincial cohort of children who will be measured annually from birth to entry into the school system. It specifically aims at understanding the development of basic skills needed for educational success.

Although the effort to set up this study began in 1989, the first data collection coincided with the Québec government's implementation of its *Politique Familiale* (Policy on Families). The policy has virtually the same objectives as our study:

"These services for children 5 years and under should give all Québec children, whatever the socioeconomic status of their parents, the chance to acquire and develop the skills that will allow them to succeed in school (1997, p. 10)."

On March 3 1999, in the speech opening the 36th session of the Québec legislature, Premier Lucien Bouchard confirmed that early childhood development was a priority for the government: "The theme that will dominate our actions this year, next year, and throughout our mandate, is youth... The priority...with regards to youth in Québec, begins with the family and childhood... This massive investment in early childhood... will give our children the best chance of success in the short, medium and long terms. It is our best asset against alienation and despair. It is our best preparation for personal, social and economic success."

Because of this historic coincidence, ÉLDEQ has the potential of becoming an invaluable tool for monitoring the effects of Québec's massive investment in early childhood which began in 1997. Thanks to the data collected by the federal government's National Longitudinai Study of Children and Youth (NLSCY, Canada), we will be able to compare child development in Québec with that elsewhere in Canada, before and after the implementation of Québec's new policy on the family.

However, our initial objectives are more modest. The 12 or 13 papers in this series present the results of our first annual data collection. They describe the characteristics of the families and children when the latter were 5 months old.³ They cover sociodemographic characteristics, nature of the birthing process, health and social adaptation of the parents, family and couple relations, parent-infant relations, and characteristics of the 5-month-old, such as sleep, diet, oral hygiene, temperament, and motor, cognitive and social development. These data will eventually be compared to those on children the same age collected by the NLSCY in 1994 and 1996.

An Interdisciplinary, Multi-University Team of Researchers

This study saw the light of day because of the collaboration of many people. In the preceding pages, Mireille Jetté thanked a number of them. I would like to take advantage of this introduction to emphasize that the survey was set up and continues forward because of the dedication and hard work of a group of researchers from a variety of disciplines and

^{3.} To simplify the text in this report, the phrase "5-month-old infants" will be used to refer to infants whose mean age was 5 months during data collection in 1998. In section 3.1.3 (Volume 1, Number 1), we explain why the infants were not all exactly the same age. As indicated in no. 2 of this series, 52% of the infants were less than 5 months, and 3.4% were 6 months of age or over.

universities I would particularly like to thank Michel Boivin, School of Psychology at Laval University, and Mark Zoccolillo, Department of Psychiatry at McGill University, who have been actively involved in this project since 1992. It was in that year that we prepared out first grant application for the Social Sciences and Humanities Research Council of Canada. A second group of researchers joined the team in 1993 and 1994: Ronald G. Barr, pediatrician, Montréal Children's Hospital Research Institute, McGill University, Lise Dubois, dietitian and sociologist, Laval University; Nicole Marcil-Gratton, demographer, University of Montréal and Daniel Pérusse. anthropologist, University of Montréal. Jacques Montplaisir, Department of Psychiatry, University of Montreal, joined the team in 1995. Louise Séguin, Department of Social and Preventive Medicine, University of Montréal and Ginette Veilleux, Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre (Public Health Department, Montréal-Centre Regional Health Board), joined in 1998. Three post-doctoral researchers have also made an important contribution. Raymond Baillargeon developed the task for measuring cognitive development. Christa Japel is the assistant to the scientific director for planning, analysis and presentation of the results. Heather Juby collaborates in the analysis of the data on couple and family history.

A Unique Confluence of Circumstances

A study such as this requires the coordination of many researchers over many years, enormous financial resources, and a long period of preparation. Though in the early 1990s the research team was convinced of the need for the survey, those responsible for the public purse had also to be convinced. We must therefore acknowledge the happy confluence of circumstances that allowed the players to take advantage of the opportunity at hand. When a number of civil servants in the ministère de la Santé et des Services sociaux understood the essential role of prevention, the creation of a committee on children and youth in 1991 led to an increased awareness of the importance of early childhood. At the same time, the president of the CQRS, Marc Renaud, had come to the same realization with his colleagues in the Population Health Program at the Canadian Institute for Advanced Research (CIAR). Aline Emond, the Director of Santé Québec, was ready to apply her formidable determination to work for the cause. For their part, Health Minister Jean Rochon and his Assistant Deputy Minister for Public Health, Christine Colin, aware of the importance and benefit of longitudinal studies on early childhood development, authorized the investment of large sums of money during a period of draconian budget cuts. This occurred at the same time as the federal government decided to create its own longitudinal study of children and youth (NLSCY). It is in this context that ÉLDEQ 1998-2002 materialized. Our survey also came to fruition because Mireille Jetté did everything in her power to make the researchers' dreams a reality, and Daniel Tremblay gave her all the support she needed by making various resources available for the project.

Richard E. Tremblay, Ph.D., M.S.R.C Chair of Child Development University of Montréal

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This analytical paper is one of a series presenting crosssectional data collected on a large sample of 5-month-old infants surveyed in 1998. It reports on the first of 5 annual data collections on 2,120 children in Québec who will be studied until they are 5 years old. In the first year of data collection, the results on 2,223 infants were retained.⁴

The target population of the survey is Québec babies, singleton births only,⁵ who were 59 or 60 weeks of gestational age⁶ at the beginning of each data collection period, born to mothers residing in Québec, excluding those living in the Northern Québec, Cree, and Inuit regions, and on Indian reserves, and those for whom the duration of pregnancy was unknown. Due to variations in the duration of pregnancy and the 4 or 5 weeks allotted for each data collection wave, the infants were not all exactly the same age (gestational or chronological) at the time of the survey. Therefore, the children in Year 1 (1998) of the survey had a mean gestational age of 61 weeks - about 5 chronological months.

The survey had a stratified, three-stage sampling design, with a mean design effect for the proportions estimated at 1.3. To infer the sample data to the target population, each respondent was given a weight corresponding to the number of people he/she "represented" in the population. ÉLDEQ 1998 comprised eight main collection instruments which obtained data from the person who was closest to the baby (called the Person Most Knowledgeable - PMK), the spouse (married or common-law), the infant and the absent biological parent, if applicable. Given variation in the response rates to each instrument, three series of weights had to be calculated to ensure inferences to the population were accurate. Except for the Self-Administered Questionnaire for the Absent Father (SAQFABS) and a series of

Review of the Methodology

questions in the Computerized Questionnaire Completed by the Interviewer (CQCI) on absent fathers - the overall or partial response rates of which were too high - the results of all the instruments could be weighted. Therefore, the data presented here have all weighted to reduce the biases.

All data that had coefficients of variation (CV) 15% or higher are shown with one or two asterisks to clearly indicate the variability of the estimate concerned. In addition, if the partial nonresponse rate was higher then 5%, there is a note specifying for which sub-group of the population the estimate is less accurate.

Similar to any cross-sectional population study, the Year 1 part (5-month-old infants) of ÉLDEQ 1998-2002 has certain limits. However, the vast majority of the results are valid and accurate, and provide a particularly detailed portrait, for the first time, of 5month-old infants in Québec.

Note to the reader: For more details on the methods, see Volume 1, Number 1 in the present series. Detailed information on the sources and justification of the instruments used in Year 1 of ÉLDEQ 1998-2002, and the design of the scales and indices used in this paper, are covered in Number 12, entitled "Concepts, Definitions and Operational Aspects."

⁴ Though the results for 2,223 children were retained for the first year of data collection, 2,120 will be retained for the rest of the longitudinal study; the extra 103 were part of an over-sample used to measure the effects of the January 1998 ice storm.

^{5.} Twins (twins births) and other multiple births were not targeted by the survey.

Gestational age is defined as the sum of the duration of gestation (pregnancy) and the age of the baby.

Conjugal Life of the Parents

Part I The Parents' Conjugal History



1. Introduction

The question of the impact of conjugal instability on the positive development of children's well-being has received considerable attention since marital dissolution has replaced widowhood as a primary factor in the break-up of families. Starting and keeping a family together and nurturing it as a partnership at least until the children grow up and leave home no longer seems to be a necessary premise for conjugal life. Indeed, for over thirty years this traditional vision has been under fire from all sides. The 1970s were marked by an increase in the divorce rate, and the 1980s by the decline in marriage and growth of common-law unions as the union of choice for entry into life as a couple. More recently still, these "paperless" unions have taken over from marriage as the context for starting a family, notwithstanding their greater fragility even when children are involved (Le Bourdais *et al.*, in press).

The multitude of studies attempting to give the final verdict on understanding how conjugal mobility affects the children "of divorce" have arrived at varying and sometimes contradictory conclusions. However, most of them confirm some negative associations between family instability and the well-being of children, whether in terms of psychosocial adjustment, standard of living, educational achievement or subsequent behaviours related to their own conjugal life course (Amato & Keith, 1991; Cherlin et al., 1998; Seltzer, 1994). While some see associations between the children's well-being and hold the circumstances preceding the break-up responsible for child outcomes, notably parental conflict (Fergusson et al., 1994; Jekielek, 1998), others view them as the result of the circumstances that follow, whether sociodemographic (frequency of contact with the non-custodial parent, conflict between the parents during the separation, new unions of the parents), or socioeconomic (poverty) (Amato, 1993; Coleman, 1988).

Many of these studies have the same deficiency: they use static, dichotomous measures of the family situation at a given point in time (two-parent vs. single-parent, intact vs. step, etc.) to represent the family effect in statistical models used to test the impact of family transitions on child development. Fortunately, increasing numbers of longitudinal studies are being conducted, and are therefore providing a more comprehensive portrait of the family history of children;. In the United States, for instance, researchers are now presenting more in-depth analyses of the associations between family life and child development based on data from the National Longitudinal Survey of Youth (Cooksey, 1997; Jekielek, 1998). In her analysis of the effects of the marital history of young mothers on the cognitive, affective and motor development of children, Cooksey used a variable that distinguishes six types of family histories. Unfortunately, like most American studies conducted until very recently, no distinction was made between children born into common-law unions and those born to single mothers, so it is difficult to make comparisons with the situation in Québec.

ÉLDEQ 1998-2002 is a longitudinal study that provides even more detailed information on various aspects of family life. It has adopted the survey instruments and questionnaires first developed for the National Longitudinal Study of Children and Youth (NLSCY, Canada),⁷ which is collecting information on the marital and parental life of both parents, not only after the birth of the child but before.⁸ By integrating information collected biannually on the family history of both parents, with indicators of motor, affective and cognitive development, and family socioeconomic data, researchers will be able to gain a better understanding of how events in family pathways (break-up of the parents, new unions, addition of step-siblings in the family environment) affect the children's development. They will also be able to better identify the mechanisms by which certain children remain deeply affected by their parents' break-up, while others seem to emerge unscathed.

The children of ELDEQ 1998-2002 were only 5 months old at the time of the first data collection, and since birth, few had seen their family environment change through the conjugal mobility of their parents (see No. 2 in this series of papers). However, these infants in general already possess "markers" arising from the conjugal history of the parents indicating the risk they face of experiencing the transformation of the family into which they

A survey conducted by Statistics Canada for Human Resources and Development Canada on 22,831 children aged 0 to 11 years at the time of the first data collection in the winter of 1994-1995. The sample is representative at the provincial level. Data are collected every two years.

Specifically, the section of the CQCI (Computerized Questionnaire Completed by the Interviewer) entitled "Family History and Child Care."

were born. These "markers," or determinants of turbulent family paths, were documented by the first analyses conducted on the NLSCY data. Data from the first cycle of this survey revealed associations between the type of parental union at the birth of the child and the probability of the latter experiencing the breakup of this union. For example, being born to a common-law couple seems to increases the risk by a factor of four that Québec children will see their parents separate before their 6th birthday⁹ compared to children born to a traditional married couple, namely one in which the partners had not previously lived together in a common-law union (Marcil-Gratton, 1998). In addition to the greater incidence and precocity with which children are seeing their parents break up, increased numbers are experiencing one or more family recompositions resulting from new relationships of their mother, father or both.

Data from Year 1 of ELDEQ has already made it possible to categorize the children according to the parental and conjugal history of their parents at birth. By combining this information with future data collected on the family, we will be able to do more in-depth analyses of the factors linking family mobility experienced by the children to the type of union chosen by their parents. For example, we will be able to examine the influence of factors such as employment characteristics, family income and conjugal dynamics on marital instability, and go beyond the simple fact that common-law unions are less stable than marriages. But first above all, we need to understand the diversity of family contexts into which children are being born. and this is possible due to the detailed data ELDEQ has provided on the conjugal and parental history of both parents preceding the birth of the child. Indeed, it is this period prior to the infants coming into the world that the analyses in this paper have as their focus. It is clear from examining the tables that the infants were not all similar in terms of the family history of their parents. The diversity of the conjugal history of the mothers and fathers already presages a very diversified family future for these children who, for the most part, were still born into twoparent families.

⁹ For the cohorts born between 1983 and 1987, it was calculated that 37% of Québec children born to a common-law couple had seen their parents separate before their 6th birthday, versus only 9% whose parents had not lived together before marrying.

2. A Minority of Births in the Context of Traditional Marriage

Birth records have shown a remarkable surge in the proportion of children born outside marriage in the past ten years, who even in the recent past, were designated as "illegitimate." Representing less than 10% of births before the 1980s, they had become the norm by the mid-1990s, comprising 55% of all Québec babies born in 1997 (Bureau de la statistique du Québec, 1998), a little before the cohort for ÉLDEQ 1998-2002 was established.

However, though most children were born outside marriage, the vast majority were being born into two-parent families (Table 2.1). In 1998, still only a minority (8%) of the infants were born into single-parent families, and in contrast to the situation a number of years ago, they no longer fit the image of a baby born to a young single mother, conceived in a short-term relationship and abandoned by the father. In nearly half of these cases (4%), the parents had lived together before the birth, and, as will be indicated later in this paper, a good proportion of fathers were in the picture at the time of the birth to varying degrees.

More than 9 in 10 infants (92%) were born to parents who were living together as a couple, but in more than half of these cases (48%) they were living in a common-law union. Though 44% of the babies were born to a married couple, only 19% were born to parents who had married without first living together. Therefore, the so-called "traditional" marriage seems to have been swept aside in the wake of Québec's "quiet revolution," and no longer constitutes the primary context for family formation in the province.

Table 2.1

Distribution of Infants by Type of Parental Union at the Time of the Birth, 1998

	n	%
Parents living together at the time of the birth	2,030	91.6
Married	975	44.0
Had not lived together before marriage	413	18.6
Had lived together before marriage	562	25.4
Common-law	1,055	47.6
Parents not living together at the birth	167	8.4
Had never lived together	103	4.6
Had lived together before the birth	84	3.8
Total	2,217	100.0

 A few cases (n = 6) were excluded because of lack of data on the conjugal situation of the parents at the time of the birth.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

In contrast to the era when more than 90% of Québec children were born to parents in their first marriage with no experience of cohabitation with their spouse or anyone else, at the end of the 1990s babies were being born in large part to parents who had already been in unions with other partners (Table 3.1). Thirty-eight per cent of all the ÉLDEQ newborns had at least one parent who had lived with someone prior to the union with the other parent; for 15% of them, both parents were in at least their second union.

Table 3.1

Distribution of Infants Born into a Two-Parent Family by Type of Union of the Parents and Previous Unions of the Parents, 1998

	Previous unions			Total		
	Neither parent	Mother	Father	Both parents	n	%
		• •	6			
Married						
Had not lived together before marriage	90.4	2.3*	• 6.2*	1.1**	413	100.0
Had lived together before marriage	64.2	14.0	11.8	10.0	560	100.0
Common-Law	4 9.9	12.8	15.2	22 1	1,055	100.0
Total	62.1	10.9	12.5	14.5	2,028	100.0

 Two cases were excluded because of missing or inconsistent data on the conjugal history of the parents.

 Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

This situation has obviously resulted from the greater conjugal mobility of recent years in unions. Since mobility is associated with the type of union, children born into "traditional" unions were more likely to be born to parents who had no previous experience of conjugal life. This is clearly shown in Table 3.1; 90% of children born into families where the spouses had never not lived together before their marriage were born to two parents who were in their first union. At the other end of the scale, only half (50%) of the infants born into a common-law union came from parents who had never lived with other partners; in more than one in five cases (22%), both parents had already lived with or been married to other partners.

The purpose here is not to pass judgment on the relative merits of being born into a first or subsequent union, but rather to analyze the children's family in the light of whether they were born into a context where conjugal mobility was already present in the parents' history. The conjugal history of the parents becomes an even more pertinent variable when it is linked to their previous experience of parenthood. The growing mobility of couples has also had the effect of expanding the family network of children who are increasingly endowed at birth with siblings from previous unions of their parents.

Resulting from increased conjugal dissolution and new relationships of the parents, children are now more likely to experience at least one episode in a stepfamily. This phenomenon has two basic forms: either the child of separated parents will have to adapt to a new family configuration involving the addition to the household, on a more or less regular basis or not, of "brothers" or "sisters" from a previous union of his mother's or father's new partner, or the child is born into an existing stepfamily and shares his biological relationship to the father or mother with his half-brothers and/or half-sisters However, there is an additional category of children. Not normally classified as children in stepfamilies, they were also born into a wider family network, and will therefore be included in this part of the analysis. They comprise children with halfsiblings who were not living in the household at the time of their birth.

The analysis that follows therefore includes all the infants for whom at least one parent had children from a previous union, even if they were not living in the household at the time their half-brother or half-sister was born. Many researchers consider these families to be "intact" because from the point of view of the newborn, the family environment of the household consists only of his biological relations. However, even though the children of previous unions do not live in or visit the infant's household, they are nonetheless part of the family landscape. They may constitute an external network, but it is still one for which their mother or father is responsible, and which undoubtedly has an emotional as well as financial impact on their lives. The children outside the household are part of the parent's family history and this justifies their inclusion here with other "reconstituted" families. However, a distinct category was established for them, so that over the course of the longitudinal survey better measurements can be made of the association between the child's residential environment and his risk of experiencing a family pathway marked by the conjugal mobility of his parents.

As shown in Table 4.1, 15% of infants born into a two-parent family had parents who had already had children with other partners. These children were approximately evenly distributed in terms of coming from previous unions of the mother or father.

In only a small number of cases was the infant born into a family in which both parents had children from a previous union (1.7%).

Table 4.1

Distributi	on of	Infants B	lorn i	nto a Two	-Parer	nt	Family by
Whether	Their	Parents	Had	Children	from	а	Previous
Union, 19	98						

	n	%
No children from a previous union	1,728	85.2
Children from a previous union	300	14.8
Mother only	127	6.3
Father only	138	6.8
Both mother and father	35	1.7*
Total	2,028	100.0

 Some cases were excluded because of lack of data on the parental history of the parents.

 Coefficient of variation (CV) between 15% and 25%; interpret with caution.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Table 4.2 presents the family environment of the infants at the time of their birth, for all children, irrespective of the type of family into which they were born (single- or two-parent). Two aspects are noteworthy. Firstly, more infants were born into a two-parent family in which at least one of the parents already had children from a previous union (14%) than were born into a single-parent family (8%). Secondly, a fifth (2.8%) of the former group did not share a residence at birth with their half-siblings. Although these results were based on a small number of children, they coincide with findings from the larger NLSCY sample (Marcil-Gratton & Le Bourdais, 1999), which also indicates that the vast majority of such cases concern infants whose half-siblings were those from a previous union of the father, and who in large part went to live with their mother after the breakup. Conversely, the majority of infants born into a household with half-brothers and/or half-sisters living there had the same biological mother, but not the same biological father. It will be interesting to study the stability of stepfamilies related to their various structures, and to examine whether the risk of parental breakup varies for children living in a stepfamily according to the origin of the half-siblings in the household (from

a previous union of the father, the mother or both parents). Some studies seem to indicate that it does (Desrosiers et al., 1995; Marcil-Gratton & Le Bourdais, 1999).

Table 4.2 Distribution of Infants by Family Environment at the Time of the Birth, 1998

	n	%
Two-parent family		
No CPU'	1,728	78.0
All CPU live elsewhere	61	2.8
CPU of father only	5 3	2.4*
CPU of mother or both parents	8	0.4**
CPU living in the household	239	10.8
CPU of mother only?	134	6.1
CPU of father only	85	38
CPU of both parents	20	0.9**
Single-parent family	187	8.4
Total	2,215	100.0

1. Child(ren) of a Previous Union.

2 In a very small number of cases (0.6%), the family also included children of a previous union of the father who was not living in the household.

3. Eight cases were excluded because of lack of data on the conjugal or parental history of the parents.

* Coefficient of variation (CV) between 15% and 25%; interpret with caution.

Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002

In Québec, common-law unions have become the union of choice among couples having a child. The 1998 data show that 52% of the infants were born into a two-parent family in which the parents were in a common-law union (Table 5.1). Elsewhere in Canada, although more couples are choosing to start a family within a common-law union, they still constitute a minority. In Ontario, for example, cohabitation is most common among stepfamilies (Péron *et al.*, 1999), while in Québec couples choose common-law unions to begin their first family, and a second when the first dissolves. Another distinction is that, though in Canada as a whole families based on common-law unions are less stable than those based on married ones, the difference between the two is smaller in Québec than in the rest of the country (Marcil-Gratton, 1998).

Table 5.1

Distribution of Infants Born into a Two-Parent Family by Family Environment at the Time of the Birth and by Type of Union of the Parents, 1998

		Total			
	Marriage (direct)	Marriage Marriage Common-law (direct) after common-law		n	%
		%			
No children from a previous union	22.5	29.1	48.4	1,728	100.0
CPU ¹ living elsewhere	23.8**	23.3*	52.9	61	100.0
CPU ¹ living in the household	3.7**	18.9	77,4	239	100.0
Total	20.3	27.7	52.0	2,028 ²	100.0

1. Child(ren) of a Previous Union.

Two cases were excluded because of lack of data on the parental history of the parents.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Table 5.1 shows the effect of these trends in Québec and the associations between the type of union and family environment at birth. In spite of the high coefficients of variation due to low numbers, two observations can be made. Births to common-law couples represented about half of those in families with no children from a previous union (48%), or in those in which children from a previous union were not living in the household (53%). However, they comprised nearly 8 out of 10 births to a stepfamily in which children of the mother or father were living in the household.

Given these results, the question of being able to distinguish whether the stability or instability of families is more related to the type of union than to the composition of the household is of great interest. Does opting for a common-law union rather than marriage increase the risk of break-up beyond family composition? Do couples in stepfamilies, namely those with children from previous unions living in the household, present a greater risk of breakup than couples in intact families, irrespective of the type of union chosen? In a context where both phenomena are developing at an accelerated pace, the answer is becoming more and more relevant for Québec children.
To complete this brief portrait of characteristics of the infants' family histories, it would be appropriate to take another look at the infants whose parents were not living together at the time of the birth. In virtually all cases, the infants were in the custody of their mother. An unexpected finding from the ELDEQ 1998 data was that a rather large proportion of fathers, though officially designated as "absent" from the family when the child was born, were present in one way or another in his/her life.

First, as indicated in Table 6.1, 45% of the infants born outside of a union were in fact born to parents who had lived together before the birth. The data also revealed that, even if the parents had not been living together at the time of the birth, in 58% of cases they maintained an ongoing relationship. Furthermore, 60% of these children had the advantage of having the name of their father registered on their birth certificate.

Perhaps an even more significant fact is that not all of these infants were being deprived of a paternal presence, since 48%

of them had the benefit of regular contact with their father at the time of their birth. Only 29% of the infants born outside a union had had no contact with their father at the time of their birth (data not shown), putting them in the category of children born into a family where the father was totally absent. However, they comprised only a tiny fraction (2.4%) of all the infants, the vast majority having had contact with their father at the very beginning of their lives, even if only on an irregular basis (data not shown).

Does the frequency of contact with the absent father vary according to particular characteristics? This question remains to be explored. However, Table 6.1 shows that fathers whose name appeared on the birth certificate were more likely (70%) to see their infant regularly, as were those who maintained an ongoing relationship with the mother (73%) at the time of birth. In contrast, having lived together before the birth of the child did not seem to be a predictor of the presence of the father in the child's life.

Table 6.1

Nature of Contact with the Other Parent for Infants Born Outside a Union, by Three Characteristics Related to the Birth of the Baby, 1998

	Nature of co	ontact with the absent pa	arent	n	%
	Regular contact	Irregular or no contact	Total		
		%			
Parents had lived together before the birth			·		
Yes	4 5.9	54 1	100.0	84	44.9
No	49.4	50 6	100.0	103	55.1
Parents had an ongoing relationship at the birth					
Yes	73.1	26.9*	100.0	108	57.9
No	13.0**	87.0	100.0	79	42.1
Name of the father appears on the birth certificate					
Yes	70.0	30.0*	100.0	111	60.2
No	15.5**	84.5	100.0	74	39.8
Total of births outside a union	47.9	52.1	100.0	187	100.0

1. Excluding two cases for which there was no data.

* Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The infants were only 5 months old in Year 1 of ELDEO 1998-2002, but the data have already indicated factors in the conjugal history of their parents that may predict a family path that is neither uniform nor without repercussions.¹⁰ The bewildering variety and pace of change affecting family life in Québec in the last 30 years makes predicting future developments a challenging task. At the very least, it seems likely that Québec children, the majority of whom are being born to unmarried parents, and who find themselves thrust into family trajectories that are often already complicated, will experience changes in their family environment in growing numbers and at an increasingly younger age. In this context, it is incumbent upon researchers to try to understand what motivates couples to choose common-law unions. Interventions designed to address and prevent situations that are too harmful for children can be better targeted. In addition, being able to precisely document transitions in the children's family life as they occur will give researchers, practitioners, and decision-makers unique tools for establishing associations between family history and child development, which studies to date have not provided with much precision and reliability. The quality of findings will be all the better for including ÉLDEQ data on intermediary variables, such as the level of conflict between the parents or the loss of contact between fathers and their children, variables that the literature is increasingly identifying as being truly responsible for the negative effects certain family environments have on child development.

^{10.} To illustrate this, 35 ÉLDEQ infants had already seen their parents separate since the time of their birth; in 27 cases, their parents had been fiving in a common-law union, in 5 they had been married and had fived together prior to the marriage, and in only 3 they had been married without having previously lived together.

Conjugal Life of the Parents

Part II Spousal/Partner Support



The arrival of a child, and even moreso, becoming a first-time parent, constitute key stages in an individual's life. They also represent critical passages in the life of couples. Taking care of a newborn implies the mobilization of significant physical and psychological resources on the part of parents. Many studies reveal an important change in the couple's relationship in the first few months, and indeed the first few years following the arrival of a new child in the household (Belsky & Rovine, 1990; Cowan *et al.*, 1985; Provost & Tremblay, 1991). Transition to parenthood can result in a decrease in intimity and reinforce the division of labour based on sex, mothers assuming the larger proportion of responsibilities on the domestic front (Cowan & Cowan, 1992; Gloger-Tippelt & Huerkamp, 1998; Wicki, 1999).

In spite of the progress made in the division of parental and domestic responsibilities, much research indicates that the circumstances of family life, such as the presence of young children, continue to have a more significant effect on the time of mothers than that of fathers (Descarries et al., 1995). These studies reveal that the majority of mothers are still primarily responsible for caregiving and child-rearing, particularly in early childhood. In spite of certain variations related to socioeconomic status, most fathers of infants and toddlers have little tendency to take charge, on their own initiative, of the caregiving and upbringing associated with their children. Their contribution to family responsibilities, particularly in a child's first year of life, is most often manifested in satisfying and enriching activities in affective terms such as playing games with the child, and to a lesser degree, basic care for the child, followed by household chores far down the list (Jones, 1985; Marsiglio, 1991; for a review see Dulac, 1993).

Moreover, for sociocultural, organizational, economic (opportunity costs), practical reasons (breast feeding) or simply by choice, in the vast majority of cases it is still the mothers in Québec who stay at home to take care of the newborn or take advantage of parental leave available to both parents (Moisan, 1997). The data of Year 1 of ÉLDEQ revealed that 87% of fathers/partners versus only 17% of mothers were working approximately 5 months after the birth of the infant. To the question: "What do you consider your

(his/her) main activity at the present time?," "caring for the family" was the response given for 6% of fathers/partners (vs 85% of mothers) (see No. 2 in the present series of papers).

Since they assume the larger proportion of parenting and domestic tasks, the support provided to mothers by their spouse/partner during the postnatal period is of crucial importance. The spouse/partner's emotional and instrumental support seems to contribute to the mother's adjustment (Cutrona, 1984; Kumar & Robson, 1984) and have important effects both on the parent/child relationship (Gloger-Tippelt & Huerkamp, 1998) and many aspects of child development (Arendell, n.d.). For example, a number of studies suggest that mothers show more positive affect when the fathers contribute to doing household chores and caring for the baby (Levitt et al., 1986). Maternal behaviours such as anger, rejection and punitive control are less frequent among mothers who are satisfied with their spouse/partner's emotional support (Crockenberg, 1987). Sharing in infant caregiving on the part of fathers may not only be beneficial for mothers and the mother/child relationship. Some studies indicate that it fosters a better father/child relationship, and thereby positively influences the cognitive and social development of the child (Arendell, n.d.). Though certain studies show that both instrumental and emotional support appear to be associated with mothers' adjustment or the quality of the couple's relationship (Cowan & Cowan, 1992), emotional support stands out as determinant in this regard (Dulac, 1993; Levitt et al., 1986).

What do the mothers themselves think? How do Québec mothers perceive the support given by their spouse/partner during the first few months of the life of their child? This paper aims to shed light on the answers to these questions by presenting a portrait of conjugal support,¹ both instrumental and emotional, as perceived by mothers of 5-month-old infants who participated in Year 1 of ÉLDEQ 1998-2002. Various

Since half the couples in this survey were living in common-law unions, the word "conjugal" has been used instead of the word "marital" as an adjective to describe various attributes of a couple's relationship, except when referring to other studies in which "marital" was specifically used by the authors.

variables reflecting family composition (e.g., siblings, family structure, type of union), sociodemographic and socioeconomic characteristics of the parents (e.g., father's age, mother's employment status), lifestyle habits and characteristics of the infant (e.g., temperament, health status) and parents (e.g., depression status) will be analyzed.

Some of these variables have been previously identified as factors associated with the division of household labour in more heterogeneous populations such as couples both with and without children. Others have been examined specifically as they relate to couple satisfaction and the degree of perceived conjugal support (Wicki, 1999). In these studies, the support provided by the spouse/partner was most often considered a variable that mediated the association between the individual resources of the parents (level of psychological well-being) and parenting outcomes. This is why the latter aspect is the focus of this paper. The goal is to examine to what degree the perception of the support given by the father/partner was associated with family relationships when the infant was 5 months old. Because of their important effect on child development, self-reported parenting perceptions and behaviours will be examined as they relate to the degree of perceived support. Along with the longitudinal data, these analyses should open the door to a better understanding of the links among conjugal and family dynamics and child development in Québec.

The data were based on a representative sample of Québec 5-month-old infants (singleton births only).² Only infants in twoparent families (91% of infants), in virtually all cases living with their biological parents, were retained for this analysis. The information was derived from various questionnaires used in Year 1 of ÉLDEQ 1998-2002. Data on conjugal support and the mother/child relationship were derived from the Self-Administered Questionnaire for the Mother (SAQM), while other information on the infant, parents and family context was derived from the Computerized Questionnaire Completed by the Interviewer (CQCI), the Paper Questionnaire Completed by the Interviewer (PQCI) and the Self-Administered Questionnaire for the Father (SAQF). One of the advantages of this study was that information was gathered from fathers on numerous aspects such as the father/child relationship, his psychological well-being, perception of the infant's temperament, etc. Directly addressing the fathers was a great means of circumventing the pitfalls of research based only on the perceptions of the mother or a third party.

^{2.} For more details on the target population, see the Review of the Methodology at the beginning of Part I of this paper.

The degree of conjugal (spousal/partner) support was assessed by 5 questions exploring its various elements. For each statement, the mother responded on a 11-point Likert-type scale (0 = Not at all to 10 = Totally) according to how she rated the degree of support given by her spouse/partner with regards to instrumental support (caring for the baby and household chores), emotional support ("To what extent do you feel supported by your current spouse/partner when you feel overwhelmed?" and "To what extent do you feel support ("Overall, to what extent do you feel support ("Overall, to what extent do you feel support of your current spouse/partner?").

Focused on the mothers' perceptions, the measures of instrumental support do not provide a true portrait of the spouse/partner's involvement with their baby such as diaper changing, bathing, or feeding. The needs and expectations of the mothers could have varied with certain sociocultural characteristics and therefore their perceptions are not an accurate reflection of the fathers' true participation in infant caregiving. For example, it can be surmised that some mothers, whose spouse/partner provides little help with housework, are more easily accustomed to the unequal division of labour and state they are satisfied with the support received and vice versa (see further below).

In this regard, studies on the evolution of the spousal relationship during the transition to parenthood reveal that it is not so much the arrival of the baby *per se* or the unequal distribution of labour *in itself* that becomes an issue in this process. but rather the fulfillment of the expectations held by each spouse/partner vis-a-vis their (new) role (Hackel & Ruble, 1992). However, it should be noted that the actual division of household labour and childcare will be documented in the coming years of this longitudinal study, when the children in this cohort are 17 months of age, and when a larger proportion of mothers will enter or return to the workforce.

In Year 1 of ELDEQ, between 1,919 and 1,925 mothers in two-parent families responded to the questions on

spousal/partner support.³ Virtually all mothers were living with the biological father at the time of the survey in a marital or common-law union; only eight mothers were in a relationship with a partner other than the biological father.

^{3.} Since the questions on conjugal support were only addressed to mothers living with a spouse/partner, single-parent mothers (9%) were not included in this analysis. However, questions on social support (family and friends), sharing housework (for example, help received by family members) and the relationship with a noncohabiting spouse will be addressed to mothers not living with a spouse or partner in subsequent years of ELDEQ.

The means obtained for each question and the correlations among the five items of support are presented in Table 3.1. As indicated, the mothers had a generally favourable perception of their spouse/partner's support. These data agree in part with the results of studies on the course of marital satisfaction during the transition to parenthood. The studies indicate that in spite of a reduction in marital satisfaction after the arrival of a (new) child, the majority of couples report they are still satisfied with their relationship (for a review, see Wicki, 1999). As shown in Figure 3.1, it is in the area of domestic tasks that the mothers seem to be less satisfied. While approximately 45% of the mothers said they were definitely supported overall, or specifically with regards to caring for the baby or in times when they felt overwhelmed or sad, only 27% said they received similar support for household chores.

Table 3.1

Correlations Among Items of Conjugal Support (Perception of the Mother) and Mean Score by Item, 1998

	Infant caregiving	Housework	Support when feeling overwhelmed	Support when feeling sad	Overall support
infant caregiving	•••	0.61	0.59	0.50	0.70
Housework			0.50	0 43	0.57
Support when feeling overwhelmed			-	0 74	0.76
Support when feeling sad				-	0.78
Overall support					-
Mean score	8.2	6.9	8.4	8.4	8.6

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Figure 3.1 Distribution of Mothers by Perceived Conjugal Support, for Various Types of Support, 1998







see the next page ...



Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Although the correlations observed among the support dimensions were in general very strong, some in particular stand out. The mother's rating of overall support from her spouse seemed to be more strongly associated with emotional support than with the instrumental help perceived. For example, the correlation between overall support and the items of emotional support (times of sadness and feeling overwhelmed) was nearly 0.8. In comparison, the correlation between support in times of feeling sad or overwhelmed and that received for household chores was more modest (0.43).

To conduct the analysis of the factors associated with conjugal support, overall support and items related to support when feeling sad or overwhelmed were grouped into a single sub-scale of emotional support.⁴ Moreover, since it appeared important to distinguish the factors associated with

housework from those associated with caring for the child (Wicki, 1999), these two items of instrumental support were examined separately. Therefore, three types of conjugal support were analyzed - 1) caring for the baby, 2) household chores, and 3) emotional support.

For heuristic and statistical reasons such as non-normality of the data, the results of the three types of support were divided into two categories - mothers in the 20% of families who obtained the lowest scores for each type (lowest quintile) were put into one category and compared to those who benefited from stronger conjugal support.⁵ This classification is based on studies revealing that the rate of marital dissatisfaction varies around 20% (see Cummings & Davies, 1998; Wicki, 1999). It is important, however, to keep in mind that this differentiation or demarcation could not identify the couples who were experiencing difficulties in their relationship, nor should it be considered a measure of conjugal distress.⁶

As in the measurement of conjugal support, most of the variables examined in relation to the perception of the mothers were set up in dichotomous or polydichotomous form (categorical variables). There were many reasons for this choice. First, it seemed in light of studies conducted on the subject, that many factors examined such as age and education showed threshold effects (for example, the least educated compared to the most educated). It is noteworthy that in this analysis the distribution of variables related to symptoms of depression in the parents, family functioning and positive parenting practices showed strong asymmetry towards the positive pole (data not shown). For these reasons, we decided to group the data of the continuous variables in each scale into categories reflecting either the presence or absence of the phenomenon being examined.

For example, with respect to symptoms of depression, parents with a score of 13 or more on the abridged version of the Centre for Epidemiological Studies Depression Scale (CES-D)

^{4.} The Cronbach alpha for this sub-scale was 0.90. The value retained was the mean of the three items comprising it.

It should be noted that this cut-off point was nearly a standard deviation below the mean for each type of support retained.

Year 3 of this study (2000) will provide a more in-depth understanding of this. Conjugal dynamics, particularly problems therein, are being examined in both mothers and fathers/spouses when the children are 2 1/2 years of age.

used in ÉLDEQ were grouped together and compared to parents with a score of 12 or less. A score of 13 or more on this scale indicates a person is suffering from moderate to severe depression (Landy & Fam, 1996). The 1998 ÉLDEQ data showed that 10% of mothers in two-parent families were suffering from depression, compared to 4% of the fathers (data not shown).

With regards to the family functioning scale, the clinical threshold set by researchers at the Chedoke-McMaster Hospital in Hamilton (Ontario) was retained to distinguish functional families (scores between 0 and 14) from dysfunctional ones (scores of 15 or more), namely those that may need clinical assistance (Ross *et al.*, 1996). A dysfunctional family was defined as one in which the members have difficulty resolving problems, communicating, controlling their antisocial behaviours and in showing and receiving signs of affection (Landy & Tam, 1996). Wicki (1999) considers the level of cohesion/conflict present in a family and spousal/partner support as reflecting "family resources." According to the criterion chosen, the ÉLDEQ 1998 data showed that 94% of two-parent Québec families could be designated as functional, only 6% as dysfunctional.

To examine the associations between spousal support perceived by the mother and parenting practices and behaviours, two instruments were used - the positive parenting practice scale derived from the Parent Practices Scale designed by Stayhorn and Weidman (also used in the NLSCY), and the Parental Perceptions and Behaviours Scale Regarding the Infant (PPBS), specifically created for ÉLDEQ (see No. 10, Part I in this series of analytical papers).

Similar to Landy & Tam (1996), the median was used as the dividing line to distinguish infants benefiting from positive parenting practices from those whose parents had a lower score on the scale of positive interactions.

With regards to the Parental Perceptions and Behaviours Scale Regarding the Infant (PPBS), mothers and fathers in the lowest quintile of each dimension were grouped together and compared to other parents in relation to perceived support. PPBS was created to evaluate certain cognitive and behavioural dimensions judged relevant for the study of early childhood development (e.g., externalized and internalized problems). It comprises six dimensions reflecting the quality of the mother's and father's involvement with the infant.⁷

Comparisons between the two categories of families, low support versus high support, were conducted using the chi-square test.

^{7.} Three dimensions of this scale refer to behaviours the parent reported regarding affection, coercion and overprotection. Two other dimensions refer to the mother's or father's beliefs about their role as parent - self-efficacy, and perception of impact. A final dimension covered the parents' perception of the physical attractiveness and cognitive abilities of the child. For reasons explained in Number 10 of this series of papers, "parental affection" on the PPBS was not retained in this analysis.

4. Factors Associated with the Mother's Rating of Spousal/Partner Support

4.1 Age of the Parents and Family Composition

The first objective was to determine whether young couples (parents under 25 years of age) differed from older ones in terms of perceived conjugal support. A difference might suggest, for example, that young parents negotiate the division of labour in another way. The data revealed no significant difference associated with age groups of the parents, mothers or fathers. Given the relative homogeneity of the study population in terms of age (70% of fathers in intact two-parent families were under 35 years of age and only 9% 40 or over), the absence of a generation gap was not in itself very surprising.

Was the type of union associated with perceived conjugal support? It has been shown that couples who choose common-law unions instead of marriage negotiate the division of household labour in a more egalitarian fashion (Le Bourdais & Sauriol, 1998; Shelton & John, 1993). Mothers in common-law unions seem to report more satisfaction with the instrumental support received from their spouse/partner. Data from Year 1 of ÉLDEQ show that being in a common-law or married union with the current spouse was not significantly associated with the perception of instrumental or emotional support, whatever the family structure - intact two-parent or stepfamily (data not shown).

Family composition seemed, however, to be associated with the degree of support perceived. As shown in Figure 4.1, regardless of the type of support, mothers of infants with brothers of sisters generally had a less favourable perception of the support of their spouse/partner than mothers of firstborns. There were no differences in this perception according to whether the infants were the second and third or more in birth order (data not shown). The distinction therefore concerned "new" mothers compared to "experienced" ones. The difference was stronger in terms of caregiving; 21% of mothers rearing other children reported receiving a low level of support, whereas only 14% of first-time mothers reported this. In terms of household chores, 23% of mothers with more than one child reported low support versus 18% of those with an only child. The percentages for emotional support were 21% for the former and 17% for the latter.

Figure 4.1

Proportion of Mothers Reporting a Low Level of Conjugal Support, by Type of Support and Number of Brothers or Sisters of the Infant, 1998



1. p < 0.05.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

Virtually all the stepfamilies had, in addition to the infant, at least one child from a previous union of one of the spouses.⁸ Consequently, the association between the infant having brothers and sisters and perceived spousal support could be attributed to family structure. The results of previous studies indicate, however, that the level of conjugal satisfaction reported by Québec parents show no differences between intact two-parent families and stepfamilies (Bernier et al., 1994). The analysis of the 1998 ELDEQ data also revealed that "experienced" mothers in intact families, namely those raising more than one child, were no different from mothers in stepfamilies in terms of perceived instrumental support or emotional support. In contrast, the difference observed in terms of birth order remained when only intact two-parent families were retained in the analysis, irrespective of the type of support (data not shown).

The only exceptions were the few mothers who were living with only their 5-month-old and a new spouse/partner.

The question of caregiving examined only the target infant at approximately 5 months of age. It is possible that some fathers helped the mother indirectly by taking care of the older children. However, we can assume that certain mothers took this into account in their response to the question: "To what extent do you feel supported by your current spouse/partner in baby caregiving?" In fact, the "experienced" mothers' perception of a lower level of instrumental support is in line with various studies conducted on the division of family and household responsibilities. These reveal that the contribution of fathers to domestics tasks such as caring for the children and housework tends to decrease as the family grows (Villeneuve-Golkap, 1985).

It is interesting to note that this difference was also observed in the affective dimension of the relationship. Is this attributable to the fact that the parents of a second child or more have lived as a couple longer than first-time parents and that their relationship is therefore more tarnished by the ups and downs and humdrum of everyday life? Conversely, do the spouses/partners of "inexperienced" mothers empathize with their lack of experience? Are they more available or simply more motivated because of the novelty of the role thrust upon them? The latter is what other analyses conducted in this study suggest. They show that fathers of an only child perceived themselves as more effective and ascribed more physical and cognitive qualities to the infant than those who had more than one child (see No. 10 in this series of papers).

4.2 Socioeconomic Characteristics of the Family

Many studies suggest that lower socioeconomic status contributes to the maintenance of traditional paternal practices and is associated with less fathers' involvement in childrearing (Aisha Ray & McLoyd, 1986; Beaulieu, 1997). Women with lower socioeconomic status may have a tendency to consider the main role of the father as being the provider of the material needs of the family (Colin *et al.*, 1992). They may be more inclined to preserve their power as mother and be the only one to carry the responsibility of caring for the baby and performing the tasks that follow the arrival of a newborn (Lévesque *et al.*, 1997). From this point of view, both the division of labour and the expectations of the couple may likely vary with socioeconomic status. However,

other studies indicate that sharing the domestic workload is only marginally influenced by the socioeconomic status of each parent. They suggest that each individual's educational level or employment habits have little effect on the division of labour in the couple. The relative importance of the occupational status of the woman compared to that of her spouse/partner may prove to be significantly more determinant in terms of the division of household labour. Women with a higher employment status than that of their spouse seem to have greater negotiating power in the couple, meaning the division of labour is more equitable (Glaude & de Singly, 1986; Maret & Finlay, 1984), though in some couples, this creates tension and anxiety in the new father (Wicki, 1999).

The 1998 ÉLDEQ data provide a means of exploring the associations between socioeconomic characteristics of the parents and the instrumental support received by the mother. The data are not a measure of the parent's real use of time. Nevertheless, they make it possible to paint a portrait of the expectations of and demands on mothers in terms of sharing family responsibilities.

The proportion of mothers who reported low conjugal support related to certain socioeconomic variables is presented in Table 4.1. Some significant differences were observed. Mothers who were not working when the infant was 5 months. old were more likely to report low support from their spouse/partner with regards to caring for the baby than those working (19% vs. 14%). A more complex association was observed between perceived support in infant caregiving and educational level of the father. Mothers whose spouse/partner had a high school diploma or the highest educational level measured were more satisfied with support in infant caregiving than other mothers. Moreover, only 20% of mothers in dual-earner families (both parents having worked in the year preceding the survey) rated support in household chores unfavourably compared to 25% of mothers in families with a single income.

Table 4.1

Proportion of Mothers Reporting a Low Level of Conjugal Support by Certain Socioeconomic Variables and Type of Support, 1998

	Infant caregiving	Housework	Emotional support
		%	
Employment status at time of survey			
Working	13.5	16.8	17.5
Unemployed	18.9	21.3	19.7
Number of parents who had worked in the 12 months preceding the survey			
2 parents	17.5	19.9 [†]	18.9
1 parent	19.8	24.7	21.3
No parent	20.6**		13.5**
Educational level of the father			
No high school diploma	21.0 ¹	22.5	21.7 [†]
High school diploma	13.5*	24.5	26.0
Partial post- secondary studies or vocational/ technical diploma	20.6	19.7	19.3
College (Junior) diploma or university degree	15.9	18.7	15.9

Note : [†] indicates p < 0.05.

1. Datum not shown because of small numbers.

 Coefficient of variation (CV) between 15% and 25%; interpret with caution.

** Coefficient of variation (CV) higher than 25%; imprecise estimate for descriptive purposes only.

Source: Institut de la statistique du Québec, ÉLDEQ 1998-2002.

At first glance, these results may reflect greater sharing of domestic tasks on the part of the spouses of working mothers. However, they could also mean that double-income couples use external help more frequently. Studies on the time management of spouses indicate that the mother's employment status has little effect on the division of labour in the couple. The fact that the mother works may actually mean a reduction in the overall domestic workload because outside help is used for baby-sitting or doing housework, or that the focus changes to doing just essential tasks (Le Bourdais *et al.*, 1987). The ELDEQ 1998 data revealed that the

employment status of the father was also not associated with perceived instrumental support (data not shown). Marsiglio (1991) reports that unemployed fathers do not invest more time in domestic tasks then working fathers. Furthermore, in contrast to unemployed mothers, unemployed fathers do not devote equivalent time to domestic tasks (Marsiglio, 1991). However, the ÉLDEQ results seem to contradict those of other studies. Some show that unemployment makes fathers less adept at adequately fulfilling their role as a spouse and contributing to the workload involved with the arrival of a new family member (Lévesque *et al.*, 1997). Others show that, especially in young couples, paternal unemployment leads to a more equitable division of labour (Barrère-Maurisson & Battagliola-Bedos, 1984).

The data in Figure 4.2 show the association between socioeconomic status of the household (a measure combining education, occupational prestige and income of both parents) and perceived support for household chores. Mothers in the highest quintile of socioeconomic status were more satisfied with the support of their spouse/partner in this regard than those in the mid-quintiles. No significant difference was observed, however, in terms of baby caregiving (data not shown). Educational level of the mother, household income. occupational category of the parents, number of hours worked in the main job during the 12 months preceding the survey (mother or father), each taken alone, were not associated with the level of perceived instrumental support (data not shown). These results demonstrate that it may be of interest to take into account the characteristics of both parents simultaneously, namely family strategies as a whole, when trying to understand how tasks are negotiated in a couple (Barrere-Maurisson & Battagliola-Bedos, 1984).

Figure 4.2

Proportion of Mothers Reporting a Low Level of Conjugal Support for Housework, by Quintile of Socioeconomic Status, 1998¹



1. p < 0.05 for quintiles 2,3 vs. 5.



The perception of support in times of feeling sad or overwhelmed was also associated with social status. Rather than the employment status of the mother, characteristics of the father such as educational level seemed to be at work. Mothers whose spouse/partner was less educated (high school diploma or less) reported they were less satisfied with support than those whose spouse/partner had a college (junior) diploma or university degree. Approximately a guarter (22% to 26%) of the former received less support at difficult times compared to 16% whose spouses were more educated (Table 4.1). Being more involved in parental tasks (as indicated above), more educated fathers were also more inclined, according to their spouse/partner, to provide support when the mother was feeling sad or overwhelmed. However, as shown in Figure 4.3, the association between socioeconomic status of the parents and the degree of perceived emotional support did not seem polarized, with one end of the scale showing the lowest percentage of dissatisfied mothers and the other the highest. These data confirm the trend observed previously with regards to the father's educational level. Mothers in the highest quintile of socioeconomic status were less likely to report dissatisfaction with the support received from their spouse than mothers in the middle or lower quintiles.

Figure 4.3

Proportion of Mothers Reporting a Low Level of Emotional Support on the Part of their Spouse/Partner, by Quintile of Socioeconomic Status, 1998¹



1. $p \le 0.05$ for quintiles 1, 2,3 vs. 5 and quintiles 2,3 vs. 4.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

4.3 Infant Characteristics and Parents' Health

The three categories of perceived conjugal support in association with certain health characteristics of the infant and parents are presented in Table 4.2. Other characteristics such as sex, sleeping through the night, feeding method (1 in 3 were being breast fed at 5 months), prematurity, low birth weight, or difficult temperament in the infant as perceived by mother or father (see No. 7 in this series) were not associated with the mother's perception of conjugal support (data not shown). The temperament result is similar to that indicated in a study by Gloger-Tippelt & Huerkamp (1998), in which no significant association was observed between the perception of a difficult temperament in the infant by the parents and the level of couple satisfaction they reported. As indicated in Table 4.2, the ÉLDEQ data revealed that the mother's perception of the emotional support of the spouse was strongly associated with the health status of the infant - 26% of mothers whose infant was not in good health "almost all the time" in the 12 months preceding the survey reported a low level of support versus 19% of mothers with a baby in good health. However, the health status of the infant was not related to the mother's perception of instrumental support (caring for the baby and housework).

Table 4.2

Proportion of Mothers Reporting a Low Level of Conjugal Support by Type of Support and Certain Health Characteristics of the Infant and Parents, 1998

	Infant caregiving	Housework	Emotional support
	_	%	
In the 12 months preceding the survey, the infant was in good health			
Almost all the time	17.9	20.0	18.6 [°]
Other	20.2	25.2	25.8
General health status (mother)			
Excellent or very good	16.8 ¹	20.2	17.7 ¹
Good, fair or poor	23.4	22.0	25.5
Depression status (mother)			
Yes	34.3 ¹	34.3 [†]	43.2
No	16.5	19.0	16.8
General health status (father/partner)			
Excellent or very good	16.0	19.0 ¹	17.3
Good, fair or poor	27.2	27.0	27.6
Depression status (father/partner)			
Yes	31.8 [†] *	25.2*	36.0 ^t *
No	17.1	19.8	18.7

Note : ¹ indicates p < 0.05.

 Comprises the categories "Often," "About half the time," "Sometimes," "Almost never."

 Coefficient of variation (CV) between 15% and 25%; interpret with caution.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

As seen in Table 4.2, the health status of the parents was also associated with perceived conjugal support. Mothers not presenting optimum health (excellent or very good) felt they were receiving less support from their spouse, both on an emotional level and in terms of caring for the baby. A similar association was observed with depression status of the mother. Irrespective of the type of support, a higher proportion of depressed mothers reported a low level of support from their spouse. With regards to infant caregiving, twice as many "depressed" mothers perceived a lower level of support from their spouse/partner (34% vs. 17%). The difference was slightly less with regards to housework (34% vs. 19%). In addition, 43% of "depressed" mothers indicated receiving low emotional support compared to 17% of non-depressed mothers.

There may be indeed a link between the health status of a baby and the psychological well-being of the mother. Mothers whose child presents certain health problems may feel that they carry the burden alone - they may feel anxious and worried, and perceive their concerns are not shared by their spouse. Many studies have revealed the pivotal role mothers play when health problems afflict family members, particularly children (time off from work, arranging appointments, etc.) (Beaupré, 1990; Descarries *et al.*, 1995). The ÉLDEQ 1998 data revealed that depression in the mother, but not in the father, was ignificantly associated with the health status of the baby (data not shown).

These results raise certain questions. Is the mother's rating of the support she receives strongly affected by her degree of psychological well-being, or is it the lack of support that leads to her being depressed? Recent studies, both cross-sectional and longitudinal, seem to support the second hypothesis (Berthiaume *et al.*, 1996; for a review of U.S. studies, see Wicki, 1999).

The lower part of Table 4.2 sheds light on this question. The mother's perception of support was strongly linked to the health profile of the spouse/partner. For all three types of support, mothers whose spouse's health status was reported as "good," "fair" or "poor," had a less favourable perception of the support she was receiving, 27% versus 19% or less in cases where the spouse's health status was "excellent" or "very good." With regard to baby caregiving and emotional support, the differences were even more marked according to the depression status of the father/partner. For example, 36% of mothers whose spouse considered himself depressed (according to symptoms elicited by the CES-D on the Self-Administered Questionnaire for the Father) perceived themselves as receiving low support in times when they felt sad or overwhelmed, versus 19% whose spouse/partner was not "depressed." In terms of caring for the baby, these proportions were 32% versus 17% respectively. However, there was no association between the psychological wellbeing of the father and the mother's rating of support received for household chores.

These data indicate that the mother's perception of the spouse's caregiving and emotional support cannot be considered simply a reflection of her own affective status. The physical and psychological resources of the father/partner may influence his capacity to provide the support needed during the postnatal period. Indeed, studies reveal a link between certain psychological traits of the father such as empathy, capacity to listen, and self esteem, and his involvement with his children. These two factors are also strongly associated with the quality of the couple's relationship (for a review, see Arendell, n.d.). Though the analyses do not indicate the mechanisms at work, it is possible that the link is in part circular, the experiences of each partner being intimately intertwined (Gloger-Tippelt & Huerkamp, 1998). The ÉLDEQ data showed a significant association between the psychological well-being of the mother and that of the father (data not shown).

4.4 Perceived Conjugal Support and Family Relationships

In general, conjugal support and the quality of the couple's relationship are an important aspect of family life. Certain studies demonstrate a significant association between satisfaction with the division of household labour and childcare and the quality of parental partnership (Hacket & Ruble, 1992) on the one hand, and family functioning (e.g. degree of conflict) on the other. The latter two aspects are strongly associated with the quality of the mother/child relationship (Wicki, 1999). Emotional support given by the partner, particularly signs of affection and a low level of conflict, may provide the mother with the psychological resources to appropriately respond to the needs of the newborn and contribute to the security of the infant-mother attachment (Gloger-Tippelt & Huerkamp, 1998), an important determinant of the cognitive and social development of the child. Moreover, these mothers will feel more effective and will generally be more satisfied with their maternal role (Andersen & Tellen, 1992).

The strong association between parental characteristics such as depression status and the mother's perception of conjugal support was examined earlier. To what degree was the assessment of the support given by the father/partner associated with family functioning, and in particular the father/child relationship? First, the 1998 ELDEQ data reveal that family functioning was strongly associated with both instrumental and emotional perceived conjugal support. As shown in Figure 4.4, the proportion of mothers reporting low spousal support in terms of caring for the baby was approximately twice as high in dysfunctional families (38% vs. 17%), namely families whose members had difficulty resolving problems, communicating, controlling their antisocial behaviours and showing/receiving signs of affection. In addition, 42% of mothers in a dysfunctional family reported low support from their spouse in terms of housework versus 19% of other mothers. The gap widened with emotional support - not surprising given the similarity between the two scales.

As indicated in Figure 4.4, two out of three mothers in "dysfunctional" families said they received low emotional support from their spouse in times of sadness or feeling overwhelmed. From an other perspective, the results show that the proportion of infants in dysfunctional families was three times higher when the mother reported low instrumental support, 12% versus 4% for infant caregiving or housework, and eight times higher when she reported low affective support (p < 0.05) (data not shown). This is not without precedence, many studies revealing a strong association between unresolved family and spousal conflict and the development of psychopathology in the children (Downey & Coyne, 1990; Grych & Fincham, 1990), as well as a higher risk of union dissolution. It is mainly because they often affect parenting practices and parent/child relationships that such conflicts prove so detrimental to child development and adjustment (Cummings & Davies, 1998). Therefore we will conclude by examining the link between the degree of perceived support and the parent/child relationship.

Figure 4.4

Proportion of Mothers Reporting a Low Level of Conjugal Support by Family Functioning and Type of Support, 1998



1. p < 0.05.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

The ÉLDEQ 1998 data showed a significant association between perceived support provided by the father/partner in infant caregiving and the degree of positive interaction with the baby. Infants of mothers in the lowest quintile of support were less likely to be exposed to positive parenting practices than those of mothers who reported the highest level of support (45% vs. 53%; p < 0.05). No significant association was observed between the other two types of support (housework and emotional) and the degree of positive interactions with the infant, as defined in the study (data not shown).

The degree of perceived emotional support was positively associated with the mother's assessment of her capacity to accomplish parent-related tasks (self-efficacy) and inversely associated with the mother's tendency to coercion (PPBS). As indicated in Number 10 in this series of papers, the tendency to coercion refers to the propensity to respond in a hostile and restrictive manner to difficult behaviour in the baby. This shows a lack of sensitivity to the needs and moods of the infant. Low emotional support from the spouse was associated with a relatively high score on the coercion scale; 26% of mothers reporting weak emotional support from the spouse/partner were in the highest quintile on this scale, whereas this was the case for 18% of other mothers (p < 0.05). Similarly, 29% of those reporting weak emotional

support were in the lowest quintile of self-efficacy versus 17% of mothers who reported stronger emotional support. This component of the mother/child relationship was also associated with perceived instrumental support (infant caregiving, housework), the relative percentages being essentially of the same order (Figure 4.5). Finally, the degree of spousal support in infant caregiving was positively associated with the score on the infant qualities scale, a dimension expressing the mother's perception of the physical and cognitive attributes of the child. In this regard, 25% of mothers receiving less support in infant caregiving were in the lowest quintile of this scale versus 19% of mothers reporting more support (data not shown). These results correspond to those obtained in other analyses of the 1998 data with regards to overall conjugal support (see No. 10 in this series of papers) and corroborate those observed in a recent study on the determinants of the mother/child relationship and, more specifically, coercive maternal behaviours (Meyer, 1999).

Figure 4.5





1. p < 0.05.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

What about the fathers? Did fathers perceived as being more involved with their infant have a more satisfying relationship with their child? Again, there was a significant association between the mother's evaluation of spousal/partner support and various aspects of the father/child relationship, as the data from the PPBS section of the SAQF revealed. However, the difference between the low and high support groups seemed to be more striking in the fathers than in the mothers, particularly with regards to parental self-efficacy. Irrespective of the type of support, approximately twice as many fathers perceived as less supportive were in the lowest quintile on the parental self-efficacy scale, namely between 32% and 38% (by type of support) versus 16% (Figure 4.6). The same type of association was observed for perception of impact as a father, namely his assessment as to the effect of his own behaviour on the child's development; 26% of fathers who were giving less support according to their spouse were in the lowest quintile of this scale compared to only 17% of fathers judged to be more supportive. (p < 0.05) (data not shown).

Figure 4.6





1. p < 0.05.

Source : Institut de la statistique du Québec, ÉLDEQ 1998-2002.

However, the scale retained for perceived conjugal support in this analysis was not associated with the mother's perception of impact as a parent, the tendency to coercion in the fathers, or with the tendency to overprotection (the degree of inappropriate or excessive protection) in either the mothers or the fathers. Québec mothers' assessmer t of the support given by their spouse/partner when their infant was 5 months old gives a partial snapshot of the family life and the couple's relationship in 1998. For certain spouses, the arrival of the baby marks their debut as a parent; for others, it constitutes the beginning of another growth phase of the family. In both cases, the arrival of a (new) child represents a transition in the life of a couple, a stage in the process of adjustment that can stretch for several months, indeed, several years (Belsky & Rovine, 1990).

As we have seen, the majority of Québec mothers had a favourable perception of the father or spouse/partner's support, both instrumental and emotional. However, some felt more alone and less supported by their spouse during this generally demanding period of life. It will be interesting to document the evolution of the couple's relationship over time and in association with certain changes in the family such as the arrival of another child. Pre-existing conditions likely to be associated with conjugal dynamics in the transition to parenthood, notably the desire to have a baby, will be recorded in retrospective fashion in future years of the longitudinal survey. Other data on the quality of the couple's relationship collected from the mother and father/spouse, as well as help received from the extended family such as grandparents, will also be examined in relation to various aspects of child development.

Even at this juncture, certain results obtained in Year 1 of ÉLDEQ deserve attention because of their potential value in the planning of preventive interventions targeting child development. The results substantiate similar findings of other cross-sectional and longitudinal studies on the interrelatedness of parental partnership and parenting outcomes. In spite of this, the parent/child relationship is still often judged only in association with the individual characteristics of the parent, usually the mother. Recent studies show the limits of this approach in that it tends to conceal the fact that the parent or stepparent may be involved in a relationship, so couple dynamics do play a role (Gloger-Tippelt & Huerkamp, 1998). Even in separated couples, the type of relationship the ex-spouses have becomes an important indicator that must be take into account if we hope to understand the impact of family dissolution on the children (Donnelly & Finkelhor, 1992; Jutras & Dandurand, 1994). Since the type of relationship that arises between ex-spouses or between the non-custodial parent and the children is strongly associated with the family dynamics preceding the union's dissolution, a better understanding of the various sub-systems and the links among the sub-systems that comprise the family (couple, parent/child) before a breakup is undeniably important.

This raises the question of intervention. The rapid increase in recent years in union dissolutions involving children has led the Québec government to implement mandatory mediation services at the time of the break-up to ameliorate the process, both for parents and the children. However, organizations concerned with this such as the *Conseil de la famille et de l'enfance* (Council for the Family and Childhood) have recently underlined the importance of directing energy to the prevention of problems in couples with children, given the human costs associated with conjugal conflict (*Conseil de la famille*, 1996, 1997).

Among the interesting results to highlight because of their utility in developing programs and interventions for families, birth order stands out. More mothers of children who were the second or later child reported weak support from their spouse/partner, both in terms of domestic tasks (caregiving for the infant, housework) and during times when they felt sad or overwhelmed. The latter finding suggests that it would be important not to focus only on first-time parents in the planning of support programs for families.

Finally, one of the most rewarding benefits and particular advantages of this study was the fact that information was collected on the spouse/partner, not only from a third party, in this case, the mother, but also by means of a selfadministered questionnaire for the father/spouse. The analysis of factors associated with perceived conjugal support revealed a strong association between the degree of support reported by the mother and certain characteristics of the father such as depression status. In terms of the parent/child relationship, the results showed that fathers perceived to be more involved instrumentally and emotionally considered themselves more effective as parents. Though the mechanisms at work here remain to be understood, the results suggest that greater involvement on the part of the father has beneficial effects, both for the fathers themselves and for the various sub-systems of the family unit (couple, parent/child), these diverse elements being inter-related.

Following the social and economic transformations of the past thirty years such as the massive influx of women into the workforce, numerous studies have underlined the persistence of inequities in the division of labour with regards to family and household responsibilities in couples with children. In this regard, certain individual characteristics stand out, the most common being sociodemographic or socioeconomic, as a means of explaining the variations observed. Further research needs to be conducted in order to better identify, particularly through multivariate analyses, the configuration of factors social, family, psychological - that foster greater involvement on the part of fathers in family life, given the benefits this seems to bring to everyone involved. To shed light on this process, this study has shown that it is important to widen our focus to include fathers' perspective, since they are important actors in family life and child development.

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Glossary

Centre de la petite enfance Commission d'accès à l'information du Québec - CAI Conseil québécois de la recherche sociale (CORS) Direction de la méthodologie et des enquêtes spéciales, ISQ Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre Direction de la technologie et des opérations statistiques, ISQ Direction des normes et de l'information, ISQ Direction Santé Québec, ISQ Étude des jumeaux nouveaux-nés au Québec - ÉJNQ Fichier maître des naissances Fonds de la recherche en santé du Québec (FRSQ) Fonds pour la formation de chercheurs et l'aide à la recherche (FCAR) Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP Institut de la statistique du Québec, ISQ La Politique Familiale Le Rapport Bouchard (1991) « Un Québec fou de ses enfants » Les Priorités nationales de santé publique ministère de l'Éducation ministère de la Famille et de l'Enfance ministère de la Justice ministère de la Recherche, Science et Technologie ministère de la Santé et des Services sociaux du Québec (MSSS) ministère de la Sécurité publique ministère de la Solidarité sociale Politique de la santé et du bien-être Service de la recherche Service de support aux opérations de la Régie de l'assurance-maladie du Québec - RAMQ

Child-care centre Québec Access to Information Commission Social Research Council of Québec Methodology and Special Surveys Division, ISQ Public Health Department, Montréal-Centre **Regional Health Board** Technology and Statistical Operations Division, ISQ Standards and Information Division, ISQ Health Québec Division Québec Study of Newborn Twins Master Birth Register Health Research Fund of Québec Researcher Education and Research Assistance Fund Research Unit on Children's Pyschosocial Maladiustment Québec Institute of Statistics Policy on Families The Bouchard Report, 1991: A Québec in Love with its Children Priorities for Public Health Ministry of Education Ministry of Family and Child Welfare Ministry of Justice Ministry of Research, Science and Technology Ministry of Health and Social Services of Québec Ministry of Public Security Ministry of Social Solidarity - formerly Income Security (Welfare) Policy on Health and Well-Being Research services **Operations Support Section of the**

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The analyses presented in this paper are part of a large body of research flowing from the longitudinal study, aimed at providing a better understanding of the associations among family and conjugal dynamics and the development of Québec children of preschool age.



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November 2001

Foreword

Similar to what has been observed in the majority of industrialized nations over the past twenty years, Québec and Canada have seen a significant increase in the costs related to maladjustment, particularly in young people. The Longitudinal Study of Child Development in Québec (*l'Étude longitudinale du développement des enfants du Québec*) (ÉLDEQ 1998-2002) being conducted by *Santé Québec* (Health Québec),¹ a division of *l'Institut de la statistique du Québec (ISQ)*² (Québec Institute of Statistics) in collaboration with a group of university researchers, will provide an indispensable tool for action and prevention on the part of government, professionals and practitioners in the field, who every day must face maladjustment in children.

More precisely, a major purpose of this longitudinal study of a cohort of newborns is to give Québec a means of preventing extremely costly human and social problems, such as school dropout, delinquency, suicide, drug addiction, domestic violence, etc. Similar to what is being done elsewhere (in the UK, New Zealand, the US), Santé Québec and a group of researchers have designed and developed a longitudinal study of children 0 to 5 years of age (2,223 children in this study and 600 twins in a related one). It will help gain a better understanding of the factors influencing child development and psychosocial adjustment.

The general goal of ÉLDEQ 1998-2002 is to learn the PRECURSORS, PATHS and EFFECTS, over the medium and long terms, of children's adjustment to school. ÉLDEQ is the logical extension of the National

Longitudinal Study of Children and Youth (NLSCY, Canada). These Québec and Canada-wide longitudinal studies are both comparable and complementary. They employ distinct survey methods, and use different techniques to obtain the initial samples. Though many of the instruments are practically identical, about a third of those being used in ÉLDEQ are not the same.

This first report casts light on the enormous potential of the data generated by this study. From the descriptive analyses of the results of the first year of the study to the longitudinal analyses of subsequent years, there will be an enormous wealth of data. With updated knowledge on the development of the cohort of young children, the annual longitudinal follow-up will respond to the needs which the ministère de la Santé et des Services Sociaux du Québec - MSSS (Ministry of Health and Social Services), who financed the data collection, expressed in both the Report of the Working Group on Youth (Rapport Bouchard, 1991, Un Québec fou de ses enfants - the Bouchard Report, 1991, A Québec in Love with its Children) and the policy papers entitled Politique de la santé et du bien-être, 1992 (Health and Well-Being) and les Priorités nationales de santé publique 1997-2002 (Public Health Priorities 1997-2002).

Man

Yvon Fortin

Certain French appellations in italics in the text do not have official English translations. The first time one of these appears, the unofficial English translation is shown immediately after it. Following this, for ease in reading, only the official French name appears in the text in italics, and it is suggested the reader refer to the Glossary for the English translation.

Santé Québec officially became a division of the ISQ on April 1, 1999.

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Caution

Unless indicated otherwise, "n" in the tables represents data weighted to the size of the initial sample.

Because the data were rounded off, totals do not necessarily correspond to the sum of the parts.

To facilitate readability, proportions higher than 5% were rounded off to the nearest whole unit in the text, and to the nearest decimal in tables and figures.

Symbols:

•••	Not applicable (N/A)	CV
	Data not available	Not avail.
-	Nil or zero	Not signif.
p <	Refers to the threshold of significance	

Abbreviations

CV Coefficient of variation Not avail. Not available Not signif. Not significant

Acknowledgments

Santé Québec recognizes that the development and implementation of the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) flows directly from the synergy of effort and professionalism of many people throughout the whole process of mounting a survey of this size. Since 1995, individuals, various groups and organizations, a survey firm and the staff of *Santé Québec* have become indispensable links in making this ambitious project a reality - the first annual longitudinal survey of Québec infants.

A major characteristic of this project is that a pretest and survey are conducted every year. To accomplish this, we must annually: 1) make two sets of instruments (pretest and survey), 2) conduct two data collections, 3) analyze two sets of data, and 4) produce two types of communications materials. The results of each pretest means fine-tuning and developing instruments for the survey, which follows 17 months later. The results are sent to the parents (highlights), published in reports, and communicated to the scientific community and the public at large. The professionals and staff involved in collecting the data, as well as those involved before and after, must put their nose to the grindstone every year. We cannot over-emphasize our profound recognition of the incredible, concerted effort they are putting into this project over an 8-YEAR period, from the first pretest in 1996 to the final report to be published in 2004!

First, it must be said that without Daniel Tremblay, Director of Santé Québec (now part of the *ISQ*) since 1994, Christine Colin, Assistant Deputy Minister responsible for Public Health 1993-1998, Aline Émond, Director of Santé Québec 1986-1993, Richard E. Tremblay, Director of the ÉLDEQ research project, and Marc Renaud, President of *Ie Conseil québécois de la recherche sociale - CQRS* 1991-1997. ÉLDEQ 1998-2002, also known as "In 2002...I'll Be 5 Years Old!," would have never seen the light of day. In turn and together, they developed, defended and obtained the financing for this study. Thank you for your indefatigable tenacity.

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A very special thanks to all the master designers of the National Longitudinal Study of Children and Youth (NLSCY, Canada). Without their expertise, advice and generosity, our survey would never have been accomplished. In many senses of the word "modeling," ÉLDEQ has learnt a lot from the NLSCY.

We would also like to extend out gratitude to the staff of the Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP (Research Unit on Children's Pyschosocial Maladjustment) at the University of Montréal. Without their expertise, some of our survey instruments would have never been computerized to such a high level of quality.

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Our sincerest thanks go to our survey firm, *Bureau d'interviewers professionnels* (*BIP*). Since 1996, this polling company has been responsible for data collection in the pretests and surveys, and follow-up of families both inside and outside of Québec. Lucie Leclerc, President of *BIP*, has set the standard of quality for our numerous and complex data collections. Assisted by Véronique Dorison, she has instilled in her interviewers a great sense of respect for the respondent families, as well as a rigourous regard for all the norms governing this first-of-a-kind survey in Québec.

A big thank-you to the directors-general, directors of professional services, and staff of the medical records departments of some 80 hospitals in the province who accepted to collaborate in our study at a time when resources were rare and time was at a premium, and when the medical records departments in many hospitals were merging or in the process of doing so. Their support was exceptional. Birthing centres also graciously accepted to participate in this first Québec longitudinal study of children. A special thanks to Julie Martineau, medical records specialist, who contributed to the analysis of indispensable medical information by ensuring very rigourous coding of the data, which often lay concealed in the medical files of the infants and their mothers.

It goes without saying that the staff of Santé Québec Division directly attached to ELDEQ 1998-2002 are the cornerstone of its success from practically every point of view. Special thanks for their ongoing contribution and constant hard work go to Hélène Desrosiers and Josette Thibault, responsible respectively for analysis of the data and creation of the measurement instruments; Martin Boivin, Rolland Gaudet and Gérald Benoît, who constantly pushed the limits of what computer software can do in terms of programming and data processing; Suzanne Bernier-Messier and Diane Lord, who give meaning to the word versatility, who must organize, code and manage incredible quantities of data to ensure the progress of the study. Not directly attached to the team but who made extremely important contributions are: France Lacoursière, France Lozeau and Thérèse Cloutier, who put the finishing touches to the Santé Québec "look" in the survey instruments, reports and conference publications; Lise Ménard-Godin, who conducted fruitful literature searches and advised on many aspects of the collection instruments. The hard work, constant availability, ability to adapt, and finelyhoned skills of the people working on this project match the enthusiasm that all our partners have demonstrated in making this study a resounding success.

Finally, I would like to extend a very special thank-you to the 2,223 families who responded to our survey. Thank you for the trust you have shown in *Santé Québec*, our partners and collaborators. Thanks to your participation, your children have become the veritable stars of ÉLDEQ 1998-2002, and are making it possible, in the short term, to gain a better understanding of psychosocial adjustment in children. In the medium and long terms, they will likely be in large part responsible for the establishment of early detection programs, better designed prevention programs, and more effective interventions for such an important clientele - all of Québec's children.

Aut litt

Mireille Jetté Project Coordinator *Santé Québec* Division, *ISQ*

Preventing Social Maladjustment

It suffices to consider the costs engendered by behavioural problems in children - school dropout, delinquency, alcoholism, drug addiction, family violence, mental disorders and suicide - to conclude that they largely surpass what a modern society can accept. morally and economically. Faced with the enormity of these problems, the first reflex is to provide services to these people which will, ideally, make the problems disappear, or at the very least, lessen their severity. For many years we have tried to offer quality services to children and adults who suffer from antisocial disorders. alcoholism, drug addiction, depression, and physical or sexual abuse. However, in spite of enormous investment, these curative services are far from being able to respond to the demand.

Although the idea of early intervention as a preventive measure can be traced at least as far back as ancient Greece, the second half of the 20th century will certainly be recognized as the dawn of the field of social maladjustment prevention (Cole et al, 1993; Mrazek & Haggerty, 1994). Numerous programs have been developed for adolescents and teenagers to prevent school dropout, delinguency, drug addiction and suicide. Scientific evaluations of these programs have been far too few in number, but they tend to demonstrate that it is extremely difficult to help those most at risk in this age group (Rosenbaum & Hanson, 1998; Rutter, Giller & Hagell, 1998; Tremblay & Craig, 1995). It is becoming increasingly clear that the factors which lead to serious adaptation problems are in place long before adolescence. Hence the idea that the prevention of social adaptation problems should start at least during childhood, and preferably right from pregnancy (Olds et al. 1998: Tremblay, LeMarguand & Vitaro, 1999). These principles are clearly outlined in the objectives of the Politique de la santé et du bien-être (Policy on Health and Well-Being) and les Priorités nationales de santé publique (Priorities for Public Health) set by the government of Québec (ministère de la Santé et des Services sociaux, 1992; 1997).

The Need to Understand Early Childhood Development

If the field of maladjustment prevention appeared at the end of the 20th century, it has certainly come on the heels of child development. "Émile." by Jean-Jacques Rousseau, needs to be re-read in light of recent studies to realize just to what degree it is impossible to understand the complexity of child development, and therefore the means of preventing deviant paths, simply by reflection or introspection. Although considerable knowledge has been acquired in the neurological, motor, cognitive, affective and social development of children, what really hits home is that Jean-Jacques Rousseau and his followers in education seemed to have had more certainty about the ways of educating children than we do today.

Progress in child development research has made us realize that things are not as simple as we can or would like to imagine. We have obviously all been children, and most of us have become parents, indeed, relatively welladjusted ones. But we still do not clearly understand when, how and why adjustment problems appear, and above all, how to prevent and correct them.

Our ignorance is obvious when we examine the debates among specialists on the role of parents in the development of maladjustment problems in children. Some suggest that social maladjustment in children is largely determined by genetic factors (Bock & Goode, 1996; Rowe, 1994). Some accentuate economic factors (Duncan & Brooks-Gunn, 1997). Other researchers attribute a determining role to peer influence (Harris, 1998; Harris, 1995; Vitaro et al, 1997). These larger questions lead to narrower ones which focus on particular aspects - the role of fathers in childhood maladjustment, the impact of alcohol and cigarette consumption during pregnancy, the effect of prenatal and birthing problems, the importance of breast feeding and diet; the role of sleep, cognitive development, temperament, and so on.

The majority of these questions are at the heart of the daily concerns of parents, grandparents, educators, family service providers, and legislators. What can we do to maximize the development of our children, to prevent severe psychosocial maladjustment? What should we do when problems begin to appear, when pregnant mothers, or fathers themselves have a long history of disorders? The answers to these questions obviously have an effect on the policies put forth by Québec government Ministries such as ministères de la Famille et de l'Enfance (Family and Child Welfare), de l'Education (Education), de la Santé et des Services sociaux, de la Solidarité sociale (Social Solidarity formerly Income Security (Welfare)), de la Sécurité publique (Public Security), de la Justice (Justice), and le ministère de la Recherche, Science et Technologie (Research, Science and Technology).

The Contribution of ÉLDEQ 1998-2002

The Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002) was conceived in order to contribute to our knowledge of the development of children in their first 5 years of life. The main goal is to gain a better understanding of the factors, in the years of rapid growth, which lead to success or failure upon entry into the school system. The goal of the second phase (if approved) is to better understand development in elementary school, in light of development in early childhood.

We know that this survey cannot be a definitive one on child development in Québec, but it is the first representative study of a provincial cohort of children who will be measured annually from birth to entry into the school system. It specifically aims at understanding the development of basic skills needed for educational success.

Although the effort to set up this study began in 1989, the first data collection coincided with the Québec government's implementation of its *Politique Familiale* (Policy on Families). The policy has virtually the same objectives as our study: "These services for children 5 years and under should give all Québec children, whatever the socioeconomic status of their parents, the chance to acquire and develop the skills that will allow them to succeed in school (1997, p. 10)."

On March 3 1999, in the speech opening the 36th session of the Québec legislature, Premier Lucien Bouchard confirmed that early childhood development was a priority for the government:

"The theme that will dominate our actions this year, next year, and throughout our mandate, is youth... The priority...with regards to youth in Québec, begins with the family and childhood... This massive investment in early childhood... will give our children the best chance of success in the short, medium and long terms. It is our best asset against alienation and despair. It is our best preparation for personal, social and economic success."

Because of this historic coincidence, ÉLDEQ has the potential of becoming an invaluable tool for monitoring the effects of Québec's massive investment in early childhood which began in 1997. Thanks to the data collected by the federal government's National Longitudinal Study of Children and Youth (NLSCY, Canada), we will be able to compare child development in Québec with that elsewhere in Canada, before and after the implementation of Québec's new policy on the family.

However, our initial objectives are more modest. The 12 or 13 papers in this series present the results of our first annual data collection. They describe the characteristics of the families and children when the latter were 5 months old³ They cover sociodemographic characteristics, nature of the birthing process, health and social adaptation of the parents, family and couple relations, parent-infant relations, and characteristics of the 5-month-old, such as sleep, diet, oral hygiene,

^{3.} To simplify the text in this report, the phrase "5-month-old infants" will be used to refer to infants whose <u>mean age</u> was 5 months during data collection in 1998. In section 3.1.3 (Volume 1, Number 1), we explain why the infants were not all exactly the same age. As indicated in no. 2 of this series, 52% of the infants were less than 5 months, and 3.4% were 6 months of age or over.

temperament, and motor, cognitive and social development. These data will eventually be compared to those on children the same age collected by the NLSCY in 1994 and 1996.

An Interdisciplinary, Multi-University Team of Researchers

This study saw the light of day because of the collaboration of many people. In the preceding pages, Mireille Jetté thanked a number of them. I would like to take advantage of this introduction to emphasize that the survey was set up and continues forward because of the dedication and hard work of a group of researchers from a variety of disciplines and universities. I would particularly like to thank Michel Boivin, School of Psychology at Université Laval, and Mark Zoccolillo, Department of Psychiatry at McGill University, who have been actively involved in this project since 1992. It was in that year that we prepared out first grant application for the Social Sciences and Humanities Research Council of Canada. A second group of researchers joined the team in 1993 and 1994: Ronald G. Barr, pediatrician, Montréal Children's Hospital Research Institute, McGill University; Lise Dubois, dietitian and sociologist, Université Laval; Nicole Marcil-Gratton, demographer, University of Montréal and Daniel Pérusse, anthropologist, University of Montréal. Jacques Montplaisir, Department of Psychiatry, University of Montréal, joined the team in 1995. Louise Séguin, Department of Social and Preventive Medicine, University of Montréal and Ginette Veilleux, Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre (Public Health Department, Montréal-Centre Regional Health Board), joined in 1998. Three post-doctoral researchers have also made an important contribution. Raymond Baillargeon developed the task for measuring cognitive development. Christa Japel is the assistant to the scientific director for planning, analysis and presentation of the results. Heather Juby collaborates in the analysis of the data on couple and family history.

A Unique Confluence of Circumstances

A study such as this requires the coordination of many researchers over many years, enormous financial resources, and a long period of preparation. Though in the early 1990s the research team was convinced of the need for the survey, those responsible for the public purse had also to be convinced. We must therefore acknowledge the happy confluence of circumstances that allowed the players to take advantage of the opportunity at hand. When a number of civil servants in the ministère de la Santé et des Services sociaux understood the essential role of prevention, the creation of a committee on children and youth in 1991 led to an increased awareness of the importance of early childhood. At the same time, the president of the CORS, Marc Renaud, had come to the same realization with his colleagues in the Population Health Program at the Canadian Institute for Advanced Research (CIAR), Aline Émond, the Director of Santé Québec, was ready to apply her formidable determination to work for the cause. For their part, Health Minister Jean Rochon and his Assistant Deputy Minister for Public Health, Christine Colin, aware of the importance and benefit of longitudinal studies on early childhood development, authorized the investment of large sums of money during a period of draconian budget cuts. This occurred at the same time as the federal government decided to create its own longitudinal study of children and youth (NLSCY). It is in this context that ELDEQ 1998-2002 materialized. Our survey also came to fruition because Mireille Jetté did everything in her power to make the researchers' dreams a reality, and Daniel Tremblay gave her all the support she needed by making various resources available for the project.

PEStan

Richard E. Tremblay, Ph.D., M.S.R.C. Chair of Child Development University of Montréal

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Abbreviations

ALSPAC	Avon Longitudinal Study of Pregnancy and Childhood (Bristol. United Kingdom)	GRIP	Groupe de recherche sur l'inadaptation psychosociale, University of Montréal / Research Unit on Children's Psychological Maladiustment	
CLSC	Centre local de services communautaires / Community Health	GSS	General Social Survey (Canada)	
CNCCS	Canadian National Child Care Study	ICQ	Infant Characteristic Questionnaire	
		LFS	Labour Force Survey	
ÉBSD	Étude des besoins en santé dentaire (Montréal, Canada)	LMAS	Labour Market Activity Survey (Canada)	
EDPS	Edimburgh Postnatal Depression Scale	NCDS	National Child Development Study (Great Britain)	
ÉÉNFE	Évaluation de l'état nutritionnel en fer (Charlevoix Region, Québec, Canada) / Iron Nutritional Status	NHANES III-USA	The Third National Health and Nutrition Examination Survey (United States)	
ÉJNQ	Étude des jumeaux nouveau-nés du Québec (Québec Study of Newborn Twins)	NIMH	National Institute of Mental Health	
		NIMH-DIS	National Institute of Mental Health- Diagnostic Interview Schedule (United	
ÉLEM	Étude longitudinale et expérimentale		States)	
	de Montréal (Longitudinal and Experimental Study of Low SES Boys in Montréal)	NLSCY	National Longitudinal Survey of Children and Youth	
ÉLEMQ	Étude longitudinale des enfants de matemelle au Québec (Longitudinal Study of Québec Kindergarten Children)	NLSY	National Longitudinal Survey of Youth (United States)	
		NPHS	National Population Health Survey	
ÉPAN	Étude provinciale sur l'alimentation du	OCHS	Ontario Child Health Study (Canada)	
	nourrisson (Québec, Canada)	PDDDAM	Prétest sur les déterminants du début	
ESS-SQ	S-SQ Enquête sociale et de santé - <i>Santé Québec</i> (Québec, Canada) / Health and Socíal Survey - Santé Québec (Québec, Canada)		(Québec, Canada) / Pretest on the determinants of initiation and duration of breast feeding (Québec, Canada)	

PMK Person Most Knowledgeable

- PSCB Projet de surveillance de la carie du biberon (Québec, Canada)
- SLID Survey of Labour and Income Dynamics (Canada)

Review of the Methodology

This analytical paper is one of a series presenting crosssectional data collected on a large sample of 5-monthold infants surveyed in 1998. It reports on the first of 5 annual data collections on 2.120 children in Québec who will be studied until they are 5 years old. In the first year of data collection, the results on 2,223 infants were retained.⁴

The target population of the survey is Québec babies, singleton births only,⁵ who were 59 or 60 weeks of gestational age⁶ at the beginning of each data collection period, born to mothers residing in Québec, excluding those living in the Northern Québec, Cree and Inuit regions, and on Indian reserves, and those for whom the duration of pregnancy was unknown. Due to variations in the duration of pregnancy and the 4 or 5 weeks allotted for each data <u>collection wave</u>, the infants were not all exactly the same age (gestational or chronological) at the time of the survey. Therefore, the children in Year 1 (1998) of the survey had a mean gestational age of 61 weeks - about 5 chronological months.

The survey had a stratified, three-stage sampling design, with a mean design effect for the proportions estimated at 1.3. To infer the sample data to the target population, each respondent was given a weight corresponding to the number of people he/she "represented" in the

population ÉLDEQ 1998 comprised eight main collection instruments which obtained data from the person who was closest to the baby (called the Person Most Knowledgeable - PMK), the spouse (married or common-law), the infant and the absent biological parent, if applicable. Given variation in the response rates to each instrument, three series of weights had to be calculated to ensure inferences to the population were accurate. Except for the Self-Administered Questionnaire for the Absent Father (SAQFABS) and a series of questions in the Computerized Questionnaire Completed by the Interviewer (CQCI) on absent fathers the overall or partial response rates of which were too high - the results of all the instruments could be weighted. Therefore, the data presented here have all weighted to reduce the biases.

All data that had coefficients of variation (CV) 15% or higher are shown with one or two asterisks to clearly indicate the variability of the estimate concerned. In addition, if the partial non-response rate was higher then 5%, there is a note specifying for which sub-group of the population the estimate is less accurate.

Similar to any cross-sectional population study, the Year 1 part (5-month-old infants) of ÉLDEQ 1998-2002 has certain limits. However, the vast majority of the results are valid and accurate, and provide a particularly detailed portrait, for the first time, of 5-month-old infants in Québec.

Note to the reader: For more details information on the methodology, see Volume 1, Number 1, of this collection.

^{4.} Though the results for 2,223 children were retained for the first year of data collection, 2,120 will be retained for the rest of the longitudinal study; the extra 103 were part of an over-sample used to measure the effects of the January 1998 ice storm.

^{5.} Twins (twins births) and other multiple births were not targeted by the survey.

Gestational age is defined as the sum of the duration of gestation (pregnancy) and the age of the baby.

Concepts, Definitions and Operational Aspects

Design of Phase 1 of ÉLDEQ Instruments and Procedures



1. Background to the Longitudinal Study of Child Development in Québec (ÉLDEQ 1998-2002)

1.1 Brief History of the Study

Québec, like the majority of industrialized nations, has seen a steep rise over the past two decades in the human and social costs related to the maladjustment of individuals to their environment. Among other consequences of this alarming state of affairs are child negligence, family violence and school dropouts, as well as suicide and drug use among adolescents. Over the past several years, costly short-term measures have been implemented to tackle these problems, but their success has been limited.

An initial solution to these problems, which pose a real threat to future generations, must involve not merely REACTING TO them and attempting to allay their consequences, but rather preventing their onset in young children. To do this we must provide support to activities and programs aimed at improving our understanding of social adjustment. To this end, a group of researchers in Québec - like their Canadian, American, New Zealander and English counterparts, to name only those few -launched a longitudinal study aimed at identifying the conditions that favour the development of children, that is, factors that will enable children to enjoy physical and mental health as well as personal well-being throughout their lives. The researchers adopted a biopsychosocial approach in order to define as thoroughly as possible the principal factors that enable children to adapt well to their environment.

1.2 ÉLDEQ and Other Longitudinal Studies Worldwide

ÉLDEQ, which was almost seven years in development, was created through the joint efforts of distinguished

Québec researchers and Santé Québec⁷. In 1988. several of these researchers were involved in the formation of cohorts in the United States and Europe⁸. and they realized that the time was ripe for the setting up of a first cohort in Québec. The researchers would be able to draw on the expertise available in other countries as well as on the growing expertise among researchers in Québec, and ÉLDEQ could profit from the surveys in Great Britain (Power, 1992; Wadsworth, 1987), New Zealand (McGee et al. 1991) and the United States (Werner & Smith, 1977) to avoid costly problems that could erupt at any point during a lengthy survey of this kind. In addition, the launch in the spring of 1994 of the Harvard cohorts (Harvard School of Public Health, Human Development and Criminal Behavior) and the National Longitudinal Study of Children and Youth (NLSCY, first Canadian cohort) meant that the data in the Québec study could be compared to those on children from Canada or other countries. Because of the richness of this international environment, the Québec researchers decided that the ELDEQ cohort had to be comparable and complementary to its predecessors.

1.3 Design of ÉLDEQ

in addition to providing a wealth of documentation on the determining factors of the problems identified above, ÉLDEQ gathers in-depth data on birth and early childhood, thus furthering scientific knowledge in this field. The majority of longitudinal studies on birth to adulthood do not provide continual observation of biopsychosocial development from the first to the fifth year of life (Power et al, 1991; Wadsworth, 1991; Werner

⁷ Direction Santé Québec was named Santé Québec before its integration on 1 April 1999 to the Institut de la statistique du Québec.

⁸ The National Longitudinal Study of Children and Youth (NLSCY Canada) had not yet been confirmed.

& Smith, 1977). The Québec study, however, focuses on the link between development in early childhood and adjustment at school entry, a key factor in a child's adaptation to the school system and, by extension, to adolescence (Ensminger et al, 1993; Tremblay et al, 1992; White et al, 1990).

The scientific value of a longitudinal study that collects anthropometric and biological data at birth and surveys on an annual basis thereafter the biopsychosocial wellbeing of the child is widely recognized. Studies in the United States and New Zealand that draw on longitudinal surveys and favour a multidisciplinary approach have shown that it is possible to identify strong indicators of the physical, mental and social health of individuals beginning in childhood. Barratt (1991), Caldwell and Bradley (1984), and Howes (1988) showed that parental characteristics, family environment, child care conditions and children's characteristics in preschool, to name only a few, are predictors of children's adaptation at school entry. In addition, studies such as Barker's (1992) have shown that prenatal and neonatal biological measures are strong predictors of health problems in the adults of tomorrow. However, the vast majority of these studies were limited as to the number of subjects or variables. ÉLDEQ 1998-2002, with its over 2,000 subjects, has among other goals to verify the link between biological characteristics at birth, temperament and later social adaptation as well as the links between the parents' conjugal history and the child's cognitive and socioaffective development. In other words, this study of individual adaptation to the environment has adopted an ontogenetic approach; it examines not only characteristics unique to childhood (biological, cognitive, emotional and social) but also characteristics of the child's physical and social environment (family, child care arrangements and friends). In terms of its contribution to basic research, ÉLDEQ aims to increase our knowledge of the precursors to adaptation to the school environment, the stages in this adaptation and the short- and long-term consequences of a child's failure to adapt.

2. ÉLDEQ, a Study in Partnership

The setting up of a study of this magnitude within the borders of Québec required the development of a new model of collaboration among a broad range of partners. First, sixteen researchers associated with seven different research groups - which were themselves linked to five Québéc universities - drew up an ambitious research protocol with the support of provincial and federal agencies. Second, in association with Santé Québec, a protocol for a longitudinal survey was developed from that research. Note that, in this early stage of the project, Santé Québec was called the Centre d'enquêtes du ministère de la Santé et des Services sociaux (MSSS) (Surveys Centre, Ministry of Health and Social Services). A paragovernmental agency, its mandate was to conduct epidemiological, social and health surveys in Quebec. Santé Québec, which from early on formed partnerships with the Québec universities involved in the ÉLDEQ survey, then found itself mandated to transform the research protocol to a survey protocol that would fulfill the objectives of the first cohort of infants in Québec.

The survey protocol having been rigorously pretested in 1996 (see next section) it was finalized and submitted to the ministère de la Santé et des Services sociaux du Québec (MSSS). After this important milestone was passed, the scientific director of ELDEQ and Santé Québec received from the MSSS an 8-year grant providing exclusive financial support for all aspects of the annual data collection - whether related to data collection for the pretest or the ÉLDEQ survey, or to publication of the biannual reports. The MSSS's decision to provide ÉLDEQ with significant financial backing corresponded to its identification in the early 1990s of several needs in the population, as outlined in the 1992 Politique de santé et du bien-être du Québec, the recommendations of the Rapport Bouchard of 1991 and Priorités nationales de santé publique published in 1997-2002. They identified a longitudinal study on a cohort of children in Québec as an important research priority and an essential step in creating effective preventive activities and programs for them.

At the same time, the partners in ÉLDEQ launched discussions with the Special Surveys Division of Statistics Canada about the opening up to them – several already served as consultants to the NLSCY – of the data collection instruments assembled for that national Canadian study. These discussions lead to a bilateral collaboration between *Santé Québec* and Statistics Canada. Reflecting the Canadian experience, the ÉLDEQ study in Québec would use the research instruments of Statistics Canada (NLSCY) and, in return, the original instruments developed for ÉLDEQ would be made available to the NLSCY. This partnership resulted in the NLSCY study being nicknamed the "Mother Study."

2.1 From ÉLDEQ 1998–2002 to "In 2002... I'll Be 5 Years Old!"

In collaboration with the researchers, Santé Québec and the Bureau de la statistique du Québec⁹ drew up a preliminary protocol for the study and devised data collection tools that would meet a large majority of the research objectives. A pretest or pilot study based on the various elements was undertaken in the fall of 1996, and a detailed preliminary report was written and published the following year (Santé Québec, Jetté et al, 1997). The pretest, comprising 572 families from the greater Montréal region and Quebec City, was used by Santé Québec as the basis for its modifications to the initial protocol and the test instruments. The modifications were integral to the fine-tuning of the design for the survey and to ensuring that the budgets set for it could be met.

The modified protocol and instruments were then submitted to the ÉLDEQ Advisory Committee and Planning Committee as well as to the *Santé Québec* Ethics Committee. These three committees verified that

The Bureau de la statistique du Québec was the name of Direction de la méthodologie et des enquêtes spéciales (Methodology and Special Surveys Division) prior to its integration on 1 April 1999 to the Institut de la statistique du Québec (Québec Institute of Statistics).

the original objectives of the study would be achieved and that the new collection instruments were valid, from administrative as well as data collection perspectives. The committees also submitted the proposal to an ethics review. A final proposal and grant request were then submitted to the MSSS. The proposal outlined four rounds of data collection for the pretest and five for the study itself. These would take place between 1997 and 2002. In addition, it called for the publishing of three biannual reports on the study – one cross-sectional and two longitudinal reports – from 2000 to 2004¹⁰.

Santé Québec had never before conducted a longitudinal study, although it had initiated several important surveys between 1988 and 1997. For ELDEQ, Santé Québec decided to create several promotional tools to foster a positive "initial" contact with the families that would be interviewed annually for at least five years. Although it was anticipated that the acronym ELDEQ would become important to researchers and health and social service professionals in Québec, its appeal to Québec families might be limited. Another way had to be found to encourage their participation in the study. Thus, for 2,223 families in Québec, ÉLDEQ became "En 2002... J'aurai 5 ans!" (In 2002... I'll Be 5 Years Old!). A brochure explaining the study and a folder for storing documents about it were created as presentation items for the parents.

To encourage families to take part annually over the 5year term of the study it was decided to: 1) plan an annual follow-up with the families; 2) compensate families with an annual \$20 payment for the time they devoted to the study; and 3) give all participating families a personalized souvenir album at the end of the first 5-year study period.

With respect to the annual follow-up, families are contacted three times throughout the year using various communication strategies. They receive: an annual letter announcing an upcoming call from the survey firm to set up an appointment for the interview; spring and fall issues of the newsletter *Communiqués*, addressed to parents and providing them with information on studies of this type as well as the preliminary results of ÉLDEQ; and each year on the birthday of the child, he or she receives a birthday card from *Santé Québec*.

With each contact, the families also receive a change-ofaddress card. Thus, at least five times a year (including during the interview), the families are advised of the importance of informing *Santé Québec* of any upcoming move.

To date, the incentive of \$20 has generally been perceived as adequate compensation for the annual 2-hour interview. Some low-income families have even come to rely on it. However, we believe that the souvenir album, which will include personalized annual results for the child, has been the greatest incentive for retaining families in the study, especially because each year the parents are reminded that the folders are getting bigger!

2.2 The Terms of Reference and Collection Parameters of the Pretest and Survey

Once the essential components of ELDEO were determined, the Terms of Reference were written, Subsequent to a public invitation to tender, the Bureau d'interviewers professionnels (BIP) was awarded the contract for data collection in the pretests and surveys. The Terms of Reference also served as the basis for the contract between this private-sector survey firm and Direction Santé Québec of the Institut de la statistique du Québec (ISQ). The former outlines, among other things, all the rights and obligations of the two signatories of the contract as well as the rules for each step in the data collection process: preparation of the collection, recruitment and training of the interviewers, data collection. reception/verification and coding/processing of the instruments, as well as initial validation of the data files. Because ELDEQ includes a

For detailed information on ELDEQ 1998-2002 and the instruments used in the 1998 data collection wave, see Vol. 1, No. 1, of this collection.

computerized questionnaire, the Terms of Reference called for *BIP* to transmit by modem encrypted data on a weekly basis to *Santé Québec*. Finally, the Terms of Reference outlined in detail *Santé Québec's* implication in and close supervision of the data collection process and related activities.

The collaboration between BIP and Santé Québec began, as in all surveys, with the recruiting of interviewers. The partners decided after the first pretest that only women (mothers) would be selected as interviewers in the annual survey of the infants' development. This was because some respondents in the pretest had expressed relicence about being interviewed by a man while alone with a 5-month-old baby. After the recruitment of about 30 interviewers in 14 regions of Québec, the partners worked on the data collection and follow-up instruments. These would, in effect, constitute a second annual collaboration between them. Santé Québec agreed to provide training related to all data collection and follow-up, given that it had conceived the instruments in collaboration with the researchers and it was charged with the production, publishing and translation, etc. of all related reports. BIP, on the other hand, assumed responsibility for several administrative instruments; for example, it is solely responsible for managing its staff.

In general, training took place only a few days before the start of data collection. This ensured that the newly acquired knowledge of the interviewers was rapidly put to use. *Santé Québec* implemented various quality control measures related to data collection; these included listening in ("fly-on-the wall") to calls placed to set up interviews or as quality control; on-site, unannounced validation of the coding of some of the paper-based instruments; examination of the results for bias due to interviewer input; follow-up on the computerized questionnaires and verification of the collection files, to name a few.

2.3 Data Management

During the collection phase of the survey, BIP regularly sends data to Santé Québec. Data collected from the questionnaires are transmitted weekly, thus ensuring stringent verification of the contents of this phase of the interview and continual coding by staff. In addition, every 2 weeks, the paper-based instruments coordinated by Sante Québec (consent form, computerized follow-up forms, authorization forms for medical records) or coded by its partners (result sheets of the psychometric tests). are gathered together and verified, as needed, before being redirected to the researchers. Halfway through the process, that is, after the first 3 months of the annual data collection. BIP transmits to Santé Québec the database comprising the results from approximately half the coded, verified and entered data from the paper questionnaires; a preliminary validation is also done on these data. After a second validation by the Santé Québec team, this partial data is made available to the researchers, who then begin their initial analyses for the biannual report¹¹. About 3 months after the end of each annual data collection, the final database is sent to Santé Québec. The complete database is once again validated. It is organized into files and derivative variables which are created so that all the different research teams may use the data.

It is important to note that for ÉLDEQ the data are never available simultaneously. The data taken from the medical reports and the psychometric tests require specialized analysis, which takes longer. Because of this, the 12 or 13 reports in Volume 1 of the ÉLDEQ collection were not issued together, but will be published over a 2-year period. Nonetheless, the first crosssectional database includes 1,350 variables, of which 90 are derivative variables.

The mid-term databases are sent to the analysts only every 2 years because Santé Québec must prepare the biannual reports.

This ends our brief look at the background to ÉLDEQ. For more detailed information on this topic please consult Volume 1, Number 1, of the collection. The next section examines the themes (sources and justifications) and the questions and scales for the first data collection year of the longitudinal survey. The second part examines various factors related to measures, from data validation to the creation of derivative variables.

3. Sources and Justifications of Questions, Scales, Forms and Tests

This section describes the sources and justifications of the questions, scales in the questionnaires, and forms and tests used in the 1998 ÉLDEQ survey.

The instruments are discussed in the following order:

- 3.1 Computerized Questionnaire Completed by the Interviewer (CQCI), filled out by the person who best knows the child or the PMK (Person Most Knowledgeable);
- 3.2 Paper Questionnaire Completed by the Interviewer (PQCI), filled out by the PMK;
- 3.3 Questionnaire on the Ice Storm of January 1998, completed by the PMK;
- 3.4 Self-Administered Questionnaire for the Mother (SAQM), which is filled out by the biological mother or the spouse/partner of the biological father and by the absent biological mother if she can be contacted;
- 3.5 Self-Administered Questionnaire for the Father (SAQF), which is filled out by the biological father or spouse/partner of the mother. Biological fathers who are absent from the household but have contact with the child at least once a month are also asked to fill out the questionnaire;
- 3.6 Observations of Family Life (OFL), which is filled out by the interviewer;
- 3.7 Imitation Sorting Task (IST) or 1, 2, 3 Hands Game: this test is conducted with the target child by the interviewer;
- 3.8 Baby Diary (BD), which may be completed by the mother, father or anyone else who looks after the child, for example, the babysitter;

3.9 Authorization Form to Access Mother's and Infant's Medical Records: this form is used to obtain access to the medical records of the biological mother and her baby. The biological mother must sign this document.

These instruments are used to gather information on infants approximately 5 months of age, the household, the family and the couple (the biological mother and father or her/his spouse/partner), or the biological parent not living in the household.

3.1 Computerized Questionnaire Completed by the Interviewer (CQCI)

The CQCI is drawn in large part from the questionnaire developed for Cycle 2 of the National Longitudinal Study of Children and Youth (NLSCY), conducted by Statistics Canada and Human Resources Development Canada in 1996. We used the justifications in the document titled *Overview of Survey Instruments for 1994–95 Data Collection, Cycle 1* (Statistics Canada and Human Resources Development Canada, 1995). Following the publication of that document, the NLSCY or ÉLDEQ researchers added questions or adapted others. These changes were taken into account when the justifications for the 1998 ÉLDEQ survey were finalized.

The questionnaire comprises 4 sections:

- 3.1.1 Sociodemographic Questionnaire
- 3.1.2 Parents' Questionnaire
- 3.1.3 Child's Questionnaire
- 3.1.4 Absent Biological Parent's Questionnaire

3.1.1 Sociodemographic Questionnaire

This section of the questionnaire examines the household, that is, the relationships among its members as well as their housing conditions.

3.1.1.1 Household – CONT et DEM¹² (completed for all members of the household)

Objective

To obtain information on the members of the household and their age, sex and civil status.

Measure (CONT-Q8, 13 to 16, 19 and 20 and DEM-Q1)

These questions are identical to those of NLSCY (Cycle 2). The questions on the members of the household (CONT-Q13 to 16) and those on the date of birth and sex of the individual members (DEM-Q1) are drawn from the Enquête sur la population active (Labour Force Survey), which is conducted by Statistics Canada. The question on current marital status (DEM-Q1) is drawn from the National Population Health Survey. The response items were, however, modified for the present survey.

Questions CONT-Q19 and 20 are original; they were developed by *Santé Québec* to obtain a more precise description of the survey families (number of children living in and apart from the household).

3.1.1.2 Relationships – REL (completed for all members of the household)

Objective

To gather information on the relationships between all members of the household. This information makes it possible to obtain, as in the case of the NLSCY, a precise picture of the household for purposes of analysis or future activities related to the survey.

Measure (REL-Q1)

The question on relationships is identical to the one used in Cycle 2 of the NLSCY. It was drawn from the Survey of Labour and Income Dynamics conducted by Statistics Canada. The question provides a means to establish a grid of the relationships of all members of the household, in contrast to understanding only the relationship of each of these members to one person in the household such as the mother or father. Given the rapidity of change in young families, this information is essential both for the NLSCY and ÉLDEQ.

3.1.1.3 Housing Conditions - HHLD (completed by the PMK or the respondent for the household)

Objective

To determine the housing conditions of the household. These data provide information on whether the dwelling is owned by the occupants or, if not, it is subsidized housing, as well as on its state of repair and the number of bedrooms it contains. With this information, the researchers can describe the home environment of the infant.

Measure (HLD-Q1 to 8)

Questions HHLD-Q1, 2, 2b, 3 and 6 to 8 are identical to those in Cycle 2 of the NLSCY, Questions 4, 5 and 5a are drawn from the Cycle 1 survey and were not included in the Cycle 2 survey.

Question HHLD-Q1, on the ownership of the dwelling, is a modified version of a question in the 1991 Census (Statistics Canada).

Question HHLD-Q2, on subsidized housing, is drawn from the Ontario Child Health Study (OCHS).

The question on the state of repair of the dwelling (HHLD-Q2b) is drawn from the 1991 Census (Statistics Canada).

Question HHLD-Q3 covers the number of bedrooms; it was formulated by Canada Mortgage and Housing. Information acquired from this question may serve, among other things, to determine a scale of overcrowding.

^{12.} These abreviations indicate sections of the CQCI.

Questions HHLD-Q4, 5 and 5a are used to indicate whether there is a family pet and thus to complete the description of the child's home environment. They are drawn from the National Population Health Survey (NPHS), the purpose of which is to produce reliable estimates of the physical and mental health of Canadian residents and to identify their determining factors.

For question HHLD-Q6, the interviewer must describe the type of dwelling visited (e.g., single detached house, duplex, etc.).

This section ends with questions HHLD-Q7 and 8, which identify the respondent and the language of the interview. Let us now examine the section of the questionnaire addressed to parents.

3.1.2 Parents' Questionnaire

The theme of this part of the questionnaire is the parents of the target child, that is, the mother and father or the spouse/partner of this parent residing in the household. For the 1998 survey, in almost every case, these were the child's biological parents. The questions in this section cover education, employment, income, health status, family functioning, neighbourhood and sociodemographic characteristics.

3.1.2.1 Education Level – EDA (completed for the PMK and his/her spouse/partner)

Objective

To determine the number of years of schooling, the educational level attained and whether the respondent or the spouse/partner is currently enrolled in an educational institution.

Some studies – for example, OCHS and the National Longitudinal Survey of Youth (NLSY) in the United States – have shown that there is a relationship between the mother's level of education, family environment and the development of the child. The question on full- and part-time schooling is an indicator of the respondent's and his/her partner's main activities.

Measure (EDA-QI to EDUC-Q6)

The questions on level of education (EDA-Q1 to 4) are drawn from the General Social Survey on work and education (GSS) conducted by Statistics Canada in 1994, and questions EDA-Q5 and 6 on current school enrollment were formulated by the NLSCY project team.

All the questions in this section are identical to those in Cycle 2 of the NLSCY.

3.1.2.2 Employment Activity – LFS (completed for the PMK and her/his spouse/partner)

Objective

Describe the employment activity of the parents during the preceding 12 months and at the time of the survey.

The parents' employment status affects the living conditions of the family in terms of family income and other factors such as stress. Research from OCHS has shown that unemployment of the parents may have a detrimental effect on the mental health of children. Data on work schedules and type of work provide additional information on the parents and may be compared with data on child care.

Measure (LFS-Q1 to LFS-Q12d)

The questions cover main activity (Q1), paid work (Q2, 8)and 9a), number of weeks worked in the year (Q3), hours worked each week (Q4), work schedule – for example, working a regular shift (Q5) and weekends (Q6) – type of work (Q10a, 11a, 12a) and number of jobs worked during the 12 months preceding the survey.

All the questions are identical to those in Cycle 2 of the NLSCY, except question 9a, which comprises two parts (9a et 9b), and questions 12c and 12d. The latter, which are original, were added by the ELDEQ researchers to ascertain how many jobs the parents held during the 12 months preceding the survey, given that young parents are often precariously employed.

As with Cycle 2 of the NLSCY, the most detailed information covers the principal employment of the parents in the year prior to the survey. These questions are drawn from the Labour Force Survey (LFS) and Survey of Labour and Income Dynamics (SLID) conducted by Statistics Canada.

3.1.2.3 Income – INC (completed for the household)

Objective

To determine the sources and level of income during the 12 months preceding the survey.

This information provides an overview of the economic status of the household, a significant factor in the child's standard of living.

Measure (INC-Q1, 2, 3, 3a to 3g)

The questions on the household's sources and level of income before taxes and deductions are similar to those in other surveys and in the 1991 Census of Canada. Two approaches to gathering the information were used. If the respondent refused or was reluctant to provide precise figures, he/she was asked a cascade question, that is, questions on the range of income. These are similar to the questions in Cycle 2 of the NLSCY. The response items for questions 1 and 2 were, however, modified to take into consideration the context in Québec. For the 1999 ÉLDEQ survey, a question was added on the PMK's income (before taxes) in the 12 months preceding the survey. This question is also drawn from the NLSCY.

3.1.2.4 Parents' Health – HLA (completed for the PMK and her/his spouse/partner)

Objective

To gather information on the parents' health status, long-term health conditions, smoking and the consumption of alcohol and drugs. The questions on smoking are included because research has shown that second-hand smoke may be detrimental to the health of children. The questions on alcohol and drug consumption are included because these activities may affect the parents' physical and mental health as well as the economic status of the household and family relationships.

Measure (HLA-Q1 to Q7c)

Questions HLA-Q1 to 7 are drawn from Cycle 2 of the NLSCY. The questions on general health, smoking and the consumption of alcohol are drawn from the National Population Health Survey (NPHS).

Questions HLA-Q7a, b and c were proposed by ÉLDEQ researcher Mark Zoccolillo. Modified from the Diagnostic Interview Schedule (DIS), version III-A, these questions reveal whether the PMK and the spouse/partner consumed certain drugs during the 12 months preceding the survey. These questions are not in the NLSCY.

Depression (completed only for the PMK)

Objective

To gather information on the mental health of the PMK, especially regarding symptoms of depression. Several members of the Expert Advisory Group of the NLSCY have proposed that, for a longitudinal survey, the best procedure is to measure one aspect of the respondent's mental health and not to try to measure that indivudual's overall mental health. We proposed that depression be the subject of the section for the following reasons: it is a prevalent condition; it has been shown that depression in a parent affects the children; most current research on the topic is based on small groups rather than on representative population samples; and we believe that the adoption by government of programs and policies related to depression could have a significant impact.

Measure (HLA-Q12a to 12l and 12m)

Questions 12a to 12l comprise an abridged version of the Depression Scale (CES-D) developed by L.S. Radloff of the Center for Epidemiological Studies of the National Institute of Mental Health (NIMH) in the United States. They measure the frequency of symptoms of depression in the general population as well as the presence and severity of symptoms associated with depression in the week prior to the survey. M. Boyle of Chedoke-McMaster Hospital at McMaster University proposed an abridged version of this scale.

Question HLA-12m, taken from the Edimburgh Postnatal Depression Scale (EPDS), was proposed by Richard E. Tremblay as a means of obtaining an additional measure of postnatal depression in the PMK when the infant is approximately 5 months old. Louise Seguin adapted the EPDS into French and it was validated by Jean-François Saucier of Ste-Justine Hospital with a sample of 369 mothers in Québec, 6 months after the birth of their babies. Thus it appears in neither Cycle 1 nor Cycle 2 of the NLSCY.

All the questions were also addressed to the biological father or the spouse/partner of the mother living in the same household as well as to absent biological fathers eligible to be included in the survey. They are part of the Self-Administered Questionnaire for the Father (SAQF, Q40 to 51a).

3.1.2.5 Family Functioning – FNC (completed by the PMK for the family)

Objective

To obtain a global assessment of family functioning and an indication of the quality of the relationship between the parents/spouses.

Studies have shown that the relationships among family members have a significant impact on the children. For example, the OCHS revealed a significant association between dysfunctional families and some mental health problems in children.

Measure (FNC-Q1a to FNC-Q1m)

This set of questions on family functioning, which was developed by researchers at Chedoke-McMaster Hospital at McMaster University, has been widely used not only in Canada but also around the world. The purpose of the scale is to measure problem solving, communication, parenting roles, emotional receptivity, emotional participation and behavioural control.

Question FNC-Q1m, drawn from the OCHS, was added to the initial scale to determine if alcohol consumption has an impact on family dynamics.

All the questions are identical to those in Cycle 2 of the NLSCY.

3.1.2.6 Neighbourhood – SAF (completed only for the PMK)

Objective

To gather information on the PMK's level of satisfaction with the neighbourhood as a place to bring up children; this includes an assessment of the degree of dangers and problems as well as social cohesion or "community spirit." Recent research by Jacqueline Barnes of the Judge Baker Children's Center at Harvard University has shown that parents' experience of danger and perception of social problems in the neighbourhood affect their sense of belonging to it and their disciplinary approaches with their children.

Information on parents' perceptions of the neighbourhood in which they live (HHLD-Q6) is coupled with the interviewer's observations on the type of dwelling the respondent lives in. This information may eventually be compared with ecological data from other sources – for example, percentage of single-parent families or crime rates in the neighbourhoods or public housing complexes where the respondents live.

Measure (SAF-Q1, SAF-Q2, SAF-Q5a to SAF-Q7f and SAF-Q3)

These questions cover how long the family has lived in the neighbourhood, satisfaction with the neighbourhood as a place to bring up children and neighbourhood safety, social cohesion and social problems. They were adapted from the sections of the Simcha-Fagan Neighbourhood Questionnaire used by Jacqueline Barnes in her studies of neighbourhoods in Boston and Chicago. With the agreement of Jacqueline Barnes, we modified the questions to facilitate, among other things, factorial analysis.

The question on volunteer involvement (SAF-Q3) is drawn from the NPHS.

All the questions are identical to those in the NLSCY (Cycle 2).

3.1.2.7 Sociodemographic Characteristics – SOC (completed for the PMK and his/her spouse/ partner)

Immigration and Ethnic Origin

Objective

To gather information on the immigration and ethnic origin of the parents. These data provide a means to describe the parents' ethnocultural affiliation.

Measure (SOC-Q1 to Q4a)

The questions on the place of birth, citizenship, immigration status, year of immigration and ethnic origin are drawn from the 1991 Census (Statistics Canada). For the questions on ethnic origin, some response items were added to take into account the context in Québec.

Language

Objective

To determine the first language of the respondent and his/her spouse/partner as well as the other languages they know. First language may be used along with other information (birthplace and ethnic origin) to identify members of visible minorities.

Measure (SOC-Q5, 6 and 6a)

Question SOC-Q5 on the language(s) of conversation is drawn from the NPHS while the one on the first language (mother tongue) (SOC-Q6) is drawn from the 1991 Census (Statistics Canada). To these questions has been added one (SOC-Q6a) on the language(s) spoken most often at home; it is drawn from the Survey of Labour and Income Dynamics and the 1991 Census (Statistics Canada).

Religion

Objective

To determine the respondent's religious affiliation and participation rate in religious activities. It is well known that religion and especially the frequency with which one engages in religious activities may influence health and individual well-being.

Measure (SOC-Q8 and Q9)

The question on religious affiliation (SOC-Q8) is drawn from the General Social Survey (GSS) conducted by Statistics Canada in 1994. The one on how often the respondent participates in religious activities (SOC-Q9) is taken from the NPHS.

This ends the section of the questionnaire on parents. Other questions concerning parents are found in the paper-based instruments. They will be examined after a brief review of the sections of the CQCI entitled "Child's Questionnaire" and "Absent Biological Parent's Questionnaire."

3.1.3 Child's Questionnaire

This section provides data on a target population of infants of approximately 5 months of age. The information is given to the interviewer by the person with the most knowledge of the infant, that is, the PMK.

3.1.3.1 Health - HLT

Objective

To gather information on the physical health of the infant (general health, injuries, disabilities, chronic health problems) and on the use of health services.

Health is both a dependent and an independent variable. It is an intrinsic characteristic that may influence different aspects of an infant's life; it is also an element of the infant's life that is easily influenced by other factors. Health is thus fundamental to the development and wellbeing of children, and information on this aspect of children's lives must be gathered if we are to plan policies and programs of benefit to them.

Measure (HLT-Q1, HLT-Q3, HLT-Q4 and HLT-Q37 to HLT-Q42, HLT-Q45 and HLT-Q2, HLTQ48a to HLT-Q48i, HLT-Q49 and 50)

The questions on general health (HLT-Q1), height (HLT-Q3), weight (HLT-Q4) and injuries (Q37 to 42) are drawn from the NPHS. The questions on injuries were somewhat modified to better adapt them to very young children and to ensure they conformed with other data sources such as the Canadian Hospitals Injuries Reporting and Prevention Program.

The questions on chronic health problems and on consultations with health professionals (HLT-Q45 and HLT-Q48a to i) were developed by the project team at the NLSCY. They are drawn from the questions addressed to adults in the NPHS.

The question covering recent health status (HLT-Q2) was provided to the NLSCY project team by J.-F. Saucier from the Ste-Justine Hospital in Montréal.

Question Q49, on whether the infant has spent at least one night in hospital, was developed by the NLSCY project team from a question in the OCHS. Question Q50, about the reasons for this hospitalization, was proposed by the project team in consultation with Denise Avard of Canadian Institute of Child Health.

All these questions are identical to those in Cycle 2 of the NLSCY.

3.1.3.2 Medical and Biological (Perinatal) Information – MED (the questions are asked only if the respondent is the infant's biological mother [MED-Q3 to 31] or biological father [MED-Q13a to 31])

Objective

To gather information on factors such as weight at the time of delivery and smoking and drug usage during the pregnancy. Studies have shown that these factors have a direct influence on the growth and development of infants. For example, babies with low birth weight are at higher risk of experiencing ill health and developmental problems.

Measure (MED-Q3 to MED-Q10b, MED-Q13a, MED-Q23a to MED-Q24b and MED-Q29, 30a to 31)

The questions on the mother's drug and alcohol consumption and smoking during pregnancy are the same as those added to the supplementary survey of the NPHS (MED-Q3 to MED-Q10b).

The questions on the infant's birth weight (MED-Q13a) and the mother's health at delivery (MED-Q23a to MED-Q24b) were formulated by the NLSCY project team from questions provided by J.-F. Saucier of Ste-Justine Hospital in Montréal.

All these questions are identical to those in Cycle 2 of the NLSCY.

The three questions covering the mother's employment after her baby's birth (MED-Q29, 30a and 31) were added to Cycle 2 of the NLSCY and adopted without any changes for the 1998 ÉLDEQ survey.
3.1.3.3 Temperament – TMP

Objective

To measure the temperament of the target child by asking the parents to assess how difficult they find the child to be. This measure is based on the fact that a child's temperament is associated not only with biological factors but also with the perceived difficulty of that child by its parents.

Measure (TMP-Q1, 3, 5 to 8, 17, 19, 20 and 33)

The temperament scale known as the Infant Characteristics Questionnaire (ICQ), which was developed by John Bates of the University of Indiana, is a well-known scale that has been used in several large studies. It is considered by experts as the best instrument for population studies.

Because of the age of the target children in ÉLDEQ, only 10 questions are addressed to the PMK. They are identical to those in the NLSCY (Cycle 2), except for question 3, which was removed from the Cycle 2 survey. Some of these questions (TMP-Q5, 6, 7, 8, 19, 20 and 33) are also answered by the father in the Self-Administered Questionnaire for the Father (SAQF-Q2 to 12).

3.1.3.4 Literacy - LIT

Objective

To measure the exposure of the children to reading. This section enables the researchers to acquire, over the course of the survey, indices of how well prepared the children are to enter school and the effect this preparation may have on their success in school.

Measure (LIT-Q1 to LIT-Q3)

These questions were developed by B. DeBaryshe of the University of Hawaii, based on the US National Assessment of Educational Progress. The questions vary according to the age of the child. Three questions from this source were adopted for ÉLDEQ 1998. They are identical to those in Cycle 1 and Cycle 2 of NLSCY.

3.1.3.5 Activities – ACT

Objective

To measure the children's participation in educational activities. This section provides information on how children use their time. In particular, we wish to know if they are involved in, for example, Mom and Tot program and Infant stimulation programs.

Measure (ACT-Q1 to ACT-Q2b)

The questions on pre-school activities were formulated by the NLSCY team from sources such as the Canadian National Child Care Study (NCCS) and the Better Beginnings, Better Futures Project sponsored by the government of Ontario. These questions are identical to those in Cycle 2 of the NLSCY.

3.1.3.6 Motor and Social Development – MSD

Objective

To measure motor, social and cognitive development in young children.

Measure (MSD-Q8 to MSD-Q22 and MSD-Q22a to MSD-Q22k)

The scale of motor and social development was finetuned by Gail Poe of the National Center for Health Statistics in the United States. This scale comprises 15 questions (MSD-Q8 to MSD-Q22) that measure aspects of motor, social and cognitive development in young children, from birth to age 3. The questions vary according to the age of the child. This scale was used to collect data for the National Longitudinal Survey of Youth (NLSY) in the United States and for recent versions of the National Child Development Survey (NCDS) in England.

MSD-Q22A to MSD-Q22k

Eleven questions from the Vineland Adaptive Behaviour Scales (Sparrow et al, 1984) were used in ÉLDEQ, on the recommendation of Richard E. Tremblay. Since there were relatively few questions aimed at measuring the social adaptation of infants, these questions (MSD-Q22a to MSD-Q22k) helped complete the social dimension of the survey. The questions are similar to those in the source scale, but they were reformulated for use in face-to-face interviews. They were translated into French by *Santé Québec* and verified by the researcher.

3.1.3.7 Parental Roles – PAR

Objective

To measure parenting practices and aspects of the basic care of the children. This section of the survey covers topics such as the parents' positive interaction with and hostility towards the infant.

The way in which children are raised has a significant influence on their behaviour and development. This is an area in which support policies and programs for families are needed.

Measure (PAR-Q1 to PAR-Q6 and PAR-Q7a)

The questions on parenting practices were provided to the NLSCY by M. Boyle of Chedoke-McMaster Hospital from work done by Ken Dodge at Vanderbilt University and adapted from the Parent Practices Scale by Strayhorn and Weidman.

The seven questions used in the 1998 <u>collection wave</u> of ÉLDEQ measure the frequency of certain parental behaviours towards the child and comprise two scales of parenting practice. The first measures positive interactions (PAR-Q1, 2, 3, 6 and 7) and the second assesses hostile interactions (PAR-Q4 and 5).

The questions in the first year of ÉLDEQ are identical to those in Cycle 2 of the NLSCY, except for questions

PAR-Q4 and 5; after the pretest, the French versions of the questions were modified to take into account the context in Québec.

3.1.3.8 Family and Custody History – CUS

Objective

To gather information on the family of the target child, including on transitions in the family before and after the birth, by examining the conjugal history of the biological parents.

Numerous clinical studies have shown a link between family instability, that is, parental conflict, separation, divorce and family reconstitutions, and the emergence of problems such as low self-esteem, adjustment problems and mediocre success at school. In documenting, from a representative sample, changes in the families of children, the data from the NLSCY and ÉLDEQ 1998-2002 provide a means to understand the impact of marital dissolution on the development of children.

Measure (CUS-Q1 to CUS-Q23)

This section of the survey brings together innovative data on family transitions experienced by children and on changes in child-care arrangements after parental separation or divorce. The questions were developed for the NLSCY by Nicole Marcil-Gratton of the Department of Demography at the University of Montréal and used without adaptation for the first data <u>collection wave</u> of ÉLDEQ. In the NLSCY, as in ÉLDEQ, the respondent (PMK) must be one of the child's biological parents.

Beginning with the ÉLDEQ 1999 survey, some new questions, proposed by *Santé Québec*, were added to those addressed to the biological parents (SAQM or SAQF). They provide a means to understand the circumstances surrounding the break-up, if indeed that is the case, and the relationship between the non-custodial parent and the target child. Questions are also addressed to the absent biological parent, if it is possible to get in contact with that person (see the discussion below).

Objective

To gather basic information on child care for parents who work or study, as well as retrospective information on child care. These questions provide a means to ascertain how much time the child spends in a child-care environment and the nature of that child-care service. In addition, information is gathered on how often in the preceding 12 months the child-care arrangement changed and on the nature and reason for those changes. The questions also provide a means to determine if the daycare services used are non-profit or profit-based and whether or not the home daycare centres are licensed.

Measure (CAR-Q1a to CAR-Q5)

The questions on daycare centres were formulated by the NLSCY project team from the Canadian National Child Care Study, conducted in 1988 and improved after discussions with experts in the field. Some were adapted for specific age groups (0–11 months, 1–3 years, 4–5 years, 6–11 years and 12–13 years). For the first data collection period of ÉLDEQ, 21 questions pertaining to the age group of the target children (approximately 5 months) were retained. They are identical to the questions in Cycle 2 of NLSCY.

3.1.3.10 Sociodemographic Information - SOC - Child

Questions SOC-Q4, 4a 8 and 9 on the ethnic origin, race and religion of the child are the same as those addressed to parents in both Cycle 2 of the NLSCY and the 1998 ELDEQ survey (see the section entitled "Parents' Questionnaire").

This ends our examination of the section of the questionnaire entitled "Child's Questionnaire". Let us now examine the final section, "Absent Biological Parent's Questionnaire."

3.1.4 Absent Biological Parent's Questionnaire

This section of the questionnaire was designed for ÉLDEQ 1998–2002. It must be completed by the PMK if the other biological parent is not living in the household.

The questions cover the name and date of birth of the absent biological parent as well as his/her level of education (EDA-Q2, 3 and 4) and employment (LFS-Q1: main activity; Q2, 8, 9a: paid work; Q10a and 11a: type of work). The questions are identical to those in the section on the CQCI entitled "Parents' Questionnaire."

This ends the examination of the Computerized Questionnaire Completed by the Interviewer. The next section will examine the two paper questionnaires, the Paper Questionnaire Completed by the Interviewer (PQCI) and Questionnaire on the Ice Storm of January 1998, which are completed by the interviewer during a face-to-face interview with the PMK. This will be followed bv an examination of the Self-Administered Questionnaire for the Mother (SAQM) and the Self-Administered Questionnaire for the Father (SAQF) as well as the Observations of Family Life (OFL) questionnaire that is filled out by the interviewer after meeting with the parents.

3.2 Paper Questionnaire Completed by the Interviewer (PQCI)

Like the CQCI, the respondent for the Paper Questionnaire Completed by the Interviewer (PQCI) is the person who best knows the child, the PMK. This questionnaire complements the CQCI and is divided into three sections: the grandparents, the perception of the socioeconomic situation and the infant's diet and oral hygiene.

Section 1 - The Grandparents

Objective

To acquire information on the reproductive behaviour of the grandparents of the target child from the point of view of intergenerational reproduction.

Measure

Questions 1 to 6 cover the current age of the target child's maternal and paternal grandparents or, if they are deceased, the date of death as well as the age of the eldest child in that family (the aunt or uncle of the target child). These questions are drawn from the Étude longitudinale et expérimentale de Montréal (Longitudinal and Experimental Study of Low SES Boys in Montréal) and the Étude longitudinale des enfants de matemelle au Québec (Longitudinal Study of Québec Kindergarten Children), two studies conducted in Québec by the Groupe de recherche sur l'inadaptation psychosociale (Research Unit on Children's Psychosocial Maladjustment) at the University of Montréal (GRIP), in 1984 covering 1,037 boys and 1986, 3,018 boys and airis.

Section 2 – Perception of the Socioeconomic Situation

Objective

To measure the respondents' perception of the financial situation of the household at the time of the interview.

Measure

Questions 7, 8, 9 and 10 measure the respondents' perception of the financial situation of the household. Question 9 examines how long the perceived financial situation has lasted. These questions are drawn from the *Enquête sociale et de santé 1992–1993* (Health and Social Survey) conducted by *Santé Québec* and covering more than 16,000 households in Québec. The questions were included in this study upon the recommendation of Christine Colin, former Assistant Deputy Minister for Public Health in the *ministère de la Santé et des Services sociaux du Québec – MSSS*.

Question 11 is original. It covers the total annual income of the household in the year preceding the mother's maternity leave. It aims at discerning the economic mobility of the household during the period before the arrival of the infant.

Section 3 - Diet

Objective

To gather information on the dietary patterns of infants. An expert advisory group on nutrition (see Annex Part I for a list of members) was formed to gather information on the diet of babies. The subject of breast feeding, in particular, was incorporated in ÉLDEQ 1998-2000 upon the request of the *ministère de la Santé et des Services sociaux du Québec (MSSS)*, one of the principal sources of funding for this survey.

This section comprises questions on the mother's choice of mode for feeding the infant, its duration, social support related to breast feeding, the introduction of solid foods, nutritional supplements, etc.

Studies have shown that there is an association between dietary patterns, infant development and behavioural problems (Beaudry et al, 1995; D'Amours, 1990). Iron deficiency and the quality of the mother-infant relationship have also been linked.

The main risk factors associated with iron deficiency are poverty, low birth weight and rapid growth in the infant, use of non-iron-enriched formulas, breast feeding for longer than 6 months by the mother if she does not take iron supplements, use of cow's milk and dietary allergies. It is these factors that were surveyed in ÉLDEQ.

With respect to the mother-child relationship, it has been shown, for example, that breast feeding the infant from birth is important in creating a bond between the mother and child.

Measure

Questions 12 and 13 provide a means to ascertain the breast feeding pattern during the first 5 months of the child's life. They were recommended by:

- Lise Dubois of Université Laval, who based them on questions in the Avon Longitudinal Study of Pregnancy and Childhood (ALSPAC, 1990). This longitudinal study was initiated in 1990 and continued for at least 7 years in the county of Avon, which includes the city of Bristol, in Great Britain. The sample, comprising 13,995 mothers and 14,138 children, is representative of children born in the country between 1991 and 1992.
- Marie-Claire Lepage, from the team working with Adaptation familiale et sociale of the Direction de la santé publique (Public Health Department) for the Quebec region, who was associated with the Étude provinciale sur l'alimentation du nourrisson (ÉPAN) conducted in the fall of 1994 among primiparious women in Québec by means of post-partum interviews in hospitals as well as telephone interviews.
- Louise Séguin and Louise Desjardins of the University of Montréal following a pretest on the déterminants du début et de la durée de l'allaitement matemel (PDDAM) (determinants of initiation and duration of breast feeding) that they conducted in 1994-1995 among 22 Québec women living in low-income households in the course of a preliminary study on nutrition.

Questions 14, 16a and 16b cover the consumption of infant formula or cow's milk. They were recommended by Michèle Houde-Nadeau of the Nutrition Department of the University of Montréal and by Lise Dubois, who also found inspiration in the ALSPAC study.

Questions 16a, 16b, 21a and 21b, on the infant's age when the mother introduced or ceased to use one type of milk, are drawn from The Third National Health and Nutrition Examination Survey (NHANES III-USA 1988-1991, 1991–1994). The data for this crosssectional study with longitudinal follow-up were collected in two waves, that is, from 1988 to 1991 and from 1991 to 1994 for a non-institutionalized civilian population aged 2 months and older (34,000 persons). As in the case of questions 12 and 13, questions 16 and 21 aim to discern dietary patterns in bottle feeding during the infant's first 5 months as well as the impact on his/her health of the various types of milk used.

Questions 17 and 19 provide a means to assess when the mother decided to use the feeding method. Then, during the analysis of the data and cross-tabulation, we can ascertain if there is a link between the time of the decision and the preferred choice at the time of birth. Questions 15, 18 and 20 cover the main reason why the mother chose to breast or bottle feed the infant. These questions are drawn from the ÉPAN and PDDDAM.

Question 22 comes from the NHANES III (1988–1991) and was adapted to account for the context in Québec. The question provides information on the proportion of mothers receiving an allowance from the government to breast feed their infants or to purchase commercial formulas. It was recommended by Lise Bertrand, nutritionist with the *Direction de la santé publique* for the Montréal-Centre region.

Questions 23 and 24, which aim at providing information on how long the infant took nutritional supplements, come from the Évaluation de l'état nutritionnel en fer d'un groupe d'enfants (ÉÉNFE) (Iron Nutritional Status). a study conducted in a sample of infants aged 12 to 20 months and living in the Charlevoix region of Québec. The study, under the direction of Huguette Turgeon-O'Brien, was conducted in 1992-1993 by the Groupe de recherche en nutrition humaine (Human Nutrition Research Group) from Université Laval among 22 boys and 25 girls. The questions had been pretested. This information is needed, according to Michèle Houle-Nadeau of the University of Montréal, because it is very important to supplement the diet with iron as well as other nutrients such as Vitamin D, in particular for babies born in fall or winter.

The responses to question 24, on the consumption of vitamin or mineral supplements, are also analyzed by the team of consulting dentists of the *Direction de la santé publique, Montréal-Centre*, headed by Ginette Veilleux (see the following section on dental health).

Question 25, on the sequence of introduction of solid foods, provides a glimpse of the extent to which the recommendations of the Canadian Paediatric Society¹³ are followed by parents. This question was drawn from the following studies and modified to some extent: NHANES III-USA (1988–1991), ÉÉNFE and ÉPAN.

Question 28 is asked to learn if the attitude to breast feeding of the mother's family, friends and professional contacts influenced her choice of feeding method. The question is drawn from the ÉPAN and PDDDAM.

Section 4 – Oral and Dental Health

Objective

To increase knowledge of the evolution of habits in infancy relating to fluoride intake, dietary practices, dental hygiene, non-nutritive sucking and use of dental services. The associations between some of the above named habits related to oral and dental health and socioeconomic and psychosocial aspects of the development of very young children must be better documented if we are to design appropriate prevention programs.

The period from age 0 to 5 years is when the process of infection that leads to dental caries first sets in. A particular manifestation of morbidity, called baby bottle or early childhood caries, has been observed in very young children. It is characterized by very rapid destruction of tooth structure. Although multiple factors are known to cause the condition, many observers suggest it results from ignorance of the negative effects of constantly letting a child fall asleep with a bottle containing milk or juice. Carles in young children may affect speech, including pronunciation, and facial aesthetics, which in turn have a psychological impact on the child and lead to difficulties with speaking or smiling and mastication, possibly resulting in poor diet and stunted growth. With regard to non-nutritive sucking habits (of a finger, a pacifier or other object), the effect most often observed in primary dentition is the

displacement of dento-alveolar structures in the anterior segment of the maxilla. For this reason, it may affect appearance, swallowing and speech in some children.

The ELDEQ survey has, for the first time in Québec, provided data on habits related to dental health in very young children.

Measure

To gather information on infants approximately 5 months of age, questions 26a, b, c and 27a, b, c, which cover what bottle-fed infants are imbibing and over what period, were included in the section on diet. These questions were provided by a 6-member team of consulting dentists associated with the *Direction de la santé publique* for *Montréal-Centre* (see Annex Part I for a list of members). They were adapted from two sources.

The first is the questionnaire for the Étude des besoins en santé dentaire (ÉBSD), developed by Martin Généreux and Ginette Veilleux of the Direction de la santé publique for Montréal-Centre. The questionnaire was administered by telephone in February and March 1990 to a sample of 106 parents of 12- to 18-month old infants who had attended an immunization clinic at a CLSC (Community Health Centre) in Montréal East.

The second source is the *Projets de surveillance de la carie du biberon (PSCB)*, which is associated with the *Directions de la santé publique* for *Montréal-Centre* and the Laurentians. Michel Lévy and Paul Massicotte developed a questionnaire for this project based on the training manual from the Center for Disease Control and Prevention and entitled *How to organize a baby bottle tooth decay program*. Data collection took place from 1997 to 1998 in a sample of 200 children associated with seven CLSCs in the Laurentians¹⁴.

Questions 24a and 24b cover the type of vitamin and/or mineral supplement(s) taken by the infant. The purpose of these questions is to estimate the intake among

^{13.} These recommendations are found in the booklet From Tiny Tot to Toddler (Doré & Le Hénaff, 1997) given free of charge to all mothers who give birth in a hospital or birthing centre in Québec.

The report was not available when the present volume was published.

infants of supplements containing fluoride, a factor known to provide protection against caries. These questions are also analysed by the expert advisory team on diet that is working under the direction of Lise Dubois of the *Département de médecine sociale et préventive de l'Université Laval* (Department of Social and Preventive Medicine of *Université* Laval).

Question 14 of the SAQM (Self-Administered Questionnaire for the Mother), which is found in Section 2, "Sleep," deals with whether the infant has a particular object in the bed before going to sleep. It provides a means to study non-nutritive sucking, that is, whether the infant uses a pacifier to go to sleep. The responses to this question are also analysed by Jacques Montplaisir of the Centre d'étude du sommeil (Center for the Study of Sleep) of Sacré-Coeur Hospital, University of Montréal.

Note that the separate section on oral and dental health was introduced in the PQCI with the 1999 ÉLDEQ survey.

3.3 Questionnaire on the Ice Storm of January 1998

The short questionnaire entitled Questionnaire on the Ice Storm of January 1998 is filled out by the interviewer with the PMK. Its completion brings to an end the faceto-face interview.

Objective

To determine the impact of the ice storm that hit Montréal and the surrounding regions in January 1998 on diverse variables related to the development of the infants in view of their age during the event (babies in the 2^{nd} or 3^{rd} trimester of pregnancy or up to 3 months of age).

Measure

Questions 1 and 2 cover the period during which family members lived without electricity or telephone service. They provide a means of ascertaining the proportion of families who were affected by the storm and the number of hours or days they lived with neither electricity nor telephone service during the coldest months of a Québec winter.

Questions 3, 4 and 7 deal with the type and location of shelter, if any, used by the families.

Questions 5 and 6 aim to provide information on losses in revenue and stored food experienced by the families as well as on damage to their homes.

Question 8 covers the respondent's perception of the consequences of the storm for the family.

All the questions come from the 1998 Enquête sociale et de santé (ESS-SQ) coordinated by Santé Québec of the ISQ. They were designed by a committee set up by Santé Québec. The results of the preliminary analysis of the data for ÉLDEQ are presented in Volume 1, Number 1, of this collection.

3.4 Self-Administered Questionnaire for the Mother (SAQM)

The Self-Administered Questionnaire for the Mother (SAQM) must be completed by the biological mother of the target child or the spouse/partner of the father (if the biological mother is absent from the household) and by the absent biological mother if it is possible to contact her. It comprises seven sections on the following themes: experiences during pregnancy, sleeping habits of the infant, the mother-child relationship, financial support provided to the mother by the father or the current spouse/partner, prior antisocial behaviours in the mother and biological father, if the latter is absent from the household, and leisure activities.

Section 1 – Experiences During Pregnancy

Objective

To obtain a profile of the mother's reproductive history from the perspective of intergenerational reproduction. In the long term, the responses to these questions could be examined in relation to the child's onset of puberty and her/his sexual comportment and reproductive profile.

Measure

Questions 2 to 6 cover the biological mother's age at onset of menstruation, her first pregnancy, first child, first abortion and the number of pregnancies and abortions she has had. These questions are new; they were developed by Richard E. Tremblay of GRIP at the University of Montréal.

Section 2 - Sleep

Objective

To assess the role of genetic and environmental factors on the circadian sleep-wake rhythm of infants. Identifying the environmental factors (temperature, light levels) or parental behaviours that enhance or impede the consolidation of the sleep-wake rhythm in infants is one step in formulating for parents recommendations on how they can foster normal sleep rhythms early in their children's lives. In the short term, this section of the survey provides a means to examine the links between infants' sleep patterns and various aspects of their development.

Measure

The questionnaire on sleep was specially designed for the *Étude des jumeaux nouveau-nés du Québec (ÉJNQ)* (Québec Study of Newborn Twins) and the sample of singleton babies of ÉLDEQ 1998–2002 by Jacques Montplaisir of the *Centre d'étude du sommeil* of Sacré-Coeur Hospital at the University of Montréal. The questions are thus original and were not drawn from existing questionnaires. They were translated into English and counter-verified by the researcher. Questions 7 and 7a provide a means to verify the consolidation of the sleep-wake rhythm and to identify the age at which the infant started sleeping through the night.

Questions 8, on how long it takes the infant to fall asleep, and 9, on difficulties in falling asleep, aim to measure the mother's perception of the ease or difficulty with which the infant falls asleep.

Questions 10 and 11, on sleep consolidation during the night and day, provide a means to determine the onset of the sleep-wake cycle in the baby and whether it is reversed.

Question 12 deals with the circumstances surrounding going to bed; specifically, the behaviours adopted by parents to get their infants to go to sleep.

Question 13, on where the infant sleeps, provides information on the sleep environment and factors that might contribute to sleep problems.

Question 14 covers the infant's sleep habits, in particular, whether a transitional object (e.g., pacifier, bottle, stuffed animal) is present when the infant is falling asleep. As mentioned, responses to this question are also analyzed from the point of view of non-nutritional sucking (use of a pacifier) by the team of consulting dentists at the *Direction de la santé publique, Montréal-Centre*, lead by Ginette Veilleux (see the sections "Diet" and "Oral and Dental Health" of the CQCI).

Question 15 addresses the parents' behaviour at night awakenings. It provides information on parental reaction when babies do not sleep through the night. Question 16, dealing with the number of sleep interruptions experienced by the mother, aims to assess the degree of sleep fragmentation.

Question 17 deals with the temperature of the room in which the baby sleeps, and question 18 deals with the light level. They aim to determine the influence of the physical environment on the quality of the infant's sleep consolidation.

Question 19, on the infant's breathing, aims to discern breathing patterns that could influence the infant's sleep, while question 20, on the smoking habits of the parents or others in the household, provides information on the influence of second-hand smoke on the infant's sleep.

Section 3 – The Mother-Child Relationship (ÉCOPAN- Échelle des cognitions et des conduites parentales) Parental Perceptions and Behaviours Regarding the Infant Scale (PPBS)

Objective

To obtain an assessment of the mother's attitudes and behaviours regarding her child.

Numerous studies reveal an association between maternal attitudes and behaviours and various indices of child adjustment. For example, several studies suggest that infants whose parents show them little affection or are overprotective are more likely to develop internalizing problems during their development. The literature also seems to show that maternal behaviours are associated with the mother's perception of her efficacy as a mother and the impact of her behaviours on her child's development.

This scale, entitled the *ÉCOPAN* (*Échelle des cognitions* et des conduites parentales), Parental Perceptions and Behaviours Regarding the Infant Scale (PPBS) is also administered to the biological father (living in the household or absent from it) or the current spouse/partner in the Self-Administered Questionnaire for the Father.

Measure

Six dimensions are measured using the following questions:

Feeling of self-efficacy:	questions 23, 25, 27, 29, 32, 47
Perception of impact:	questions 22, 31, 37, 42, 45
Tendency to coercion:	questions 26, 28, 30, 33, 36, 40, 43
Affection:	questions 22a, 22b, 46a, 46b, 46c
Overprotection:	questions 34, 38, 39, 41, 44
Perception of the child's qualities:	questions 21, 24, 35, 46

For each question, the mother indicates the degree to which the statement accurately describes her actions, thoughts or feelings towards the child. To reply, the mother selects a response on a Likert-type scale ranging from "Not at all" to "Exactly."

The questions related to the dimension "feeling of selfefficacy" are drawn from a scale developed in 1991 by Teti and Gelfand and adapted by Michel Boivin and Christiane Piché of the Laboratoire de recherche de l'École de psychologie de l'Université Laval (Research Laboratory at the School of Psychology of Université Laval) to take into consideration the age of the infants. Question 47, recommended by Michael Lamb, comes from the questionnaire Being a Parent developed by Joe Pleck of the University of Illinois. All the other questions are original and were developed by Michel Boivin and Christiane Piché. A list of initial items was drawn up and the validity of their contents was verified by 15 specialists in the field of mother-child interactions. The list was finalized after the items were pretested in a sample of francophone and anglophone mothers in the ÉJNQ-1995 and the pilot study of ÉLDEQ, which took place in 1996 (Santé Québec, Jetté et al, 1997).

Section 4 - Support Provided by the Current Spouse/Partner

Objective

To assess the emotional and instrumental support provided to mothers by the spouse/partner. The questions provide a means to explore various situations, including overall conjugal support, support in infant caregiving, in household chores, during periods of feeling overwhelmed and during periods of sadness.

Numerous studies have shown an association between a mother's behaviours and the instrumental and emotional support provided to her by her spouse/partner. For example, certain studies have demonstrated that mothers are better adjusted when fathers participate in household chores and in caring for the baby (Levitt et al, 1986), while others reveal that maternal behaviours such as anger, rejection and punishment are less frequent in mothers who are satisfied with their spouse/partner's emotional support (Crockenberg, 1987).

Measure

The first question (48) is directed to the mother and serves to verify what relation the spouse/partner is to the target child (infant approximately 5 months old).

Questions 49 to 53 of the scale for instrumental and emotional support are original and were developed by Valérie Saysset, Michel Boivin and Christiane Piché of the Laboratoire de recherche de l'École de psychologie de l'Université Laval.

This scale comprises five questions that provide an assessment of the spouse/partner's instrumental and emotional support in a variety of situations. Questions 49 and 50 address in particular the father's instrumental support, while questions 51 and 52 assess his emotional support and question 53 assesses his overall support.

To reply, the mother selects a response on a Likert-type scale ranging from "Not at all" to "Totally."

Section 5 – Overview of the Childhood, Adolescence and Adult Life of the Mother

Objective

To assess the psychopathology (particularly problems related to antisocial behaviour) of mothers of infants approximately 5 months old.

Canadian, American and British studies have shown that children with behaviour problems are more likely to have been born to parents with a history of conduct problems or of antisocial personality. Questions similar to those addressed to biological fathers, living in the household or absent from it, are addressed to mothers of the infants to assess the prevalence of antisocial behaviours that can be manifested in childhood or adulthood.

Measure

The questions in this section were modified from the most commonly used structured psychiatric interview in the world: the National Institute of Mental Health-Diagnostic Interview Schedule (NIMH-DIS), developed by Helzer and Robins (1988), and are based on the DSM-III (American Psychiatric Association, 1980) criteria. They also reflect DSM-IV criteria for the diagnosis of Conduct Disorder and Antisocial Personality Disorder (American Psychiatric Association, 1994). They were adapted and translated into French by Arthur BIYesn and pretested in ÉLEMQ, a longitudinal study directed by Richard E. Tremblay and Frank Vitaro of GRIP at the University of Montréal.

For the 1998 ÉLDEQ survey, the questions were adapted for use in a self-administered questionnaire. The response items "refuses, doesn't know" were removed and "before the end of secondary 5" was modified to "before the end of high school" as a way to define what we mean by "childhood."

To avoid making the interview too long, some questions were regrouped. Readers should take note that certain problems of specificity exist for all the ÉLEDQ questions that combine questions from DIS and that measure more than one symptom from DSM-III or DSM-IV (Diagnostic and Statistical Manual of Mental Disorders).

Questions 55 and 56 (adapted from questions R12 and R6 of the ÉLEMQ) on stealing and fighting represent one part of the scale of antisocial behaviours (criteria B11, B12 and B3) of DSM-IIIR. These questions are found in the SAQF (questions 53 and 54), although in a somewhat different form, to take into account the antisocial behaviours of men.

Questions 54, 58, 60 and 65, on participation in clubs or organized sports teams, are new and were added to the questionnaire to give it a positive tone and to prevent respondents from adopting a certain resistance to it. They are similar to questions 52, 57, 58 and 63 of the SAQF.

Question 57 is drawn from the ELEMQ (question R18), with two modifications: 1) "when he was a minor" is replaced by "before the end of high school" in order to make it consistent with the questions on the mother's childhood; 2) "appeared in youth court" was changed to "in trouble with Youth Protection because of misbehaviour" to take into account the context in Québec. In addition, this rewording makes the criterion a bit less formidable than the case of a court appearance. The question is similar to question 55 of the SAQF.

Question 59 is adapted from question R5 of the ÉLEMQ. This question, on trouble at school, that is, on "skipping school" is used for mothers only because such behaviour seems more pertinent to them. It differs from question 56 of the SAQF, which refers to having been "expelled or suspended from school."

The next question (Q59a) deals with running away from school. It comes from question R10 of the ELEMQ and is addressed only to mothers because it attempts to evaluate a symptom associated more frequently with antisocial behaviour in women.

Question 61 is drawn from question R50 of the ÉLEMQ. It also appears in the SAQF (question 59). We changed the term "let go" to "fired" (excluding layoffs resulting from lack of work). The theme "problems at work" corresponds to the DSM-IIIR criterion C1, which is used to diagnosis Antisocial Personality Disorder. Question 62 comes from question R19 of the ÉLEMQ. This question, about arrests, relates to criterion C2 of the DSM-IIIR and is almost identical to question 60 of the SAQF.

Question 63, on physical aggression exhibited in adulthood ("hit or threw objects"), is from the ÉLEMQ (R43). It corresponds to criterion C3 of the DSM-IIIR and is addressed only to mothers, the formulation being more appropriate to the behaviour of women. For men, the survey seeks information on physical aggression towards others (e.g., fights, assault), whether or not the violence is directed against the spouse/partner (Q61 of the SAQF and Q74 of the SAQM – "About your baby's biological father...").

Question 64 deals with problems related to drugs and alcohol. It combines three questions – M-14, P-18 and M-17 – of the ÉLEMQ. The part "been in trouble at work, with the police or with your family... " comes from question M-14. Combining aspects of questions P-18 and M-17, we listed "alcohol" with "drugs" as causes of the symptom and included the part of question M17 on car accidents to identify another potential problem related to drugs or alcohol. This question is similar to question 62 of the SAQF.

As mentioned, we encountered a problem of specificity for all the questions i. which we combined more than one of the DIS questions measuring more than one symptom of DSM-III. The strategy was nevertheless retained to make filling out the questionnaire less onerous.

Section 6 – Overview of Childhood, Adolescence and Adult Life of the Absent Biological Father

Objective

To assess the psychopathology (particularly problems related to antisocial behaviour) of absent fathers of infants approximately 5 months old.

Certain studies suggest that infants are more likely to exhibit conduct problems or antisocial personality if the father, more specifically than the mother, exhibited such problems himself. This association is valid even if the child has few or no contact with the father during childhood. The data on absent fathers are provided by proxy by the infant's mother (SAQM). Absent fathers who are eligible and whose address is provided by the mother receive the Self-Administered Questionnaire for the Absent Father (SAQFABS) so that they may answer the questions as do the biological fathers or spouse/partners living in the household (see SAQF, above).

Measure

As with Section 5 of the SAQM on the mother's prior life, all the questions in this section come from the NIMH-DIS (Helzer & Robins, 1988). They were adapted and translated into French then pretested in the ÉLEMQ. On the basis of this French version, the questions were set in the third person singular for inclusion in the proxy questionnaire.

For all the questions on adolescence, "before finishing Secondary 5" was changed to "before the end of high school." We also added "Do not know" to the response items, given that the mother/ spouse might not know the answer to some of the questions.

Questions 66 and 67 provide a means to assess the involvement of the absent biological father in the life of his infant of approximately 5 months old. Question 66 has been modified. We ask how much contact the biological father has had with his baby rather than inquiring about his presence in the household (as was done earlier in the survey). This question comes from the antisocial behaviour scale (criterion C4 of the DSM-IIIR) for diagnosing Antisocial Personality Disorder. It is adapted from question A5 of the ÉLEMQ.

To discern if the absent father provides financial support (question 67), we adapted question R60 of the ÉLEMQ. This question is another component of the antisocial behaviour scale (criterion C4 of the DSM-IIIR). Questions 68 and 69, adapted from questions R12 and R6 of the ÉLEMQ and covering stealing and fighting, correspond to criteria B11, B12 and B3 of the DSM-IIIR. These questions are also found in the questionnaire on antisocial behaviours given to the mother (questions 55 and 56).

Question 70, on involvement with the Department of Youth Protection, is identical to question 57 of the SAQM (see preceding section).

Question 71, which is adapted from question R4 of the ÉLEMQ, is about "problems at school"; it also is part of the scale of antisocial behaviour (DSM-III). This question appears in the SAQP (question 56), but is not in the mother's self-administered questionnaire.

Question 72, on problems at work, and question 73, on arrests, are similar to questions 61 and 62 addressed to the mother. The justifications for the latter were presented in the preceding section. With respect to the father, however, question 72 asks if he has been fired from "more than one job."

Question 74 deals with physical aggression manifested in adulthood; it combines two questions from the ÉLEMQ (R42 and R44) to reduce the number of questions in this somewhat lengthy survey. We therefore had to eliminate or adapt the parts of the original questions that were redundant or contradictory or would have made the question too long or not appropriate for a proxy questionnaire. For example, we replaced "it came to blows" to "assaulted or physically hurt anyone" and "hit his partner" to "including yourself"; as well, we removed "except for disputes with his partner or those related to his work" and "thrown objects."

This question on the antisocial behaviour scale corresponds to criterion C3 of the DSM-IIIR for diagnosing Antisocial Personality Disorder. It is similar in part to question 61 of the SAQF (see below).

Note that this question on general physical aggression is not found in the questionnaire on antisocial behaviours addressed to the mother (Section 5).

Section 6 of the questionnaire ends with question 75, which deals with problems related to drugs and alcohol and is identical to question 64 in the mother's questionnaire.

Section 7 - Leisure Time

Objective

To gather data on the time the mother devotes to leisure. Certain analyses may be undertaken associating the health and well-being of the mother and the questions on the rhythm of daily life that will be added to subsequent data collections of this longitudinal study.

Measure

Question 76 is adapted from the study Ados, families et milieu de vie (1994) conducted by a research team led by Richard Cloutier of the *Centre de recherche sur les services communautaires* at *Université* Laval and from the preliminary questionnaire of the *Enquête sociale et de santé auprès des enfants et adolescents* undertaken by *Santé Québec* in 1997. The question was added to the current survey to end it on a positive note. And, for the same reason, a page inviting the mother to write her comments was also placed at the end.

3.5 Self-Administered Questionnaire for the Father (SAQF)

The above-named questionnaire is completed by the biological father living in the household or by the mother's spouse/partner if the biological father is absent. It may also be completed by the absent biological father if he is eligible to do so and if he can be contacted. It comprises five sections on the following themes: temperament of the infant, the father-child relationship (PPBS), the well-being of the father (depression scale).

prior antisocial behaviours and leisure time. Some sections are taken in whole or in part from the CQCI or the SAQM.

Section 1 - Temperament of the Infant

Objective

To measure the temperament of the infant by asking the father to assess his/her degree of difficulty.

This measure is based on the fact that an infant's temperament is not only biological in origin, but also influenced by the two parents' perception of the degree of difficulty of the infant's temperament. The data gathered from fathers provide a means to examine the link between the father's perception of it and the infant's temperament, as well as inter-observer reliability (i.e., mother in the CQCI and father in the SAQF).

Measure

Questions 2 to 12 inclusively are drawn from the Infant Characteristics Questionnaire (ICQ) created in 1979 by J. E. Bates of the University of Indiana and used in Cycle 1 of the NLSCY (1994-1995). The latter pan-Canadian study was conducted in a sample of 22,831 anglophone and francophone respondents. The questions, as well as the translation of them, were pretested in a sample of 2,721 francophones from across Canada.

This scale provides a means to measure the parent's perception of the degree of difficulty of the infant, that is, how irritable or fussy it is as well as how well it adapts. Some questions in the SAQF also appear in the CQCI, which is addressed to the PMK. In the SAQR, the items "Refusal" and "Does not know" were deleted.

Section 2 – Father-Child Relationship (ÉCOPAN -Échelle des cognitions et des conduites parentales) Parental Perceptions and Behaviours Regarding the Infant Scale (PPBS)

Objective

To assess the behaviours and attitudes manifested by the father in his relationship with his child.

There has been little research on the father's perceptions of his role and behaviours towards his infant, though such knowledge is essential if we are to better understand the influence fathers have on the development of their children. Recall that the PPBS is also administered to the mother in the SAQM.

Measure

Six dimensions are i	neasured usi	ng the	following
questions:			
Feeling of self-efficacy :	questions 15,	17, 19, 2	21, 24, 39
Perception of impact:	questions 14,	23, 29 , 3	34, 37
Tendency to coercion:	questions 18	, 20, 2 2	25. 28,
	32, 35		
Affection:	questions 14	a, 14b, 1	38a, <mark>38</mark> b,
	38c		
Overprotection:	questions 26,	30, 31, 3	33, 36
Perception of the child's			
qualities:	questions 13,	16, 27, 3	38

For each question, the father indicates the extent to which the statement describes his feelings or actions towards his child. To reply, the father selects a response on a Likert-type scale ranging from "Not at all" to "Exactly."

The questions related to the dimension "feeling of selfefficacy" are from Teti and Gelfand's 1991 scale; they were adapted to make them more appropriate for infants approximately 5 months old by Michel Boivin and Christiane Piché of the *Laboratoire de recherche de l'École de psychologie de l'Université Laval.* Question 39, recommended by Michael Lamb, comes from the questionnaire Being a Parent developed by Joe Pleck of the University of Illinois. All the other questions are original; they were developed by Michel Boivin and Christiane Piché. An initial list of items was produced and the content of the items was verified by 15 specialists in the field of parent-child interactions. The list was finalized after the items were pretested in a sample of francophone and anglophone mothers in the ÉJNQ-1995 and the pilot study ÉLDEQ-1996 (Santé Québec, Jetté et al, 1997).

Section 3 - Well-Being of the Father

Objective

To gather information on the mental health of the respondent, mainly with regard to symptoms of depression.

Depression is relatively widespread. It has been shown that maternal depression has repercussions on the psychosocial adjustment of the infant. There has, however, been little research on the relationship between paternal depression and problems related to behavioural or cognitive development in the infant.

Measure

Questions 40 to 51 are from the Depression Scale (CES-D) developed by L.S. Radloff of the Center for Epidemiological Studies of the National Institute of Mental Health in the United States to measure the frequency of symptoms of depression in the general public. The presence and severity of symptoms associated with depression are measured in the week preceding the survey. An abridged version of this scale was developed by M. Boyle of Chedoke-McMaster Hospital at McMaster University and used in the Parent Questionnaire of Cycle 1 of the NLSCY in 1994-1995 (questions HLA-Q12a to 12i). The survey was conducted in a sample of 22,831 francophone and anglophone respondents. The questions, as well as the translation of them, were pretested in a sample of 2,721 francophones from across Canada.

Question 51a, recommended by Richard E. Tremblay as a means of obtaining an additional measure of postnatal depression in parents when the infants are approximately 5 months old, is from the Edimburgh Postnatal Depression Scale (EPDS). The French adaptation of the EPDS by LYesse Séguin was validated by Jean-François Saucier of Ste-Justine Hospital in a sample of 369 Québec mothers 6 months after the birth of their baby. Other studies (Areias et al, 1996; Ballard et al, 1994) used it for mothers and fathers. This question does not appear in Cycles 1 and 2 of the NLSCY.

All the questions are found in CQCI of ELDEQ (HLA-Q12a-12m), which is conducted with the person who best knows the child – in the majority of cases, the mother. Nonetheless, in the SAQF we removed the response items "Do not know" and "Refuses" and added the instruction "Circle only one answer" to adapt them for the type of questionnaire (self-administered).

Section 4 – Overview of the Childhood, Adolescence and Adult Life of the Father

Objective

To assess the psychopathology (particularly problems related to antisocial behaviour) of fathers of infants approximately 5 months old.

As was discussed above, numerous studies have shown that children with behaviour problems are more likely to have a parent who presents a history of behaviour problems or antisocial personality. Intergenerational transmission of the symptoms is more frequent when the father, in contrast to the mother, experienced such problems himself, even if he maintained little or no contact with the child. The data collected for ÉLDEQ in the sample of fathers living in the household or absent from it will therefore be very useful to researchers.

Measure

The majority of questions are from the NIMH-DIS (Helzer & Robins, 1998). They were translated into French and pretested in the ÉLEMQ.

This section is similar to the one in the Self-Administered Questionnaire for the Mother (SAQM – Sections 5 and 6: questions on the mother's antisocial behaviour and questions answered by the mother on the antisocial behaviours of the absent biological father). Readers may thus refer to the justifications for these sections, which are presented above.

Questions 53 and 54, which deal with stealing and fighting, appear as well in the SAQM (questions 55 and 56 of Section 5 and questions 68 and 69 of Section 6). Like question 69 in the SAQM, question 54 in the SAQF on the behaviour of fathers was adapted to some extent: Instead of asking "Were you implicated on more than one occasion in a fight," the father is asked if he "often got into fights...."

Questions 52, 57, 58 and 63, on participation in clubs or organized sports teams, are similar to questions 54, 58, 60 and 65 of the SAQM, Section 5 only.

Question 55, on involvement with the Department of Youth Protection, is similar to questions 57 (Section 5) and 70 (Section 6) of the SAQM.

Question 56 is about problems at school. It is similar to question 71, about the absent biological father's school problems, in the SAQM, although the question does not appear in Section 5 (mother's behaviour) of that questionnaire.

Question 59 asks about having been fired more than once (not taking into account layoffs from lack of work). It is almost identical to question 61, which is addressed to the mother, and is similar to question 72, about the absent biological father, in the SAQM. Question 60 on arrests is identical to question 62 of the SAQM and corresponds to question 73 in Section 6 of that questionnaire "About Your Baby's Biological Father...."

Question 61 covers physical aggression manifested during adulthood. It is different from SAQM question 63, which addresses the mother's experience, but similar in part to question 74 of the SAQM, which is about the absent biological father. In the SAQF, we omitted the specific reference to conjugal violence to mitigate resistance to the question by the respondents.

Finally, question 62, on problems related to drug and alcohol consumption, corresponds to questions 64 and 75 of the SAQM.

Section 5 – Leisure Time

Objective

To gather information on the time the father devotes to leisure. Certain analyses may be undertaken associating the health and well-being of the father and the questions on the rhythm of daily life that will be added to subsequent data collections of the longitudinal study. This section is the same as the one included in the SAQM (Section 7).

Measure

Question 64 is adapted from Ados, familles et milieu de vie (1994), a study developed by the research team led by Richard Cloutier of the *Centre de recherche sur les services communautaires* at *Université* Laval, and from the preliminary questionnaire of the *Enquête sociale et de santé auprès des enfants et adolescents* conducted by *Santé Québec* in 1997. The question was added to the current survey to end it on a positive note. And for the same reason, a page inviting the father to write his comments was also placed at the end of the SAQF.

3.6 Observations of Family Life (OFL)

Objective

To assess the quantity and quality of stimulation and support provided to the child in its home environment.

The sensitivity of the parents and quality of the home environment have a significant impact on the development of the child. Studies have shown that family environment is associated with the health, growth and temperament of the child as well as with its development of language, cognitive and social skills (Bradley, 1993).

Measure

The questions in this scale are taken from the Home Observation for Measurement of the Environment (revised edition), developed by Caldwell and Bradley in 1984. The scale was adapted and translated by the *Laboratoire d'écologie humaine et sociale* of the University du Québec à Montréal.

The scale measures the emotional and verbal skills of the mother, use of restrictions or punishment, organization of the physical and temporal environment of the child, number and quality of appropriate toys, mother's involvement with her child, and opportunities taken during the interviewers' visit to diversify the stimulation and behaviour of the child.

This instrument is the only one completed by the interviewer not in the presence of the parents. The interviewers were given special training on filling out this instrument.

This ends the discussion of the sources and justifications of the questionnaires. The following sections provide information on the 1, 2, 3 Hands Game and the Baby Diary as well as the Authorization Form to Access Mother's and Infant's Medical Records.

3.7 Imitation Sorting Task (IST), 1, 2, 3 Hands Game

Objective

To measure the child's attention capacity (Alp, 1994; Baillargeon & Pascual-Leone, 1998; Pascual-Leone & Baillargeon, 1994) **as well as its behavioural inhibition capacity** (Barkley, 1997; Pennington & Ozonoff, 1996; Quay, 1997; Schachar, Tannock & Logan, 1993). This task is a variation on the imitation Sorting Task developed by Uzgiris and Hunt (1989).

Measure

The 1, 2, 3 Hands Game comprises two situations. In the first, the infant must grasp an object placed in front of him/her at eye level. To do so, the infant must coordinate two elements: sight and prehension (hand-eye coordination). The number of elements that the infant can coordinate simultaneously in a single action towards one goal constitutes a measure of the infant's attention capacity. Hand-eye coordination represents a key step in the second stage of sensorimotor cognitive development described by Piaget (1973, 1975). In the second situation tested, the task remains one of grasping an object, but this time an object is placed beforehand in each of the infant's hands and he/she must grasp a third object presented to him/her by first letting go of one or both of the objects already in hand. Thus, an infant with hand-eye coordination (and who has therefore attained the second stage of sensorimotor development) will not necessarily be able to grasp the object being held up, unless he/she exhibits behavioural inhibition. The capacity to inhibit behaviour may also be associated with the inhibition of inappropriate emotional responses such as fits of anger.

3.8 Baby Diary

Objective

To measure the frequency and duration of certain behaviours of the child as well as the time devoted to basic child care by the adults responsible for him/her.

Measure

This agenda-style logbook for noting the behaviours of the infant and the parents was developed for a study done in 1986 by Ronald G. Barr and his colleagues at the Montréal Children's Hospital Research Institute, McGill University, in a sample of 300 francophone and anglophone respondents (Barr et al, 1988; Hunziker et al, 1986). The data are collected over a 48-hour period.

The following behaviours of the infant are measured:

- 1. Crying (including related behaviours such as fussiness and unsoothable crying)
- 2. Sleeping
- 3. Feeding (sucking/bottle)
- 4. Awake and content

The responsible adult (mother or father) or another caregiver (eg., babysitter) indicates on a ruler-like scale when during two 24-hour periods and for how long the infant exhibited each behaviour, with the smallest unit of measure being 5 minutes.

The responses are mutually exclusive and complete: only one code may be used for each period and at least one code must be assigned in every time slot. Thus, the response "Cannot remember or absent" was added so that the respondent could honestly fill in the form without inhibition for all time periods. The behaviours are measured over 2 consecutive days. The respondent must indicate whether the days covered were typical, thus helping to ensure that the information gathered reflects the baby's normal behaviour.

The parent's behaviours, that is, two types of parental contact with the child, are also measured for the same 2 days. The contacts measured are:

1. Body contact (carrying, rocking)

2. Care (changing diapers, bathing, dressing).

As in the case of the target child, the parent or caregiver indicates on the ruler-like scale when during the time period and for how long she/he engages in each activity, with the smallest time unit being 5 minutes. These behaviours are also mutually exclusive, but incomplete: the respondent indicates by a blank space the times she/he was not engaged in either activity, with the code thus indicating "no contact."

Secondary variables may be identified by juxtaposing the data for the parental and the infant behaviours (e.g., the person who cares for the baby makes physical contact with him when he cries).

The variables in bed, and out of bed were added to recommendation the Baby Diary on the of Jacques Montplaisir of the Centre d'étude du sommeil (Center for the Study on Sleep) at Sacré-Coeur Hospital in Montréal who heads the research activities related to steep in ÉLDEQ 1998-2002. These variables provide a means to assess how the mother defines sleeping through the night as well as how much time the baby spends in bed. The variables provide complementary data on sleep to that gathered with the SAQM.

A description and example (Annex 1) of the Baby Diary may be found in Volume 1, Number 1, of the collection ÉLDEQ 1998-2002.

3.9 Authorization Form to Access Mother's and Infant's Medical Records

Objective

To gather information from the medical records for the mother and infant.

Medical information on the pregnancy and delivery provide an important means to discover the prenatal, natal and postnatal factors that may be associated with health and developmental problems in children.

The form used in this data collection has a legal duration of 90 days from the date it was signed by the biological mother of the target child. It is adapted from a form developed by the *ministère de la Santé et des Services sociaux of Québec.* The latter is similar to the form used by members of the public who wish to consult or acquire a copy of their own medical record. For the purposes of the present survey, the researchers obtain a copy of the following sections of the mother's record, covering only the period during which she was in hospital for the delivery:

Mother:	Complete obstetrical file
	Anatomy/pathology report on the placenta
	Short-term hospital admission form
Infant:	Summary of the complete medical file
	Results of the blood test done on the umbilical cord

The variables below were selected by Louise Séguin of the Department of Social and Preventive Medicine at the University of Montréal as a means to assess the conditions at birth affecting the physical and mental health of the mother and infant based on a preliminary examination of 40 medical files. Obstetrical file (mother):

Date of birth of infant; sex

Duration of the pregnancy (number of weeks of gestation)

Gravidity (total number of pregnancies)

Number of children born at term; born premature

Parity (number of children born before the current pregnancy)

Number of induced or spontaneous abortions

Number of children born live

Total duration of labour

Induction

Anaesthetic

Episiotomy

Tearing

Type of delivery

Instruments used to assist delivery

Type of presentation

Baby's weight at birth

Apgar (1, 5, 10 minutes)

Summary form (mother):

Duration of hospitalization

Diagnoses

Interventions

Summary form (newborn):

Duration of hospitalization

Diagnoses

Interventions

Transfer to another institution

Ventilation

Intensive or specialized care

Physical examination of the newborn:

Height, weight at birth

Circumference of the head

Anomaly(ies)

This terminates Part I, covering the sources and justifications of the survey questions, of Volume 12 of the ÉLDEQ collection. Part II examines the data, variables and scales of the 1998 ÉLDEQ survey.

Annex – Part I

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Concepts, Definitions and Operational Aspects

Part II Data and Variables



As mentioned in the preceding pages and in Volume 1, Number 1, of this collection, Étude longitudinale du développement des enfants du Québec (ÉLDEQ) (Longitudinal Study of Child Development in Québec) comprises several data collection instruments: the Computerized Questionnaire Completed bv the Interviewer (CQCI, drawn in large part from the NLSCY) and the paper questionnaires, that is, the Paper Questionnaire Completed by the Interviewer (PQCI). Observations of Family Life (OFL), Self-Administered Questionnaire for the Mother (SAQM), Self-Administered Questionnaire for the Father (SAQF), Questionnaire on the Ice Storm of January 1998 and Baby Diary. Finally, there is the 1, 2, 3 Hands Game, a test administered directly to the infant. In addition, information on the birth is taken from the medical records of the mother and target child.

At the start of the face-to-face interview, the interviewer must identify the person who best knows the child, the PMK (Most Knowledgeable Person). In this survey, over 99% of PMKs are the biological mother of the target child (infants 5 months old). For the remainder of the interview, the PMK answers all the questions on the CQCI for herself, the baby, her spouse/partner¹⁵ and for the other members of the household as well as for the biological father absent from the household. One unusual feature of ELDEQ is that it collects information from biological fathers absent from the household, either by proxy or by means of a questionnaire directed to him. The paper questionnaires are completed by the mother (SAQM), father (SAQF) and the interviewer (OFL, PQCI and Questionnaire on the Ice Storm), while the Baby Diary is filled out by one of the parents or by the person who looks after the baby (e.g., grandparent, babysitter).

The latter instrument and the OFL are not filled out during the interview but at some later time. The SAQM and SAQF are, if possible, completed during the interviewer's visit, but immediately after the face-to-face meeting; they may also be filled out and returned by mail in the month after the visit.

The following pages provide important information for those using the data collected during the 1998 ELDEQ survey and for readers wishing to know more about the derivative data, variables and scales that are the basis for the analyses presented in the collection. Among topics discussed are the steps that led to the creation of the database for this first survey of ELDEQ, including the validation of the data on the 2.223 infants in the sample, organization of the information into 9 separate files and the naming convention for the variables, as well as the contents of the files in the database for the first survey period. Comments on and cautions about some of the variables are also presented. The definitions of the principal derivative variables created for this survey are presented in Section 7. By derivative variable we mean either a simple combination of items in a question, or a more elaborate structure based on more than one question.

At the time of writing, the derivative variables related to the child's cognitive development (as measured by the 1, 2, 3 Hands Game), the data collected by means of the Baby Diary – which focus on the behaviours of the child and the person who looks after him/her – and the perinatal information taken from the medical records had not yet been incorporated into the ÉLDEQ database Those data are examined in Volume 1, Numbers 3, 8 and 13 of the collection, and the technical documentation for these data will be published at the same time.

^{15.} For the 1998 ÉLDEQ survey, of the fathers or partners living with the mother, 1 in 6 answered for himself the guestions about the father.

2. Data Validation: An Essential Step

The validation of the data is an important, indeed, an essential step in any statistical survey. The data used in the statistical analyses must be reliable and valid if erroneous conclusions are to be avoided.

Taking into account the logistical organization of data collection in a sample of infants 5 months old, a preliminary summary validation of the data could be carried out after the first three waves of data collection. This validation was completed at the end of the first year of data collection.

Two types of validation were carried out at each stage: 1) basic validation and 2) logical validation.

The basic validation is a detailed checking of the main elements of the data collection process (to ensure that codes are valid, filters were correctly used, etc.) while logical validation involves an in-depth examination of the contents of the questionnaires. In the latter, the consistency of the responses is ascertained by crosstabulation against information from other sections of the questionnaire or from another survey instrument. Consistency is also verified when the derivative variables are created.

Basic validation:

This step ensures, in particular, the validity of the codes. For example:

- Does the response correspond to one of the choices provided? If not, it may be necessary to create new codes.
- 2) Is the response appropriate given the minimum and maximum cut-offs, in particular for open-ended questions such as those on weight or height?

3) Were the filters correctly used, that is, were questions or their parts omitted when the response to the preceding question justified it?

With respect to the respondent's eligibility, it was determined based on factors such as the residential status of the biological father; this criterion was used to distinguish for the SAQF whether the biological father lived in the household or was absent from it. Likewise for identification of the mother eligible to answer certain questions about the absent biological father (CQCI – Absent Biological Parent; Section 6 of the SAQM). This was necessary since we had no reliable means to distinguish *a priori* and without error the SAQF completed by the biological fathers who lived in the chosen household from those who did not.

The next two sections will examine, with examples, the main steps in the data validation process for the Computerized Questionnaire Completed by the Interviewer (CQCI), on the one hand, and the paper questionnaires, on the other hand.

2.1 The Computerized Questionnaire Completed by the Interviewer

The validation of the survey data collected by means of the CQCI starts with a complete reading of the data using statistical software. This step aims to create a set of files that are easier to work with and that contain fewer variables than the original files¹⁶. It is during this step that certain errors due to simple data entry are corrected and the comments written by the interviewer on the computerized follow-up sheet are taken into account. The latter source of information is very

^{16.} It is at this time that certain data (e.g., weight and height of the infant) are converted to a single unit and items not relevant to the final database are eliminated: administrative variables such as the interviewer's number, start and finish time of the interview and variables related to the execution of the CQCI interview.

important because the comments may result in essential corrections to the survey data: the addition or omission of a member of the household, correction of a response error detected after data entry by the interviewer on her laptop computer, checking of complementary information related to a question, etc.

The second step involves the examination of the variables one by one to detect aberrant values. Variables that may contain errors are cross-checked to identify potential inconsistencies due to a data entry error or lack of understanding of the guestion by the respondent. These variables may come from the same instrument (intra-instrument validation) or from different instruments (inter-instrument validation), for example, the CQCI and SAQF. This type of checking is lengthy because each element of all the cases in which inconsistencies are detected is examined. Anomalies are examined by comparing them to the responses for other available variables. For certain variables such as weight, where the respondent chooses from among different units of measurement, it was sometimes necessary to refer back to the questionnaire to see if an error was made while entering the unit of measurment. Only at the end of this process are the aberrant responses rejected (see below).

Finally, for the variables used to construct the scales and for data that proved difficult or impossible to crosscheck, only one frequency of each was executed. The absence of invalid codes was deemed an adequate criterion of acceptance.

2.2 The Paper Questionnaires

Unlike the responses to the CQCI, which are entered directly into the interviewer's laptop computer, the data collected from the paper questionnaires are coded and entered after the visit to the household. This task is undertaken by the survey firm; double data entry is done, then validated by cross-checking. The survey firm is also reponsible for the basic validation of the paper questionnaires (rejecting ineligible codes, validating the filters).

In addition to this basic validation, there is an interinstrument validation. Santé Québec is responsible for this step, which is essential in distinguishing between the refusals to answer and "non-applicable" answers in questions addressed to a sub-group of respondents or when the questions are preceded by instructions rather than a filter question. Responses collected by means of the other instruments are examined to ensure whether the respondent is eligible to answer (e.g., for the section of the SAQM on the absent biological father and the CQCI grid of the relationships between everyone in the household). Thus, the data for the SAQF and SAQM were reorganized (recoded) so that respondents who were not eligible to answer a question or series of questions were all assigned a code signifying: Not applicable.*

For the SAQF, it was necessary to check the respondent's residential status in order to distinguish between the SAQF-father or spouse/partner present in the household and the SAQF-absent biological father. This process was lengthy because we were often given contradictory information about the residential status of the father and therefore had to check various sources (e.g., the computerized follow-up sheet completed by the interviewer, CQCI, SAQM) to determine if the biological father was or was not living in the designated household.

2.3 Correcting Errors

Errors (aberrant values, inconsistencies) detected during the validation process were examined. As stated earlier, the first step involved cross-checking contradictory information against information held elsewhere in the database. Sometimes this was sufficient to identify the necessary modification.

E.g., SAQM (Q48) How is your current spouse related to your baby? He/she is ...

... biological father

- SAQM The respondent replied to Section 6 on the absent biological father and stated that she was still in contact with him.
- CQCI (ARE1Q3) The codes identifying the relationships of members of the household indicate that the spouse is not present in the household.

Question 48 of the SAQM seems to have been interpreted incorrectly and, from the responses to other questions, we can confirm that the correct response for the first question is "You do not have a spouse" (see Table 2.2).

E.g., COCI - Section CAR The respondent states that child care is provided 35 hours a week in someone else's home by a nonrelative (Q1b1).

> The respondent states that child care is provided 35 hours a week in a daycare centre (Q1g1).

After examining the work schedule of the parents (CQCI - Section LFS), it seems that the responses are double answers resulting from confusion between the concepts "daycare" and "care in someone else's home by a non-relative." So, the responses had to be changed: We recoded a "No" to Q1b and "Not applicable" to Q1b1.

E.g., CQCI - Section INC Some PMKs indicated their main source of income was the Child Tax Benefit and gave social assistance as their only other income source. In such cases, the main source of income was coded as being "social assistance" since recipients of social assistance often confuse these two sources of income; the schedule for social assistance is adjusted for the amount received from the Child Tax Benefit.

If there was still some doubt about the response, but it was impossible to ascertain there was an error in it, the response was not changed, that is, the information provided by the respondent was taken as valid. This type of situation arose during the creation of the variable for family type; in some cases it was impossible to identify the exact residential status of the father because the information provided was insufficient or contradictory. The derivative variable was coded as "Missing" and the information provided was not changed.

If it was possible to confirm that the response was incorrect but no other question provided a means to determine the correct response, an unknown value was assigned.

E.g., CQCI - Section HLT What is the weight of ...?

For an aberrant answer, the value "Unknown" (code "Does not know," "Refusal" or "Missing") is used.

Given the large amount of data collected for ÉLDEQ, it is not possible to examine all the verifications carried out during the data validation process. Examples of the validations for each instrument or between instruments are provided in Tables 2.1 and 2.2.

Table 2.1 Examples of Validations by Instrument, ÉLDEQ 1998

INSTRUMENT(S) AND SECTION(S)	DESCRIPTION	VALIDATION
CQCI – Sections CONT and REL	ACOFQ19 Number of children living full- or part-time in the household	The variable ACOFQ19 was compared to the derivative variable AREED01 (number of brothers and sisters, biological or not, usually living in the household) created from data in the section REL. The few cases (n=13) where AREED01 + 1 (target child) did not equal ACOFQ19 were examined one by one to determine if there were children from outside the family living there (e.g. child of a correnter, child of the mother's sister, that is, a cousin, etc.).
CQCI – Section LFS	ALFMQ03 Number of weeks worked by the mother (preceding 12 months) ALFMQ03 Number of weeks worked by the current spouse/partner (preceding 12 months)	Must fall between 1 and 52.
CQCI – Section INC	AINFD03 Household income AINFD02 Main source of household income	The declared income (coded by category) was compared to main source of income for the household (coded by category). Ambiguous cases were validated using information on weeks worked and the presence or not of other adults in the household.
CQCI – Sections INC and LFS	AINFQ01A to AINFQ01N Sources of household income ALFMD01B Employment status of mother (preceding 12 months) ALFJD01B Employment status of biological father or current spouse/partner (preceding 12 months)	The employment status of the parents was verified when the PMK declared income from "wages and salaries" or "self-employment" as one of the main income sources for the household. In ambiguous cases, the number of other adults living in the household was verified.

Table 2.1 Examples of Validations by Instrument, ELDEQ 1998 (cont'd)

CQCI – Infant (Section HLT)	AHLEQ03 Height at time of survey AHLEQ04 Weight at time of survey	Extreme values were examined one by one.
CQCI – Sections SOC and CUS	ASTAT_1 Matrimonial status of the mother ASTAT_3 Matrimonial status of the father or current spouse/partner	Verify the consistency between matrimonial status of the parent and his/her conjugal (Section CUS of the CQCI). For example, if the parent has never been married and is living common law with the partner, the matrimonial status is "single" (never married).
CQCI – Sections MD and LFS	AMDEQ29 Mother's employment after the infant's birth ALFMD01A Employment status at time of the survey ALFMD01B Employment status (preceding 12 months)	Verify the consistency.
SAQM	AQMMQ48 Relationship between current spouse/partner and target child SAQM – Section 6	Eligibility to reply to questions in this section depends on the absent biological father. Section 6 on the absent biological father must not be answered if Q48 is equal to 1 ("biological father").
OFL	AIFFQ31A Number of persons present during the interview AIFFQ32 Status of child at time of interview	If the child is present during the interview (Q32 is not equal to 5), the number of persons present during the interview (Q31a) must be greater than 1.

 Table 2.2

 Examples of Inter-instruments Validations, ÉLDEQ 1998

INSTRUMENT(S) AND SECTION(S)	DESCRIPTION	VALIDATION
Master Birth Register, COCI (Sections CONT, REL	AREED01	Verify the consistency.
and CUS) and SAQM	Birth rank of the child	
		We compared the variable from the Master Birth
		Register ("number of children born of previous
	Excluding stillbirths (500 g. and over)	pregnancies [exclude current pregnancy]"), to which
		was added 1 for the target child, to the other related
		variables: number of children living in the same
		household born to the biological mother and number of
		her children living outside the household (Sections
		CONT [Q19 and Q20] and Section REL of the CQCI,
		questions on previous children from the Section CUS
		for the COCI [CUS-Q1D, Q6E and CUS-Q6H] and the
		questions in the SAUM covering the recundity of the
		MOTHER LAUMMQUSA, AUMMQUSB, AUMMQU4,
		Auminuus, Auminuus). As a result of these
	10111040	Venifications, about 1% of cases had to be corrected.
SAQM and CQCI (Sections HEL, CUS and "Absent"	AUMINU40 Relationshin between the current shouse, if	venty the consistency.
biological marenic)	applicable, and target child	The responses to question 48 of the SAOM were
		examined in relation to whether the biological father
		was present in the household (Sections REL, CUS
		and Section "Absent biological parent" of the CQCI,
		Section 6 of the SAQM on the absent biological
		father). Some mothers answered "biological father"
		to question 48 of the SAQM despite not living with
		him at the time of the interview. Because the
		question was intended to focus on the notion of co-
		when other information indicated the biological
		father was not living in the bousehold. Nonetheless
		some mothers may have had a non-cohabiting
		couple relationship with the biological father at the
		time of the interview. The question was modified for
		later data collection to take this type of situation into
		account.

Table 2.2 Examples of Inter-instruments Validations, ÉLDEQ 1998 (cont'd)

INSTRUMENT(S) AND SECTION(S)	DESCRIPTION	VALIDATION
SAQM and CQCI - Section REL	AQMMQ01	Verify the consistency.
	Relationship between the respondent and the target	
	child	
	ARE1Q2 Relationship between Person 2 and Person 3	
SAQF and CQCI - Section REL	AQPJQ01	Verify the consistency.
	Relationship between the respondent and the target	
	child	
	ARE2Q3 Relationship between Person 2 and Person 3	
	Helationship between Ferson 2 and Ferson 3	

1. The inconsistencies observed are attributable to two main factors. First, during data entry from the Life Birth Registration form, the code "1" was attributed when the information was missing. In addition, it appears that some respondents included the current pregnancy in the figure for the number of children born previously. Note that in certain cases we could observe an under-estimation of the number of live births because some biological children of the mother were not reported (e.g., children given up for adoption or who died after birth that the mother did not wish to indicate in the Life Birth Registration form or acknowledge during the interview).
2.4 Updating the Database

The first version of the complete database (n=2,223) was distributed to the ÉLDEQ researchers in March 1999. During the data analysis process, some errors were detected, however. *Santé Québec* agreed to make the necessary changes to the indexes or variables affected by these errors. *Errata* notices were sent to those using the database to ensure that they were aware of the modifications, and users who so desired were provided with the new version of the variable(s). Finally, a revised and updated version of the database for the 1998 ÉLDEQ survey was sent to the affiliated research groups in July 2000, along with the database for the 1999 ÉLDEQ survey. All the data published in Volume 1 of the ISO report were verified taking into account the corrections made after the first release of the database.

3. Composition of the Database of ÉLDEQ 1998

The composition of the database of ÉLDEQ 1998 relies on two main criteria: the logical basis of data collection, on the one hand, and the response rates of the different instruments or sections of the questionnaires, on the other. Nine data files were created from the information collected in the sample of 2,223 infants in the 1998 collection: SOCIO101, MOTHER101, FATHER101, CHILD101, BIO101, PMK101, SAQF101, SAQFABS101 and IND1101. To these files are added the data taken from the Baby Diary and the medical records of the mother and infant as well as the data collected during the 1, 2, 3 Hands Game; because these data required special handling, they were not integrated in the first release of the database.

The file SAQF101 comprises variables generated by the SAQF (Self-Administered Questionnaire for the Father); it was given to the biological father or the spouse/partner of the mother living in the household, while the file SAQFABS101 contains the variables generated by biological fathers not living in the survey household. Because the response rate for the SAQF (biological fathers or current spouse/partner) is lower, a special weighting was ascribed and the variables of the SAQF are included in a separate file, FATHER101. The variables for the SAQF, addressed to absent biological fathers, were not weighted due to the low response rate. Therefore, the results cannot be inferred for all the absent biological fathers, and the variables in the file SAQFABS101 may serve only for descriptive purposes. Detailed information on the data collected on fathers, whether or not they lived in the household, and on the response rates for those questionnaires may be found in Volume 1, Numbers 1 and 2 of this collection.

The database also contains a file of derivative variables developed by *Santé Québec* and the partners in ÉLDEQ (INDI101) in order to facilitate the analyses. In it are found the different sociodemographic indicators as well as the index scores provided by the research partners. These variables are described in detail in Section 7 of this document.

Table 3.1 provides an overview of the 9 files of ÉLDEQ 1998, which were created using the software program SAS. The files are available in SAS format (versions 6.12 and 8) as well as in SPSS for Windows.

3.1 Description of the Files in the Database of ÉLDEQ 1998

Each file contains the variable IDME (the household number), which is used during the merging of 2 or more files. All of the files are in the form "one line per household." The majority also contain a variable indicating who responded to the questionnaire or to each section of the CQCI. These variables are ascribed the values "mother," "father" or a number from 4 to 12, if someone other than the mother or father/spouse/partner was the respondent. Table 3.2 presents the data file and the variable designating the respondent for each instrument or, in the case of the CQCI, each section.

Table 3.1 Composition of the 9 Files in the Database of ELDEQ 1998, 5-Month Old Infants

FILES QUESTIONNAIRES AND SECTIONS ²	(1) SOCIO101	(2) MOTHER 101	(3) CHILD101	(4) FATHER 101	(5) PMK101	(6) SAQF101 (APOIQAP, APOIQAPM)	(7) SFABS101 (not weighted)	(8) BIO101 (not weighted)	(9) INDI101 (2 weights) ³
CQCI - SOCIODEMO									
CONT									
DEM									
REL									
HHLD									
CQCI - PARENT									
SOC									
EDA				-					
LFS									
INC									
HLA ⁴									
FNC									
SAF									
CQCI – ABSENT BIO. PARENT									
EDA									
LFS									

Table 3.1 Composition of the 9 Files in the Database of ÉLDEQ 1998, 5-Month Old Infants (cont'd)¹

FILES QUESTIONNAIRES AND SECTIONS ²	(1) SOCIO101	(2) MOTHER 101	(3) CHILD101	(4) FATHER 101	(5) PMK101	(6) SAQF101 (APOIQAP, APOIQAPM)	(7) SFABS101 (not weighted)	(8) BIO101 (not weighted)	(9) INDI101 (2 weights) ³
CQCI - CHILD									
SOC, DVS, HLT, MED, TMP, LIT, ACT, MSD, PAR, CUS, CAR									
PQCI									
SAQM (except Section 6)									
SAQM (Section 6)									
SAQF (bio. Father/current spouse/partner)									
SAQF ("absent" bio. father)									·····
OLF			.						
ICE STORM									
DERIVATIVE VARIABLES					{ 	<u> </u>			

1. Untess otherwise indicated, all files come with population and sample weights: APOIPCM and APOIPCMM. For more information on the concept of weighting and its use in the analyses, see Volume 1, Number 1, of this collection.

2. The names of the sections of the CQCI are taken from the original English version of the NLSCY questionnaire.

3. The derivative variables combine information taken from files 1 to 6; two types of weights are ascribed, that is, APOIPCMM (APOIPCM) and APIOQAPM (APOIQAP).

4. HLA-Q1 to to HLA-Q7C: file MOTHER101 and FATHER101.

HLA-Q12a to HLA-Q12m: file MOTHER101 only.

Table 3.2 Profile of the Respondents to ÉLDEQ 1998 by Instrument, Questionnaire or Section of Questionnaire

	FILE	n (not weighted)	VARIABLE DESIGNATED RESPONDENT
CQCI - SOCIODEMO	SOCIO101	2,223	A_PCM
CQCI - MOTHER	MOTHER101	2,221	ARPMQ01
CQCI – BIO. FATHER/CURRENT SPOUSE	FATHER101	2,049 ²	ARPJQ01
CQCI – Sections PMK	PMK101	2,223	A_PCM
CQCI – ABSENT BIO. FATHER	BIO101	132 ³	A_PCM
CQCI- CHILD	CHILD101	2,223	ARPEQ01
PQCI	PMK101	2,223	AQIFQ00
SAQM (Except Section 6)	MOTHER101	2,146	AQMMQ01
SAQM – Section 6	BIO101	165	AQMMQ01
SAQF - BIO. FATHER/CURRENT SPOUSE	SAQF101	1,855	AQPJQ01
SAQF – ABSENT BIO. FATHER	SFABS101	45	AQPAQ01
OFL	SOCIO101	2,221	completed by interviewer
ICE STORM	PMK101	2,219	completed by interviewer
1, 2, 3 HANDS GAME	Not avail.	1,8514	completed by interviewer
MEDICAL REPORT FOR MOTHER AND INFANT	Not avail.	2,192	
BABY DIARY	Not avail.	1,4225	Not avail.

^{1.} Two questionnaires for the mother (CQCI) are missing: in one household the biological mother was absent; in the other, the grandmother of the target child was the respondent. For the latter, the Parents' Questionnaire was not generated in E1.

2. That is, 2,042 biological fathers, 5 spouses/partners who are not the bio. father, and 2 fathers in loster homes. One questionnaire is missing for a biological father (it could not be opened or exported due to a technical problem).

3. Of a total of 180 households where the biological father is absent. For 178 of those households, only the biological father is absent, while in 2 households the biological father and biological mother are absent (foster homes). In one other household, only the biological mother is absent. The file BIO101 does not contain information on the 3 absent mothers.

4. Although 2,120 children played the game, only those children who had completed the 3 tasks in each of the 2 experimental situations, or 1,851 children, were retained for purposes of analysis (for more details, see Volume 1, Number 8, of this collection).

5. Of a total of 1,787 Baby Diaries returned by parents. Of these, 365 were not retained for analysis: 6 were unusable (e.g., sick child), 225 were determined to be too incomplete and 134 were lost (see Volume 1, Number 13).

3.2 Convention for Designating the Variables

As was stated in Part I of this document, the key instrument of ÉLDEQ 1998-2002, that is, the Computerized Questionnaire Completed by the Interviewer (CQCI), was taken in large part from the National Longitudinal Study of Children and Youth (NLSCY), conducted by Statistics Canada since 1994 in a sample of more than 20,000 children. Because of this, the convention of designating the variables of ÉLDEQ corresponds to that used in the NLSCY.

The variables are named:

A SE C Q nnx

where:

A: indicates the collection year of the survey

"A" corresponds to the 1998 (5 months) collection year

"B" corresponds to the 1999 (17 months) collection year

"C" corresponds to the 2000 (29 months) collection year and so on

SE: indicates the section of the questionnaire (see Table 3.3).

C: indicates the person signified by the variable:

- "E" signifies that the variable relates to the child
- "M" signifies that the variable relates to the mother
- "J" signifies that the variable relates to the father/current spouse
- "F" signifies that the variable relates to the household
- "A" signifies that the variable relates to the absent biological father

In the Sociodemographic Questionnaire (for the questions in Section REL only) the PMK is questioned about the relationships between all members of the household. These details are required in order to identify the variable for each person. The following notation is used:

- "1" if the variable relates to the mother
- "2" if the variable relates to the target child
- "3" if the variable relates to the father/current spouse
- "4" if the variable relates to the 4th person
- "5" if the variable relates to the 5th person
- "6" if the variable relates to the 6th person
- "7" if the variable relates to the 7th person
- "8" if the variable relates to the 8th person
- "9" if the variable relates to the 9th person
- "10" if the variable relates to the 10th person
- "11" if the variable relates to the 11th person
- "12" if the variable relates to the 12th person
- Q: indicates the type of variable. Where:
 - "Q" signifies that the variable relates to a question asked in one of the questionnaires;
 - "S" signifies that the variable relates to a score calculated for a scale used in the questionnaire;
 - "D" signifies that the variable was calculated on the basis of other questions asked in the questionnaire;
 - "M" signifies information related to a date (by month);

- "A" signifies information related to a date (by year).
- nnx: corresponds to the identification of the question. In general, "nn" is a sequential number attributed to the variable and "x" is the sequential alphabetical indicator for a series of similar variables.

PLEASE NOTE: In certain cases, the 3 last characters of the variable are not sufficient to correctly identify a question (e.g., questions comprising more than one response item). In such cases, the four last characters were used to identify the variable (most often by replacing the letter "Q").

Example : Section HLT question 45 (9 possible responses) => AHLEQ45A to AHLEQ45I

Section HLT question 45A (11 possible responses) => AHLE45AA to AHLE45AK

We thus replaced the "Q" in the fifth place.

Table 3.3 Sections of the CQCI and the Paper Questionnaires

QUESTIONNAIRE AND SECTIONS	LETTER INDICATING THE SECTION (2 nd AND 3 rd COLUMNS OF THE VARIABLE NAMES) ¹	CONTENT	
CQCI (Computerized Questionnaire Conducted by the interviewer):			
CQCI - SOCIODÉMO.			
CONT	со	Contact (language of the interview, members of the household)	
DEM	(AAGE_?, ASEX_?, ASTAT_?)	Basic sociodemographic data (for all members of the household)	
REL	RE	Relationships between household members	
HHLD	нн	Housing conditions	
CQCI - PARENTS			
SOCIO	SD	Sociodemographic information	
EDA	ED	Education	
LFS	LF	Occupation and employment	
INC	IN	Income (household)	
HLA	HL	Health and lifestyle habits	
FNC	FN	Family functionning	
SAF	SF	Neighbourhood safety	
CQCI - ABSENT BIOLOGICAL PARENT			
EDA	ED	Education	
LFS	LF	Occupation and employment	
CQCI - CHILD			
SOCIO	SD	Sociodemographic information	
DVS	DS	Relationship with the respondent	
HLT	HL	Health (general health, height, weight, weight at birth and current weight, injuries, chronic conditions, medical consultations and hospitalizations)	
MED	MD	Perinatal information (mother's lifestyle habits during the pregnancy, postnatal depression, mother's health care use, mother's employment after the infant's birth)	

Sections of the CQCI and Paper Questionnaires (cont'd)

QUESTIONNAIRE AND SECTIONS	LETTER INDICATING THE SECTION (2 nd AND 3 nd COLUMNS OF THE VARIABLE NAMES) ¹	CONTENT		
ТМР	ТМ	Temperament		
LIT	LT	Reading to the child		
ACT	AC	Educational Activities		
MSD	MS	Motor and social development		
PAR	PR	Parenting practices		
CUS	CS	Family and custody history		
CAR	CR	Child care methods		
PQCI (Paper Questionnaire Completed by the Interviewer)	QI	Information on the grandparents, perception of the current socioeconomic situation, household income before the birth, feeding methods, introduction of solid foods, attitudes of others (relatives, friends) to breast feeding, habits relating to oral and dental health, consumption of vitamins and minerals		
SAQM (Self-Administered Questionnaire for the Mother)	QM	Pregnancies and tecundity, mother-child relationship, infant's sleep, behaviourial history, conjugal support, leisure, data on the absent biological father (visits, financial support, behavioural history)		
SAQF (Self-Administered Questionnaire for the Father) – Biological Father or Current Spouse/Partner	QP	Father-child relationship, perception of the child's temperament, psychological well-being, behavioural history, leisure		
SAQF (Self-Administered Questionnaire for the Father) – Absent Biological Father	QA	Father-child relationship, perception of the child's temperament, psychological well-being, behavioural history, leisure		
OFL (Observations of Family Life)	IF	Behaviour of the child, mother-child relationship, housing conditions		
Ice Storm	QV	Consequences of the ice storm if January 1998.		

1. Excluding variables the data for which are drawn from other sources (e.g.: Master Birth Register) or derivative variables for which a convention was developed for ÉLDEQ proper.

3.3 Content of Files

File SOCI0101

This file contains the questionnaire titled Observations of Family Life (n=2,221) as well as the sociodemographic variables of the CQCI (Sections CONT, DEM, REL and HHLD), that is, age, sex, marital status of household members, relationships of the members to each other as well as some information on the dwelling (Table 3.1).

Section REL (relationships of the household members) was not recoded according to the convention due to the complexity of its structure. To correctly represent these relationships, the variables have been redefined as: AREIQJ

where A = collection year (1998)

- RE = indicates the Section RELATION
- I = indicates the first person defined by this relationship I=1,2,...,12
- Q = (as per the convention)
- J = indicates the second person defined by this relationship J=1,...,12

For example, ARE1Q2 indicates the relationship between the 1st person (mother) and the 2nd person (target child) of the household.

Note: In this section, we asked about the interpersonal relationships for only I < J. For example, we wish to discern the relationship (ARE1Q2) between the mother (I=1) and the target child (J=2), but we do not ask about the relationship (ARE2Q1) between the target child (I=2) and the mother (J=1); the computer automatically applies only the inverse relationship. The variables in which I is larger than J are therefore of no use and are not included in the database.

Note that the 1st person is almost always the biological mother¹⁷, the 2nd person is **always** the target child and the 3rd person is the biological father/spouse. The persons numbered 4 to 12 are others living in the household.

This file designates the age, sex and civil status (matrimonial status) of all persons living in the household, including other relatives (uncle, aunt, grandparent, etc.) or unrelated persons. The variables used are AAGE_?, ASEXE_? and ASTAT_? where ? is replaced by the number of the person (1=mother, 2=target child, 3=father, 4 to 12=other persons) and A indicates time 1 (1998 collection year).

File MOTHER101

This file comprises the SAQM questions (n=2,146), except for those for Section 6 covering the absent biological father (see BIO101) and the questions for the CQCI on the mother (n=2,221). Note that Sections INC, FNC and SAF are included in the file PMK101 because they cover the household and not, directly, the mother.

File CHILD101

This file contains the sections of the Child's Questionnaire (n=2,223) of the CQCI covering the target infant (aged 5 months).

File FATHER101

This file contains the data of the Parents' Questionnaire (father/current spouse) of the CQCI (n=2,049).

File BIO101

This file contains sociodemographic information on the absent biological father, if applicable, collected from the respondent. The information is complemented by information from the Absent Biological Parent

^{17.} In two cases only, this was the foster mother.

Questionnaire of the CQCI, which was developed specifically for this study¹⁸. Included also are the data from the history of the absent biological father collected by proxy from the mother in the SAQM. Due to the low rate of response, this file contains no weighting and the data may be used only for descriptive purposes (n=175).¹⁹

File PMK101

This file contains the PQCI (Paper Questionnaire Completed by the Interviewer; n=2,223), the questionnaire on the ice storm (n=2,129) and the sections of the Parents' Questionnaire (CQCI) addressed specifically to the PMK, who is, in almost all cases, the biological mother of the target child.

File SAQF101

This file contains the SAQF (Self-Administered Questionnaire for the Father) for fathers, whether or not they are the biological father, living in the household $(n=1,855)^{20}$ or whose primary residence is the target household.

Thus, fathers who are *temporarily* absent due to work (e.g., business trip), studying or another reason are considered to be living in the household.

File SFABS101

This file contains the SAQF for biological fathers who are <u>NOT_CURRENTLY</u> living in the household, that is, whose primary residence is not the household (n=45). Because too few of these questionnaires were returned, the file contains no weighting and the variables must be used only for descriptive purposes.

File INDI101

This file contains several derivative variables (sociodemographic indices, index scores, etc.) developed by *Santé Québec* and the research groups affiliated with the survey. The variables are examined in detail in Section 7.

^{18.} This file originally contained information on the 3 absent biological mothers. The information was omitted from the file BIO101 because there were too few absent mothers in the survey sample.

^{19.} That is, the number of absent fathers for whom information was acquired from one or the other source (CQCI-Absent Biological Parent or the SAQM). Five biological fathers on whom no information was found were excluded from the file.

^{20.} In addition to biological fathers/spouses present in the household, 5 non-cohabiting partners of the mother filled out the SAQF. These questionnaires were retained and integrated in the file SAQF – "current" biological fathers/spouses.

4. Comments and Cautions on Some Variables and Scales

Scale on Family Functioning (CQCI)

Santé Québec and the ÉLDEQ researchers decided, subsequent to data collection on the 5-month old infants, that this scale was not pertinent to single parents whose eldest child was younger than 4 years old. A filter was introduced for the 1999 collection (children about 17 months old) so that PMKs living in this type of family were not asked the questions for this scale.

Consumption of drugs and non-prescription medications (CQCI)

Questions HLT-Q7A and HLT-Q7B cover drugs and nonprescription medications of <u>all types</u> (e.g., Tylenol, Maalox) taken during the 12 months preceding the survey.

Smoking during the pregnancy (CQCI)

Respondents who indicated that they had smoked at least 1 cigarette a day during the pregnancy were given the value 0 of the variable AMDEQ04.

Employment and Income (CQCI)

Certain variables relating to the parents' professional situations were recoded because of a filter error at the start of Section LFS of the CQCI. The variables in question are: ALFMD01, ALFMD02, ALFMD08 for the mother (file MOTHER101) and ALFJD01, ALFJD02 and ALFJD08 for the father/spouse (FATHER101).

The data on the type of business, service or industry (LFS-Q10A) were coded in 13 categories based on the 1980 Standard Industrial Classification Structure published by Statistics Canada (1985) (ALFMD10, for the mother; ALFJD10, for the father/spouse). The type of employment held by the individual (LFS-Q11a) was

coded according to the 1980 Standard Occupational Classification and the codes were then regrouped in 16 categories according to the Pineo Socioeconomic Classification of Occupations for the Census (1985) (APIMD01, for the mother, and APIJD01, for the father/spouse). The 16 groups were then regrouped in 5 categories proposed by researchers associated with Enquête sociale and de santé conducted by Santé Québec in 1992 (APIMD02 and APIJD02). Only the regrouped data are available in the database. Likewise, the detailed information on household income was removed from the data file distributed to researchers to ensure confidentiality. The file contains only household incomes regrouped in categories. The data on income and main source of employment were used to create the derivative socioeconomic variables (file INDI101).

Section on child care (CQCI)

To the questions: "When did you start using this method of child care?", some PMKs gave a date before the birth of the target child because an older brother or sister had been cared for using this method. In such cases, it was not possible to determine when the target child started receiving this form of child care.

In addition, question CAR-Q1D, on child care provided by a brother or sister, seems to have led to some confusion. It was not possible to distinguish the "Not applicable " responses (i.e., not applicable because the infant didn't have a brother or sister) from the "No"s, so the 2 categories were regrouped (ACRED01D).

Variables for the multiple-choice questions (CQCI)

Special attention must be paid to the CQCI questions with several response items, for example, question SOC-Q5: "In which language(s)...can you/he/she conduct a conversation?" This general question generates 19 variables for each person interviewed. These variables tell us that, yes or no, the person can conduct a conversation in each of the 19 languages listed. One must therefore pay close attention when creating the indices or doing an analysis based on these variables, since one person may have replied yes to more than 1 variable.

Abortions (SAQM)

The information on abortions (SAQMQ04 and SAQMQ05) was removed from the file because Question 5 in the SAQM failed to state "excluding miscarriages." Consequently, some, but not all, mothers may have included miscarriages (spontaneous abortions) in their answers.

Age of the grandparents and their eldest child (the parents) (PQCI)

The variables from Section 1 of the PQCI were recoded to facilitate analysis. The variables AQIED01A, D03A, D04A and D06A refer to the ages of the maternal and paternal grandparents of the target child, whether or not they are living. The variables AQIED01B, D03B, D04B and D06B refer to the status of the maternal and paternal grandparents (living or deceased). The variables AQIED02 and AQIED05 correspond to the age of the eldest child in the families into which the mother and father were born. Nonetheless, care must be taken when interpreting the variables on the family of the father of the target child because of the relatively high rate of partial non-response for these variables. In addition, though the question on this subject had explicit instructions, it is not possible to determine if the respondent indicated his/her biological parents and biological siblings.

Variables relating to "date"

To facilitate the analysis of the data, 2 variables were created for each "date"-type response. They indicate the month and year, using the lettre "M" (for month) or "A" (for *année*, or year) in the fifth position of the name of the variable.

5.1 Use of Weighting and Sample Design in the Analysis

The target population of the survey is Québec babies, singleton births only, who were 59 or 60 weeks of gestational age at the beginning of each data collection period, born to mothers residing in Québec²¹. As discussed in Volume 1, Number 1, of this collection, to infer from the sample data to the target population, each respondent was given a weight corresponding to the number of people he/she "represented" in the population.

For this survey, three series of weights had to be calculated: one for the Self-Administered Questionnaire for the Father present in the household (SAQF), one for the 1, 2, 3 Hands Game, and one for the following instruments: COCI, POCI, SAOM, OFL and medical records, even though the number of respondents for certain instruments did not attain 2,223 (see Table 3.2). In contrast, Self-Administered Questionnaire (SAQF) for the absent biological father, the data in the file BIO101 (CQCI-Absent Biological Father and Section 6 of the SAOM) as well as the data from the Baby Diaries were not weighted due to insufficient overall or partial response rates, on the one hand, and the specific characteristics of the non-respondents to these instruments, on the other hand.²² Thus, only certain descriptive analyses focusing specifically on the babies whose parents filled out the questionnaire may be carried out for these data.

For the other instruments, the population weights and sample weights are provided in the database for the 1998 collection of ÉLDEQ. However, only the sample weights are used in the analyses presented in this document. Table 5.1 gives the sample weight for each instrument or questionnaire of ÉLDEQ as well as the name of the corresponding data file. In general, for models comprising variables from several files the following rule may be applied: When a variable for the SAQF is involved, use the weight APOIQAPM. Otherwise, use the weight APOIPCMM. If an unweighted variable is used, only certain descriptive analyses specifically focusing on babies whose parent responded to the questionnaire may be carried out using the data, even when the variables involved could be weighted.

In addition to weighting, the effect of the complex sample design must be taken into account in data analyses. ELDEQ has a stratified, three-stage sampling design. During data analysis, if one proceeded on the basis that this was a simple random sample, one would risk engendering biases in the results and under-estimating their variance. Number 1 of this collection examines different methods for correcting the sampling design effect based on the type of data analysis envisaged for researchers who do not have access to the detailed parameters of the sample design. For the chi-square test, for example, a mean design effect estimated at 1.3 may be used. This proportion is calculated by dividing the sample weight (mean weight of 1) by the mean design effect. With this procedure, researchers may use a software program such as SAS or SPSS.

However, when the threshold observed is close to that set for the chi-square test and certain other types of analysis, we suggest the use of a program such as SUDAAN (Survey Data Analysis) that can calculate estimates of variance taking into account a complex sample design. For analyses not available through SUDAAN, we suggest the use of a more conservative

Excluding mothers living in the following administrative regions of the health ministry: 10 (Northern Québec), 17 (Cree "territory") and 18 (Inuit "territory") and mothers living on Indian reserves.

^{22.} For example, the absent biological fathers who returned the SAQF tended to be better educated and have more contact with their child than the absent biological fathers who did not fill out the questionnaire. With respect to the Baby Diary, respondent parents seemed to be better educated, more often primiparous and French- or Englishspeaking in greater proportion than the non-respondent parents (for more details, see Number 13 of this collection).

threshold and that the estimate of variance be accompanied by a statement of caution. Note that a preliminary exploration of the possibility of using bootstrap weights is underway; this would enable users to calculate the variance of their estimates for themselves and without recourse to specialized software.

Finally, the coefficient of variation (CV) provides a means of quantifying the precision of a result (estimate). In this document, all the data with a coefficient of variation (CV) higher than 15% are shown with one or two asterisks as a means of clearly indicating that the variability of the estimates is acceptable (CV between 15% and 25%) or low (CV higher than 25%). (For more details on this, see Volume 1, Number 1, in this collection.)

 Table 5.1

 Sample Weight for Each Instrument, Questionnaire or Section of Questionnaire, ÉLDEQ 1998

INSTRUMENT AND QUESTIONNAIRE	FILE	SAMPLE WEIGHT
CQCI - SOCIODEMO.	SOCIO101	APOIPCMM
CQCI - MOTHER	MOTHER101	APOIPCMM
CQCI – BIO. FATHER/CURRENT PARTNER	FATHER101	APOIPCMM
CQCI – Sections PMK	PMK101	APOIPCMM
CQCI – ABSENT BIO, FATHER	BIO101	No weighting due to the high rate of partial non- response for most of the variables
CQCI – CHILD	CHILD101	APOIPCMM
PQCI	PMK101	APOIPCMM
SAQM (Except Section 6)	MOTHER101	APOIPCMM
SAQM - Section 6	BIO101	No weighting due to the high rate of partial non- response for most of the variables
SAQF BIO. FATHER/CURRENT PARTNER	SAQF101	APOIQAPM
SAQF - ABSENT BIO. FATHER	SFABS101	No weighting due to the low global response rate for this instrument
OFL	SOCIO101	APOIPCMM
ICE STORM	PKM101	APOIPCMM
1, 2, 3 HANDS GAME	Not avail.	Special weighting
		(variables are not distributed) (See No. 8 in the collection)
MEDICAL RECORDS	Not avail.	APOIPCMM
		(See No. 3 in the collection)
BABY DIARY	Not avail.	No weighting due to the low global response rate for this instrument (see No. 13 of the collection)

5.2 Partial Non-Response and Imputation

Most of the questionnaires were well filled out. Partial non-response was therefore not a significant problem in terms of potential biases in the results. However, some questions in the SAQM, CQCI and PQCI had a partial non-response rate higher than 5%.²³ In this report, estimates affected by a non-response rate higher than 5% are accompanied by a note specifying for which population sub-group they are less accurate.

Because of low rates of partial non-response, in particular for the questions such as those on income, which generally have a high non-response rate, no imputation has been done on the 1998 data.

^{23.} For more detailed information, see Annex 6 of Number 1. Partial Non-Response Exceeding 5%.

The denominalized database of the 1998 collection of ÉLDEQ, excluding the detailed data on income and employment, was distributed to all the research groups affiliated with ÉLDEQ.²⁴ These groups are made up mainly of university-based researchers and professionals in the health and social service network.

The 9 files that make up the complete database were distributed in March 1999, that is, about one year before the publication of the first reports in this collection. As stated, all the data published in these reports were verified by *Santé Québec* and *Direction de la Méthodologie et des enquêtes spéciales* (Methodology and Special Surveys Division) of the *Institut de la statistique du Québec*.

^{24.} All affiliated research groups must complete in advance a confidentiality form in which they agree not to distribute or copy the database. They must also sign and return a form agreeing to abide by an embargo on the data before their publication in the ISQ report.

This section describes the indices and regroupings in the database file INDI101 for the 1998 ÉLDEQ collection. This file contains the main derivative variables examined in the reports published in 2000²⁵ in Volume 1 of the collection. The sociodemographic variables were developed by *Santé Québec*. Several of them were based on the results of the National Longitudinal Study of Children and Youth, Cycle 1 (Statistics Canada and Human Resources Development Canada, 1996). Most of the scales were recommended by the research groups affiliated with ÉLDEQ.

To facilitate consultation, the detailed description of the indices and regroupings is presented in the following order, those related to: the target child, the mother living in the household, the father/spouse living in the household and, finally, the household. A table summarizing these variables (Table A.2) is presented in the Annex.

In the detailed description of the derivative variables below, the following information is provided:

POPULATION: Identifies the reference population used in calculating the index or regrouping.

7. Derivative Variables

WEIGHTS:

The weights that may have been used to obtain a frequency table for the index. The first is the population weight or the value (weight) ascribed to each child or respondent that corresponds to the number of persons she/he represents in the population. The second is the sample weight, that is, the adjusted weight whose sum is equal to the number of children or respondents in the survey. The sample weight (in bold-face type) was the one used to obtain the frequencies in the table accompanying the description.

Volume 1, Number 1, of this collection and Section 5.1 of this document provide more information on how to use these weights.

DESCRIPTION: Definition of the index or regrouping.

QUESTIONS: Questions and instruments used in creating the index or regrouping. The instruments are identified by:

- OFL Observations of Family Life
- SAQM Self-Administered Questionnaire for the Mother SAQF Self-Administered Questionnaire for the Father
- CQCI Computerized Questionnaire Completed by the Interviewer

^{25.} Excluded are certain indices, such as those covering feeding of the infant, that were not included in the general release of the file INDI101, as well as some derivative variables examined in Numbers 3, 8 and 13 of the ELDEQ collection. Readers interested in obtaining information on the constuction of the indices not included in this report on methodology may contact the Santé Québec division of the ISQ.

VARIABLES OR

- INDICES: Other indices used in creating the index under discussion, if applicable.
- **DERIVATION:** The information shows how the index was constructed, without the reader know having to а programming language. The designations of the variables to those in the correspond database; they are also consistent with those listed in Part II, Section 3.2, Convention of Designating the Variables.

A simple frequency table is presented for each index. In these tables, the total represents the weighted total of respondents to the index, excluding the UNKNOWNs. The category UNKNOWN represents the weighted number of persons who refused to answer (REFUSAL) or who did not know the answer (DOES NOT KNOW). This number is indicated under the total, if applicable.²⁶

For continuous variables, only the minimal and maximal observed values are presented.

²⁶ Note that some variables or categories of variables had low prevalence (less than 3%). We did not regroup the information when it seemed appropriate for the orientation of the analyses. Caution in using these variables is, nonetheless, recommended.

CHARACTERISTICS RELATED TO THE CHILD

BIRTH RANK OF THE CHILD - ARGED01

Population:	All children targeted by ÉLDEQ
Weight:	APOIPCM, APOIPCMM
Description:	Number of children born live to the mother
Question:	This variable comes from the Life Birth Registration Form filled out upon admission for childbirth at a hospital or birthing centre. Stillbirths of 500 g or more are excluded.

Variable "Number of children born from past Derivation: pregnancies" taken from the Master Birth Register + 1 (target child). The attributed code was validated on the basis of other information collected during the survey (for more detailed information, see the section on validation).

Code	Category	n weighted	%
1	1	975	43.9
2	2	875	39.3
3	3	252	11.4
4	4	74	3.3
5	5 and +	47	2.1
	Total	2,223	100.0

GESTATIONAL AGE - AGTED01

Population:	All children targeted by ÉLDEQ				
Weights:	APOIPCM, APOIPCMM				
Description:	Sum of the duration of the pregnancy and the chronological age of the child.				
Variables:	ADGED01 (duration of the pregnancy in weeks, taken from the Master Birth Register and ASMED01 (age of the target child in weeks based on the birth date given during the interview).				

Derivation:

ADGED01 + ASMED01

Code	Category	n weighted	%
56 to 59 ¹	56 to 59 weeks	182	8.2
60	60 weeks	793	35.7
61	61 weeks	711	32.0
62	62 weeks	366	16.4
63	63 weeks	140	6.3
64 and 65'	64 or 65 weeks	31	1.4
	Total	2,223	100.0

1. The data here were regrouped due to small numbers.

PREMATURITY - APEED01

Population:	All children targeted by ELDEC	כ
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Weights: APOIPCM, APOIPCMM

- Description: Children born at a gestational age of less than 37 weeks
- Variable: ADGED01 (duration of the pregnancy taken from the Master Birth Register)
- Derivation: APEED01= 1 if ADGED01 is known and less than 37

If not and if APEED01 is known ADGED01=2

Code	e Category n weighte		%
1	Yes	138	6.2
2	No	2,085	93.8
	Total	2,223	100.0

LOW BIRTH WEIGHT - AMDED13

Population:	All children targeted by ÉLDEQ	
Weights:	APOIPCM, APOIPCMM	
Description;	Children whose birth weight (as reported by the PMK) is less than 2,500 g	
Question:	CQCI-Child, MED-Q13	
Variable:	AMDEQ13	
Derivation:	AMDED13= 1 if AMDEQ13 is known and less than 2,500 g	

If not, if AMDEQ13 is known AMDED13=2

Code	code Category n weighted		%	
1	Yes	95	4.3	
2	No	2,115	95.7	
	Total	2,210	100.0	
	Unknown	13		

NUMBER OF BROTHERS/SISTERS - AREED01

Population: All children targeted by ELDEQ

Weights: APOIPCM, APOIPCMM

Description: Number of brothers or sisters of the target child who usually live in the household, regardless of their age. Included are brothers- and sisters-german, halfbrothers and half-sisters as well as adopted and/or foster brothers and sisters.

Question: CQCI, REL-Q1A

Variables: ARE2Q4 to ARE2Q12

Derivation: To construct this variable, the relationship of the target child to the other members of the household is examined

areed01=0

if are2q4 = F1 or F2 or F3 or F4 or F5 then areed01=areed01+1

if are2q5= F1 or F2 or F3 or F4 or F5 then areed01=areed01+1

if are2q12= F1 or F2 or F3 or F4 or F5 then areed01=areed01+1.

Children with 4 or more brothers/sisters are regrouped due to small numbers.

Note: Some cases had to be recoded a posteriori (n=15) in part because a code other than F1 to F5 (e.g., "LO" for relative) was used to describe the relationship between the target child and the "brother/sister."

Code	Category	n weighted	%	
0	0	927	41.7	
1	1	888	39.9	
2	2	273	12.3	
3	3	93	4.2	
4	4 and +	42	1.9	
	Total	2,223	100.0	

CANADIAN ETHNIC ORIGIN - ASDED4AA

FRENCH ETHNIC	ORIGIN -	ASDED4AB

Population:	All children targeted by ELDEQ	Population:	All children targeted by ÉLDEQ
Weights:	APOIPCM, APOIPCMM	Weights:	APOIPCM, APOIPCMM
Description:	This variable provides a means to identify children of Canadian ethnic origin, regardless of other stated origins. The variables ASDED4AA to ASDED4AG are not exclusive.	Description:	This variable provides a means to identify children of French ethnic origin, regardless of other stated origins. The variables ASDED4AA to ASDED4AG are not exclusive.
Question:	CQCI-Child, SOC-Q4	Question:	CQCI-Child, SOC-Q4
Variable:	ASDEQ04A	Variable:	ASDEQ04B
Derivation:	ASDED4AA =1 if ASDEQ04A=1	Derivation:	ASDED4AB =1 if ASDEQ04B=2

If not, if SOC-Q04 is known ASDED4AA=0

Code	Category	n weighted	%
0	No	713	32.3
1	Yes	1,493	67.7
	Total	2,206	100.0
	Unknown	17	

If not, if SOC-Q04 is known ASDED4AB=0

Code	ode Category n weigh		%	
0 No		1,528	69.3	
1	Yes	678	30.7	
	Total	2,206	100.0	
	Unknown	17	······································	

BRITISH ETHNIC ORIGIN - ASDED4AC

Population: All children targeted by ÉLDEQ

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify children of British ethnic origin (that is, English, Scottish, or Irish), regardless of other stated origins. The variables ASDED4AA to ASDED4AG are not exclusive.
- Question: CQCI-Child, SOC-Q4
- Variables: ASDEQ04C, ASDEQ04E, ASDEQ04F
- Derivation: ASDED4AC =1 if ASDEQ04C=3 or ASDEQ04E=5 or ASDEQ04F=6

If not, if SOC-Q04 is known ASDED4AC=0

Code	Category	n weighted	%
0	No	2,042	92.6
1	Yes	164	7.4
	Total	2,206	100.0
	Unknown	17	

OTHER EUROPEAN ETHNIC ORIGINS - ASDED4AD

C and a	Catanani	n weighted	a/	
	If not, if SOC-Q04	4 is known ASDED4	4AD=0	
	ASDEQ04L=12 ASDEQ04S=19	or ASDE	Q04M=13 or	
Derivation:	ASDED4AD =1 if ASDEQ04H=8 or	ASDEQ04D=4 or ASDEQ04I=9 or A	ASDEQ04G=7 or ASDEQ04K=11 or	
	ASDEQ04K, ASE	EQ04L, ASDEQ04	M, ASDEQ04S	
Variables:	ASDEQ04D, AS	DEQ04G, ASDEQ	04H, ASDEQ04I,	
Question:	CQCI-Child, SOC	C-Q4		
Description:	This variable pro a European ethni that is, Dutch, Portuguese, Ukra stated origins. ASDED4AG are o	vides a means to id ic origin other than German, Italian, linian or Spanish, re The variables not exclusive.	dentify children of French or British, Jewish, Polish, egardless of other ASDED4AA to	
Weights:	APOIPCM, APOI	PCMM		
Population:	All children targeted by ELDEQ			
— • • •	All shifts an example of but the DEC			

Code	Category	n weighted	%
0	No	1,974	89.5
1	Yes	232	10.5
	Total	2,206	100.0
	Unknown	17	

ABORIGINAL ETHNIC ORIGIN - ASDED4AE

AFRICAN/HAITIAN ETHNIC ORIGIN - ASDED4AF

Population:	All children targeted by ELDEQ	Population:	All children targeted by ELDEQ
Weights:	APOIPCM, APOIPCMM	Weights:	APOIPCM, APOIPCMM
Description:	This variable provides a means to identify children of aboriginal ethnic origin, regardless of other stated origins. The variables ASDED4AA to ASDED4AG are not exclusive.	Description:	This variable provides a means to identify children of African or Haitian ethnic origin, regardless of other stated origins. The variables ASDED4AA to ASDED4AG are not exclusive.
Question:	CQCI-Child, SOC-Q4	Question:	CQCI-Child, SOC-Q4
Variable:	ASDEQ04P	Variables:	ASDEQ040, ASDEDQ04T
Derivation:	ASDED4AE =1 if ASDEQ04P=16	Derivation:	ASDED4AF=1 if ASDEQ04O=15 or ASDEQ04T=20

If not, if SOC-Q04 is known ASDED4AE=0

Code	Category	n weighted	%
0	No	2,144	97.2
1	Yes	62	2.8
	Total	2,206	100.0
	Unknown	17	

If not, if SOC-Q04 is known ASDED4AF=0

Code	Category	n weighted	%
0	No	2,128	96.5
1	Yes	78	3.5
	Total	2,206	100.0
	Unknown	17	

OTHER ETHNIC ORIGINS - ASDED4AG

Population: All children targeted by ÉLDEQ

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify children of ethnic origins other than those in variables ASDED4AA to ADSDED4AG. The following origins, regrouped due to small numbers, are included: Chinese or South Asian, Métis, Inuit/Eskimo,²⁷ as well as those given as "Arabic-speaking of Maghreb and of Middle East," "Spanish-speaking of the Americas" and other unspecified origins. The variables ASDED4AA to ASDED4AG are not exclusive.
- Question: CQCI-Child, SOC-Q4
- Variables: ASDEQ04J, ASDEQ04N, ASDEQ04Q, ASDEQ04R ASDEQ04U, ASDEQ04V, ASDEQ04W
- Derivation: ASDED4AG=1 if ASDEQ04J=10 or ASDEQ04N=14 or ASDEQ04Q=17 or ASDEQ04R=18 or ASDEQ04U=21 or ASDEQ04V=22 or ASDEQ04W=23

If not, if SOC-Q04 is known ASDED4AG=0

Code	Category	n weighted	%
0	No	1,828	82.9
1	Yes	378	17.1
	Total	2,206	100.0
	Unknown	17	

^{27.} Eskimo is an older term that has the same meaning as Inuit. The term appeared in the NLSCY instruments but not in the later texts.

PERCEPTION OF CHILD'S DEGREE OF DIFFICULTY BY MOTHER-ATMES01

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: Degree of difficulty of the child according to the PMK. A high score shows that the PMK perceives the child's temperament to be difficult.
- Questions: CQCI-Child, TMP-Q5 to Q8, TMP-Q19, TMP-Q20, TMP-Q33
- Variables: ATMEQ05, ATMEQ06, ATMEQ07, ATMEQ08, ATMEQ19, ATMEQ20, ATMEQ33
- Derivation: If the number of valid responses to ATMEQ05, ATMEQ06, ATMEQ07, ATMEQ08, ATMEQ19, ATMEQ20 and ATMEQ33 is equal to or greater than 5 then:
 - the missing variables were replaced by the mean of the valid variables;
 - ATMES01 = sum of (ATMEQ05, ATMEQ06, ATMEQ07, ATMEQ08, ATMEQ19, ATMEQ20, ATMEQ33) - 7.

If not, ATMES01 is undefined.

Note: The variable ATMES01 was not derived when the respondent to CQCI-Child was the father because he had already filled out these questions in the SAQF (see ATMES03).

Scores vary from 0 to 36.

PERCEPTION OF CHILD'S DEGREE OF DIFFICULTY BY BIOLOGICAL FATHER/SPOUSE LIVING IN THE HOUSEHOLD -ATMES03

Population: All children targeted by ELDEQ whose father, biological or not, is living in the household Weights: APOIQAP, APOIQAPM Description: Degree of difficulty of the child according to the PMK. A high score shows that the PMK perceives the child's temperament to be difficult. Questions: SAQF, Q2 to Q5, Q7, Q8, Q12 Variables: AQPJQ02. AQPJQ03. AQPJQ04, AQPJQ05, AQPJQ07, AQPJQ08, AQPJQ12 Derivation: If the number of valid responses to AQPJQ02, AQPJQ03, AQPJQ04, AQPJQ05, AQPJQ07, AQPJQ08 and AQPJQ12 is equal to or greater than 5 then: the missing variables were replaced by the mean of the valid variables: ATMES03 = sum of (AQPJQ02, AQPJQ03, • AQPJQ04, AQPJQ05, AQPJQ07, AQPJQ08, AQPJQ12) - 7.

If not, ATMES03 is undefined.

Scores vary from 0 to 35.

POSITIVE PARENTING PRACTICES (according to PMK) - APRES01

Population: All children targeted by ÉLDEQ

Weights: APOIPCM, APOIPCMM

Description: The scale of positive parenting practices: A high score reflects a high level of positive interactions between the person who best knows the child (PMK) and the target child approximately 5 months old.

Questions: CQCI-Child, PAR-Q1 to Q3, Q6, Q7A

- Variables: APREQ01, APREQ02, APREQ03, APREQ06, APREQ07A
- Derivation: If the number of valid responses to APREQ01, APREQ02, APREQ03, APREQ06 and APREQ07A is equal to or greater than 5 then:
 - the missing variables were replaced by the mean of the valid variables;
 - APRES01 = sum of (APREQ01, APREQ02, APREQ03, APREQ06, APREQ07A) 5.

If not, APRES01 is undefined.

Scores vary from 7 to 20.

CHARACTERISTICS RELATING TO THE MOTHER

AGE GROUP OF THE MOTHER- AAGMD01

Population:	All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	The mother's age is established on the basis of the date of birth she provides during the interview.
Question:	CQCI, DEM-Q2
Variable:	AAGE_1

Derivation: Regrouped in 6 categories of the variable AAGE_1.

Code	Category	n weighted	%
1	Less than 20 years	74	3.3
2	20-24 years	440	19.8
3	25-29 years	678	30.5
4	30-34 years	723	32.6
5	35-39 years	253	11.4
6	40 years and +	54	2.4
	Total	2,222	100.0
	Unknown	1	

HIGHEST LEVEL OF EDUCATION ATTAINED BY THE MOTHER - AEDMD01

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

Description: This variable deals with the highest level of education attained, regardless of diplomas/degrees obtained. Thus, persons who did not obtain a high school diploma but who did study at the university level are placed in the category "some university."

Questions: CQCI-Mother, EDA-Q1 to Q4

Variables: AEDMQ01, AEDMQ02, AEDMQ03, AEDMQ04

Derivation: AEDMD01=1 if AEDMQ01=1 or (AEDMQ02=2 and AEDMQ03=2)

AEDMD01=2 if AEDMQ02=1 and AEDMQ03=2

AEDMD01=3 if AEDMQ04=1 or AEDMQ04=2 or AEDMQ04=10

AEDMD01=4 if AEDMQ04=4

AEDMD01=5 if AEDMQ04=5

AEDMD01=6 if AEDMQ04=3

AEDMD01=7 if AEDMQ04=6 or AEDMQ04=7 or AEDMQ04=8 or AEDMQ04=9

Note: Cases where the respondent answered "Other (specify)" to question AEDMQ04 were examined one by one (n=41) and placed in another category on the basis of the available information (e.g., for "diploma in massage therapy," AEDMD01=4; for "college (Junior) diploma," AEDMD01=3; for "BA in French," AEDMD01=5, etc.).

Code	Category	n weighted	%
1	No high school diploma	398	17.9
2	High school diploma	252	11.4
3	Some post-secondary study	392	17.7
4	Vocational/Technical school diploma	238	10.7
5	College (Junior) diploma	281	12.6
6	Some university	112	5.1
7	University degree	546	24.6
	Total	2,219	100.0
	Unknown	4	

HIGHEST DIPLOMA/DEGREE ATTAINED BY THE MOTHER - AEDMD02

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable corresponds to the highest diploma/degree obtained.
- Questions: CQCI-Mother, EDA-Q1 to Q4
- Variables: AEDMQ01, AEDMQ02, AEDMQ03, AEDMQ04
- Derivation: AEDMD02=1 if AEDMQ01=1 or AEDMQ02=2

AEDMD02=2 if AEDMQ02=1 and (AEDMQ04=-4 or AEDMQ04=1 or AEDMQ04=2 or AEDMQ04=10)

AEDMD02=3 if AEDMQ02=1 and (AEDMQ04=3 or AEDMQ04=4 or AEDMQ04=5)

AEDMD02=4 if AEDMQ04=6 or AEDMQ04=7 or AEDMQ04=8 or AEDMQ04=9

AEDMD02= missing if AEDMQ01= "Don't know"

Cases where the respondent answered "Other (specify)" were placed in one of the above categories after consideration of the response.

For persons who answered "Some post-secondary Note study" to question EDA-Q4 "What is the highest level of education that you have attained?* the data provide no means to determine with precision the highest level obtained. We used the information on whether the person obtained a high school diploma to classify the case in the first or second category. For persons who said they had some university, we again determined the classification in relation to whether the person received a high school diploma. Thus, we presumed that those who obtained a high school diploma had followed the normal path and obtained a college (Junior) diploma. Those who did not have a high school diploma were placed in the first category, that is, no high school diploma.

Code	Category	n weighted	%
1	No high school diploma	448	20.2
2	High school diploma	597	26.9
3	Post-secondary level study	628	28.3
4	University degree	546	24.6
	Total	2,219	100.0
	Unknown	4	

PAID WORK AT THE TIME OF THE SURVEY (MOTHER) - ALFMD1A

Population: All children targeted by ELDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable aims to identify mothers who were working when the survey was conducted, regardless of the type of employment.
- Questions: CQCI-Mother, LFS-Q1, LFS-Q8
- Variables: ALFMD01, ALFMD08
- Derivation: ALFMD1A = 1 if ALFMD01=2 or ALFMD01=3 or ALFMD08=1

If not, if ALFMD01 and ALFMD08 are known, ALFMD1A=0

Note: Filter errors introduced during programming made it necessary to restructure *a posteriori* the information collected for Section LFS. The data for Section MED on the mother's employment since the birth were used to verify the accuracy of the responses. We ensured, for example, that mothers who answered "No" to question LFS-Q08 "Are you currently working at a job or a business?" also declared that they had not worked since the birth of the child (AMDEQ29= NO).

Code	Category	n weighted	%
0	No	1,812	82.7
1	Yes	378	17.3
·····	Total	2,190	100.0
	Unknown	33	

PAID WORK IN THE YEAR PRECEDING THE SURVEY (MOTHER) - ALFMD1B

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: Employment status over the 12 months preceding the survey. In contrast to the preceding variable, this derivative variable focuses on the type of work. Considered to have held a job during the year preceding the survey are mothers who answered "Working for pay or profit" or "Caring for family, paid parental leave" to question LFS-Q1 "What do you consider to be your main activity currently? (For example, working for pay, caring for family.)" as well as mothers who answered in the affirmative to question LFS-Q2 "Have you worked for pay or profit at any time in the past 12 months?".
- Questions: CQCI-Mother, LFS-Q1, LFS-Q2
- Variables: ALFMD01, ALFMD02
- Derivation: ALFMD1B=1 if ALFMD01=2 or ALFMD01=3 or ALFMD02=1

If not, if ALFMD01 and ALFMD02 are known, ALFMD1B=0

Code	Category	n weighted	%
0	No	719	32.6
1	Yes	1,487	67.4
	Total	2,206	100.0
	Unknown	17	

MAIN EMPLOYMENT STATUS OF THE MOTHER - ALFMD1C

- Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
- Weights: APOIPCM, APOIPCMM
- Description: Mother's main work status during the 12 months preceding the survey.
- Questions: CQCI-Mother, LFS-Q1, LFS-Q2, LFS-Q4
- Variables: ALFMQ04, ALFMD18
- Derivation: ALFMD1C=-4 (not applicable) if ALFMD1B=0

ALFMD1C=1 if ALFMQ04=1 or ALFMQ04=2 or ALFMQ04=3

ALFMD1C=2 if ALFMQ04=4 or ALFMQ04=5 or ALFMQ04=6

Code	Category	n weighted	%
-4	Not applicable (not employed)	719	32.7
1	Part time	359	16.4
2	Full time	1,119	50.9
	Total	2,197	100.0
	Unknown	26	

IMMIGRANT STATUS (MOTHER) - ASDMD3A

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: The immigrant status corresponds to the typology developed by Chen et al (1996). The first category covers persons born in Canada, regardless of their ethnic origin. The second category includes persons born in the United States, Australia, New Zealand or in Europe. The third category includes those born in all other countries.
- Questions: CQCI-Mother, SOC-Q1, SOC-Q2
- Variables: ASDMQ01, ASDMQ2AA
- Derivation: ASDMQ01=COUNTRY OF BIRTH and ASDMQ2AA=CITIZENSHIP

ASDDMD1A=1 if ASDMQ01=1 (born in Canada) or ASDMQ2AA=1 (Canadian citizen by birth)

ASDMD1A=2 if ASDMQ01=3, 4, 5, 8, 10, 12, 14, 15, 16, 17

ASDMD1A=3 if ASDMQ01=2, 6, 7, 9, 11, 13, 18, 19

Code	Category	n weighted	%
1	Not an immigrant	1,877	84.5
2	European immigrant	73	3.3
3	Non-European immigrant	271	12.2
	Total	2,221	100.0
	Unknown	2	
NUMBER OF YEARS SINCE FIRST IMMIGRATION (MOTHER) - ASDMD3A

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

Description: Number of years since immigrating for the first time to Canada

Question: CQCI-Mother, SOC-Q3

Variable: ASDMO03

Derivation: Not an immigrant if ASDMQ03=-4 (not applicable)

Otherwise, if SOC-Q3 is known, the value 1998-ASDMQ03 is regrouped in three categories.

Code	Category	n weighted	%
-4	Not an immigrant	1,877	84.5
1	Less than 5 years	119	5.3
2	5-9 years	107	4.8
3	10 years and over	118	5.3
	Total	2,221	100.0
	Unknown	2	

CANADIAN ETHNIC ORIGIN (MOTHER) - ASDMD4AA

Population:	All children targeted by ELDEQ whose mother, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	This variable provides a means to identify mothers of Canadian ethnic origin, regardless of other stated origins. The variables ASDMD4AA to ASDMD4AG are not exclusive.
Question:	CQCI-Mother, SOC-Q4
Variable:	ASDMQ04A
Derivation:	ASDMD4AA =1 if ASDMQ04A=1 if not ASDMD4AA=0

Code	Code Category n weighted		%	
0	No	893	40.5	
1	Yes	1,312	49.5	
	Total	2,205	100.0	
	Unknown	18	······	

FRENCH ETHNIC ORIGIN (MOTHER) - ASDMD4AB

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify mothers of French ethnic origin, regardless of other stated origins. The variables ASDMD4AA to ASDMD4AG are not exclusive.
- Question: CQCI-Mother, SOC-Q4

Variable: ASDMQ04B

Derivation: ASDMD4AB =1 if ASDMQ04B=2 if not ASDMD04B=0

Code	Category	n weighted	%
0	No	1,590	72.1
1	Yes	615	27.9
	Total	2,205	100.0
	Unknown	18	

BRITISH ETHNIC ORIGIN (MOTHER) - ASDMD4AC

Population:	All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	This variable provides a means to identify mothers of British ethnic origin (English, Scottish or Irish), regardless of other stated origins. The variables ASDMD4AA to ASDMD4AG are not exclusive.
Question:	CQCI-Mother, SOC-Q4
Variables:	ASDMQ04C, ASDMQ04E, ASDMD04F
Derivation:	ASDMQ4AC=1 if ASDMQ04C=3 or ASDMQ04E=5 or ASDMQ04F=6 if not ASDMQ4AC=0

Code	Category	n weighted	%
0	No	2,027	91.9
1	Yes	179	8.1
	Total	2,205	100.0
	Unknown	18	

OTHER EUROPEAN ETHNIC ORIGINS (MOTHER) - ASDMD4AD

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

Description: This variable provides a means to identify mothers whose ethic origin is other than French or British, that is, of Dutch, German, Italian, Jewish, Polish, Portuguese, Ukrainian or Spanish, regardless of other stated origins. The variables ASDMD4AA to ASDMD4AG are not exclusive.

Question: CQCI-Mother, SOC-Q4

Variables: ASDMQ04D, ASDMQ04G, ASDMQ04H, ASDMQ04I, ASDMQ04K, ASDMQ04L, ASDMQ04M, ASDMQ04S

Derivation: ASDMD4AD=1 if ASDMQ04D=4 or ASDMQ04G=7 or ASDMQ04H=8 or ASDMQ04I=9 or ASDMQ04K=11 or ASDMQ04L=12 or ASDMQ04M=13 or ASDMQ04S=19 if not ASDMD4AD=0

Code	Category	n weighted	%
0	No	2,024	91.8
1	Yes	181	8.2
	Total	2,205	100.0
	Unknown	18	

ABORIGINAL ETHNIC ORIGIN (MOTHER) - ASDMD4AE

Population:	All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	This variable provides a means to identify mothers of aboriginal ethnic origin, regardless of other stated origins. The variables ASDMD4AA to ASDMD4AG are not exclusive.
Question:	CQCI-Mother, SOC-Q4
Variable:	ASDMQ04P
Derivation:	ASDMD4AE=1 if ASDMQ04P=16 if not ASDMD4AE=0

Code	Category	n weighted	%
0	No	2,136	96.9
1	Yes	69	3.1
	Total	2,205	100.0
	Unknown	18	

AFRICAN/HAITIAN ETHNIC ORIGIN (MOTHER) - ASDMD4AF

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify mothers whose ethnic origin is African or Haitian, regardless of other stated origins. The variables ASDMD4AA to ASDMD4AG are not exclusive.
- Question: CQCI-Mother, SOC-Q4

Variables: ASDMQ04O, ASDMQ04T

Derivation: ASDMD4AF=1 if ASDMQ04O=15 or ASDMQ04T=20 if not ASDMD4AF=0

Code	Category	n weighted	%
0	No	2,147	97.4
	Yes	58	2.6
	Total	2,205	100.0
	Unknown	18	

OTHER ETHNIC ORIGINS (MOTHER) - ASDMD4AG

Total

Unknown

Pop	oulation:	All children targe biological or not, is	eted by ÉLDEQ s living in the house	whose mother, hold
We	ights:	APOIPCM, APOIP	CMM	
Des	scription:	This variable provides a means to identify mothers whose ethnic origin is other than those included in the variables ASDMD4AA to ADSDMD4AG. The following origins, regrouped due to small numbers, are included: Chinese or South Asian, Métis, Inuit as well as those given as "Arabic-speaking of Maghreb and of Middle East," "Spanish-speaking of the Americas" and other unspecified origins. The variables ASDED4AA to ASDED4AG are not exclusive.		
Qu	estion:	CQCI-Mother, SO	C-Q4	
Va	riables:	ASDMQ04J, ASD ASDMQ04U, ASD	MQ04N, ASDMQ04 MQ04V, ASDMQ0	4Q, ASDM Q04R, 4W
De	Derivation: ASDMD4AG=1 if ASDMQ04J=10 or SDMQ04N=14 or ASDMQ04Q=17 or ASDMQ04R=18 or ASDMQ04U=21 or ASDMQ04V=22 or ASDMQ04W=23			
[Code	Category	n weighted	%
	0	No	1,866	84.6
	1	Yes	33 9	15.4

2,205

18

100.0

LANGUAGE(S) OF CONVERSATION (MOTHER) - ASDMD05

- Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
- Weights: APOIPCM, APOIPCMM
- Question: CQCI-Mother, SOC-Q5
- Variables: ASDMQ05A to ASDMQ05S
- Derivation: ASDMD05=1 if ASDMQ05A=1 or ASDMQ05B=2 and ASDMQ05C to ASDMQ05S=0

ASDMD05=2 if ASDMQ05A=1 and ASDMQ05B=2 and ASDMQ05C to ASDMQ05C=0

ASDMD05=3 if ASDMQ05A=1 and ASDMQ05B=2 and (ASDMQ05C=3 or ASDMQ05D=4 or ASDMQ05S=19)

ASDMD05=4 if ([ASDMQ05A=1 and ASDMQ05B=0) or (ASDMQ05A=0 and ASDMQ05B=2]) and (ASDMQ05C=3 or ASDMQ05D=4 or ASDMQ05S=19)

ASDMD05=UNKNOWN if one of the variables ASDMQ05A to ASDMQ05S is missing.

Code	Category	n weighted	%
1	French or English only	1,035	46.6
2	French and English only	785	35.3
3	French and English + other language(s)	217	9.8
4	French or English + other language(s)	184	8.3
	Total	2,221	100.0
	Unknown	2	

FIRST LANGUAGE(S) LEARNED BY THE MOTHER - ASDMD06

- Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
- Weights: APOIPCM, APOIPCMM
- Question: CQCI-Mother, SOC-Q6
- Variables: ASDMQ06A to ASDMQ06S
- Derivation: ASDMD06=1 if ASDMQ06B=2

ASDMD06=2 if ASDMQ06A=1 and ASDMQ06B=0

ASDMD06=3 if ASDMQ06A=0 and ASDMQ06B=0 and (ASDMQ06C=3 or ASDMQ06D=4 or ASDMQ06S=19)

ASDMD6A= UNKNOWN if one of the variables ASDMQ06A to ASDMQ06S is missing

Code	Category	n weighted	%
1	French	1,695	76.3
2	English (no French)	193	8.7
3	Neither French nor English	333	15.0
	Total	2,221	100.0
	Unknown	2	

Note: The categories are exclusive. The first category includes mothers for whom one of the first languages learned was French. The second category comprises mothers who learned English only or English and some other language (not including French). Mothers whose maternal language (first language learned) is neither French nor English are regrouped in the third category.

LANGUAGE(S) SPOKEN MOST OFTEN AT HOME BY THE MOTHER - ASDMD6A

- Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
- Weights: APOIPCM, APOIPCMM
- Question: CQCI-Mother, SOC-Q6A
- Variables: ASDMQ6AA, ASDMQ6AB, ASDMQ6AC
- Derivation: The three variables used to calculate this index have the values 0 or 1; 0 or 2 and 0 or 3, respectively. To calculate this variable, the following equation may be used:

First, if ASDMD6A=missing

LANGUEM=ASDMQ6AA + (10*ASDMQ6AB) + (100*ASDMQ6AC)

Thus,

ASDMD6A=1 if LANGUEM=20

ASDMD6A=2 if LANGUEM=1

ASDMD6A=3 if LANGUEM=300

ASDMD6A=4 if LANGUEM=21

ASDMD6A=5 if LANGUEM=301 or LANGUEM=320 or LANGUEM=321

Otherwise ASDMD6A=UNKNOWN

Code	Category	n weighted	%
1	French only	1,689	76.0
2	English only	249	11.2
3	Neither French nor English	198	8.9
4	French and English only	40	1.8
5	French or English + other language(s)	45	2.0
	Total	2,221	100.0
	Unknown	2	

CONJUGAL SUPPORT PERCEIVED BY THE MOTHER - ASOMS01

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: Scale from 0 (Not at all) to 10 (Totally)
- Questions: SAQM, Q49 to Q53

Variables: AQMMQ49 to AQMMQ53

Derivation: If the number of valid responses to AQMMQ49, AQMMQ50, AQMMQ51, AQMMQ52, AQMMQ53 is equal to or greater than 3 then:

ASOMS01 = mean of (AQMMQ49, AQMMQ50, AQMMQ51, AQMMQ52, AQMMQ53).

If not, ASOMS01 is undefined.

Scores vary from 0 to 10.

REPORTED LEVEL OF SYMPTOMS OF DEPRESSION (MOTHER) - ADPMS01

- Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
- Weights: APOIPCM, APOIPCMM
- Description: Scale from 0 to 36
- Questions: CQCI-PMK, HLA-Q12A to HLA-Q12M
- Variables: AHLMQ12A to AHLMQ12M
- Derivation: If AHLMQ12F=1, 2, 3 or 4 then AHLMQ12F=5 - AHLMQ12F
 - If AHLMQ12H=1, 2, 3 or 4 then AHLMQ12H=5 AHLMQ12H
 - If AHLMQ12J=1, 2, 3 or 4 then AHLMQ12J=5 AHLMQ12J
 - If the number of valid responses to AHLMQ12A, AHLMQ12B, AHLMQ12C, AHLMQ12D, AHLMQ12E, AHLMQ12F, AHLMQ12G, AHLMQ12H, AHLMQ12I, AHLMQ12J, AHLMQ12K, AHLMQ12L and AHLMQ12M is equal to or greater than 6 then:
 - the missing variables were replaced by the mean of the valid variables;

- ADPMS01= sum of (AHLMQ12A, AHLMQ12B, AHLMQ12C, AHLMQ12D, AHLMQ12E, AHLMQ12F, AHLMQ12G, AHLMQ12H, AHLMQ12I, AHLMQ12J, AHLMQ12K, AHLMQ12L and AHLMQ12M) - 13.
- If not, ADPMS01 is undefined.
- Note: The variable ADPMS01 was not derived when the PMK was the father because he answered these questions in the SAQF (see ADPJS01).

Scores vary from 0 to 36.

FEELING OF SELF-EFFICACY (MOTHER) - APAMS01

Population:	All	children	targeted	by	ÉLDEQ	whose	mother,
	biol	ogical or i	not, is livin	g in	the house	ehold	

Weights: APOIPCM, APOIPCMM

- Description: Scale from 0 (Not at all) to 10 (Exactly)
- Questions: SAQM, Q23, Q25, Q27, Q29, Q32, Q47
- Variables: AQMMQ23, AQMMQ25, AQMMQ27, AQMMQ29, AQMMQ32, AQMMQ47
- Derivation: If the number of valid responses to AQMMQ23, AQMMQ25, AQMMQ27, AQMMQ29, AQMMQ32 and AQMMQ47 is equal to or greater than 4 then:

APAMS01 = mean of (AQMMQ23, AQMMQ25, AQMMQ27, AQMMQ29, AQMMQ32, AQMMQ47).

If not, APAMS01 is undefined.

Scores vary from 0.8 to 10.

PERCEPTION OF PARENTAL IMPACT (MOTHER) - APAMS02

Population:	All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	Scale from 0 (Not at all) to 10 (Exactly)
Questions:	SAQM, Q22, Q31, Q37, Q42, Q45
Variables:	Aqmmq22, Aqmmq31, Aqmmq37, Aqmmq42, Aqmmq45
Derivation:	If the number of valid responses to AQMMQ22, AQMMQ31, AQMMQ37, AQMMQ42 and AQMMQ45 is equal to or greater than 3 then:
	APAMS02≃10 - mean of (AQMMQ22, AQMMQ31, AQMMQ37, AQMMQ42, AQMMQ45).
	If not, APAMS02 is undefined.

Scores vary from 0 to 10.

COERCIVE TENDENCIES (MOTHER) - APAMS03

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: Scale from 0 (Not at all) to 10 (Exactly)
- Questions: SAQM, Q26, Q28, Q30, Q33, Q36, Q40, Q43
- Variables: AQMMQ26, AQMMQ28, AQMMQ30, AQMMQ33, AQMMQ36, AQMMQ40, AQMMQ43
- Derivation: If the number of valid responses to AQMMQ26, AQMMQ28, AQMMQ30, AQMMQ33, AQMMQ36, AQMMQ40 and AQMMQ43 is equal to or greater than 4 then:

APAMS03 = mean of (AQMMQ26, AQMMQ28, AQMMQ30, AQMMQ33, AQMMQ36, AQMMQ40, AQMMQ43).

If not, APAMS03 is undefined.

Scores vary from 0 to 8.8.

PARENTAL AFFECTION/PLEASURE (MOTHER) - APAMS04

Population:	All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	Scale from 0 (Not at all) to 10 (Exactly)
Questions:	SAQM, Q22A, Q22B, Q46A, Q46B, Q46C
Variables:	AQMMQ22A, AQMMQ22B, AQMMQ46A, AQMMQ46B, AQMMQ46C
Derivation:	If the number of valid responses to AQMMQ22A, QMMQ22B, AQMMQ46A, AQMMQ46B, AQMMQ46C is equal to or greater than 3 then:
	APAMS04 = mean of (AQMMQ22A, QMMQ22B, AQMMQ46A, AQMMQ46B, AQMMQ46C).
	If not, APAMS04 is undefined.

Scores vary from 1 to 10.

PARENTAL OVERPROTECTION (MOTHER) - APAMS05

Population: All children targeted by ÉLDEQ whose mother, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: Scale from 0 (Not at all) to 10 (Exactly)
- Questions: SAQM, Q34, Q38, Q39, Q41, Q44
- Variables: AQMMQ34, AQMMQ38, AQMMQ39, AQMMQ41, AQMMQ44
- Derivation: If the number of valid responses to AQMMQ34, AQMMQ38, AQMMQ39, AQMMQ41 and AQMMQ44 is equal to or greater than 3 then:

APAMS05 = mean of (AQMMQ34, AQMMQ38, AQMMQ39, AQMMQ41 and AQMMQ44).

If not, APAMS05 is undefined.

Scores vary from 0 to 10.

PERCEPTION OF CHILD'S QUALITIES (MOTHER) - APAMS06

Population:	All children targeted by ÉLDEQ whose mother, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	Scale from 0 (Not at all) to 10 (Exactly)
Questions:	SAQM, Q21, Q24, Q35, Q46
Variables:	AQMMQ21, AQMMQ24, AQMMQ35, AQMMQ46
Derivation:	If the number of valid responses to AQMMQ21, AQMMQ24, AQMMQ35 and AQMMQ46 is equal to or greater than 3 then:
	APAMS06= mean of (AQMMQ21, AQMMQ24, AQMMQ35 and AQMMQ46).
	If not, APAMS06 is undefined.

Scores vary from 0 to 10.

CHARACTERISTICS RELATING TO THE FATHER OR SPOUSE/PARTNER LIVING IN THE HOUSEHOLD

AGE GROUP OF FATHER/CURRENT PARTNER - AAGJD01

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

Description: The age of the father or current spouse/partner is based on the date of birth provided during the interview.

Question: CQCI, DEM-Q2

Variable: AAGE_3

Derivation:	Regrouped	in (6 categories	of	the	variable	AAGE_3	3
	(file SOCIO	101)					

Code	Category	n weighted	%
1	Less than 25 years	173	8.6
2	25-29 years	545	27.0
3	30-34 years	693	34.3
4	35-39 years	437	21.6
5	40 years and +	173	8.6
	Total	2,021	100.0
	Unknown	202	

HIGHEST LEVEL OF EDUCATION ATTAINED BY THE FATHER/CURRENT SPOUSE - AEDJD01

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable deals with the highest level of education attained, regardless of diplomas/degrees obtained. Thus, persons who did not obtain a high school diploma but who did study at the university level are placed in the category "some university study."
- Questions: CQCI-Father, EDA-Q1 to Q4
- Variables: AEDJQ01, AEDJQ02, AEDJQ03, AEDJQ04
- Derivation: AEDJD01=1 if AEDJQ01=1 or (AEDJQ02=2 and AEDJQ03=2)

AEDJD01=2 if AEDJQ02=1 and AEDJQ03=2

AEDJD01=3 if AEDJQ04=1 or AEDJQ04=2 or AEDJQ04=10

AEDJD01=4 if AEDJQ04=4

AEDJD01=5 if AEDJQ04=5

AEDJD01=6 if AEDJQ04=3

AEDJD01=7 if AEDJQ04= 6 or AEDJQ04=7 or AEDJQ04=8 or AEDJQ04=9

Note: Cases where the respondent answered "Other (specify)" to question AEDMQ04 were examined one by one and placed in another category on the basis of the available information (e.g., for "diploma in massage therapy," AEDMD01=4; for "college (Junior) diploma," AEDMD01=3; for "BA in French," AEDMD01=5, etc.).

Code	Category	n weighted	%
1	No high school diploma	351	17.6
2	High school diploma	254	12.7
3	Some post-secondary study	337	16.8
4	Vocational/Technical school diploma	231	11.5
5	College (Junior) diploma	242	12.1
6	Some university	92	4.6
7	University degree	493	24.7
	Total	2,000	100.0
	Unknown	223	

HIGHEST DIPLOMA/DEGREE ATTAINED BY THE FATHER/CURRENT PARTNER - AEDJD02

Population: All children targeted by ELDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable corresponds to the highest diploma/degree obtained.
- Questions: CQCI-Father, EDA-Q1 to Q4
- Variables: AEDJQ01, AEDJQ02, AEDJQ03, AEDJQ04
- Derivation: AEDJD02=1 if AEDJQ01=1 or AEDJQ02=2

AEDJD02=2 if AEDJQ02=1 and (AEDJQ04=-4 or AEDJQ04=1 or AEDJQ04=2 or AEDJQ04=10)

AEDJD02=3 if AEDJQ02=1 and (AEDJQ04=3 or AEDJQ04=4 or AEDJQ04=5)

AEDJD02=4 if AEDJQ04=6 or AEDJQ04=7 or AEDJQ04=8 or AEDJQ04=9

AEDJD02= missing if AEDJQ01= "Don't know"

Cases where the respondent answered "Other (specify)" were placed in one of the above categories after consideration of the response.

Note: For persons who answered "Some post-secondary study" to question EDA-Q4 "What is the highest level of education that you have attained?" the data provide no means to determine with precision the highest level obtained. We used the information on whether the person obtained a high school diploma to classify the case in the first or second category. For those who said they had some university, we again determined the classification in relation to whether the person received a high school diploma. Thus, we presumed that those who obtained a high school diploma had followed the normal path and obtained a college (Junior) diploma. Those who did not have a high school diploma were placed in the first category, that is, no high school diploma.

Code	Category	n weighted	%
1	No high school diploma	414	20.7
2	High school diploma	529	26.4
3	Post-secondary level diploma	563	28.2
4	University degree	494	24.7
	Total	2,000	100.0
	Unknown	223	

PAID WORK AT THE TIME OF THE SURVEY (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ALFJD1A

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify fathers or current spouse/partners who were working when the survey was conducted, regardless of the type of employment.
- Questions: COCI-Father, LFS-Q1, LFS-Q8
- Variables: ALFJD01, ALFJD08
- Derivation: ALFJD1A=1 if ALFJD01=2 or ALFJD01=3 or ALFJD08=1 if not, if ALFJD01 and ALFJD08 are known, ALFJD1A=0

Code	Category	n weighted	%
0	No	257	12.8
1	Yes	1,760	87.2
	Total	2,017	100.0
www	Unknown	206	

PAID WORK DURING 12 MONTHS PRECEDING THE SURVEY (FATHER/CURRENT SPOUSE) - ALFJD1B

- All children targeted by ÉLDEQ whose father, Population: biological or not, is living in the household Weights: APOIPCM, APOIPCMM Description: Employment status over the 12 months preceding the survey. In contrast to the preceding variable, this derivative variable focuses on the type of work. Considered to have held a job during the year preceding the survey are fathers or current spouse/partners who answered "Working for pay or profit" or "Caring for family, paid parental leave" to question LFS-Q1 "What do you consider to be your main activity currently? (For example, working for pay, caring for family)" as well as fathers or spouses/partners who answered in the affirmative to question LFS-Q2 "Have you / has he worked for pay or profit at any time in the past 12 months?".
- Questions: CQCI-Father, LFS-Q1, LFS-Q2
- Variables: ALFJD01, ALFJD02
- Derivation: ALFJD1B=1 if ALFJD01=2 or ALFJD01=3 or ALFJD02=1 if not, if ALFJD01 and ALFJD02 are known, ALFJD1B=0

Code	Category	n weighted	%
0	No	119	5.9
1	Yes	1,892	94.1
	Total	2,011	100.0
	Unknown	212	

EMPLOYMENT STATUS OF THE PRINCIPAL EMPLOYMENT OF THE FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ALFJD1C

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: Work status of the principal employment during the 12 months preceding the survey.
- Questions: CQCI-Father, LFS-Q1, LFS-Q2, LFS-Q4
- Variables: ALFJQ04, ALFJD1B
- Derivation: ALFJD1C=-4 (not applicable) if ALFJD1B=0

ALFJD1C=1 if ALFJQ04=1 or ALFJQ04=2 or ALFJQ04=3

ALFJD1C=2 if ALFJQ04=4 or ALFJQ04=5 or ALFJQ04=6

Code	Category	n weighted	%
-4	Not applicable (not employed)	119	5.9
1	Part time	73	3.7
2	Full time	1,811	90.4
	Total	2,003	100.0
	Unknown	220	

IMMIGRANT STATUS (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD1A

- Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household Weights: APOIPCM, APOIPCMM Description: The immigrant status corresponds to the typology developed by Chen et al (1996). The first category covers persons born in Canada, regardless of their ethnic origin. The second category includes persons born in the United States, Australia, New Zealand or in Europe. The third category includes those born in all other countries. Questions: COCI-Father, SOC-Q1, SOC-Q2 Variables: ASDJQ01, ASDJQ2AA
- Derivation: ASDJQ01=COUNTRY OF BIRTH AND ASDJQ2AA=CITIZENSHIP

ASDJD1A=1 if ASDJQ01=1 (born in Canada) or ASDJQ2AA=1 (Canadian citizen by birth)

ASDJD1A=2 if ASDJQ01=3, 4, 5, 8, 10, 12, 14, 15, 16,17

ASDJD1A=3 if ASDJQ01=2, 6, 7, 9, 11, 13, 18, 19

Code	Category	n weighted	%
1	Not an immigrant	1,698	84.1
2	European immigrant	65	3.2
3	Non-European immigrant	255	12.7
	Total	2,018	100.0
	Unknown	205	

NUMBER OF YEARS SINCE FIRST IMMIGRATION (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD3A

Population:	All biolo	children gical or n	targeted ot, is living	by g in t	ÉLDEQ he housel	whose hold	father,
Weights:	APO	IPCM, A	POIPCMM				

- Description: Number of years since the first immigration to Canada
- Question: CQCI-Father, SOC-Q3

Variable: ASDJQ03

Derivation: Not an immigrant if ASDJQ03=-4 (not applicable)

Otherwise, if SOC-Q3 is known, the value 1998-ASDJQ03 is regrouped in three categories.

Code	Category	n weighted	%
-4	Not an immigrant	1,698	84.4
1	Less than 5 years	88	4,4
2	5-9 years	78	3.9
3	10 years and +	148	7.3
	Total	2,012	100.0
	Unknown	211	

CANADIAN ETHNIC ORIGIN (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD4AA

Population:	All children targeted by ÉLDEQ whose father, biological or not, is living in the household
Weights:	APOIPCM, APOIPCMM
Description:	This variable provides a means to identify fathers of Canadian ethnic origin, regardless of other stated origins. The variables ASDJD4AA to ASDJD4AG are not exclusive.
Question:	CQCI-Father, SOC-Q4
Variable:	ASDJQ04A
Derivation:	ASDJD4AA =1 if ASDJQ04A=1 if not ASDJD4AA=0

Code	Category	n weighted	%
0	Non	758	38.0
1	Yes	1,239	62.0
	Total	1,997	100.0
	Unknown	226	

FRENCH ETHNIC ORIGIN (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD4AB

Population:	All	children	targeted	by	ÉLDEQ	whose	father,
	biol	ogical or r	not, is living	g in t	he housel	hold	

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify fathers of French ethnic origin, regardless of other stated origins. The variables ASDJD4AA to ASDJD4AG are not exclusive.
- Question: CQCI-Father, SOC-Q4
- Variable: ASDJQ04B

Derivation: ASDJD4AB =1 if ASDJQ04B=2 if not ASDJD04B=0

Code	Category	n weighted	%
0	No	1,427	71.5
1	Yes	570	28.5
	Total	1,997	100.0
	Unknown	226	

BRITISH ETHNIC ORIGIN (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD4AC

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household Weights: APOIPCM, APOIPCMM Description: This variable provides a means to identify fathers of British ethnic origin (that is, English, Scottish or Irish), regardless of other stated origins. The variables ASDJD4AA to ASDJD4AG are not exclusive. Question: CQCI-Father, SOC-Q4 Variables: ASDJQ04C, ASDJQ04E, ASDJQ04F Derivation: ASDJQ4AC=1 if ASDJQ04C=3 or ASDJQ04E=5 or ASDJQ04F=6 if not ASDJQ4AC=0

Code	Category	n weighted	%
0	No	1,874	93.8
1	Yes	123	6.2
	Total	1,997	100.0
	Unknown	226	

OTHER EUROPEAN ETHNIC ORIGINS (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD4AD

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

Description: This variable provides a means to identify fathers of European ethnic origin other than French or British, that is, Dutch, German, Italian, Jewish, Polish, Portuguese, Ukrainian or Spanish, regardless of other stated origins. The variables ASDJD4AA to ASDJD4AG are not exclusive.

Question: CQCI-Father, SOC-Q4

- Variables: ASDJQ04D, ASDJQ04G, ASDJQ04H, ASDJQ04I, ASDJQ04K, ASDJQ04L, ASDJQ04M, ASDMQ04S
- Derivation: ASDJD4AD=1 if ASDJQ04D=4 or ASDJQ04G=7 or ASDJQ04H=8 or ASDJQ04I=9 or ASDJQ04K=11 or ASDJQ04L=12 or ASDJQ04M=13 or ASDJQ04S=19

If not ASDJD4AD=0

Code	Category	n weighted	%
0	No	1,843	92.3
1	Yes	154	7.7
	Total	1,997	100.0
	Unknown	226	

ABORIGINAL ETHNIC ORIGIN (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD4AE

All children targeted by ÉLDEQ whose father, Population: biological or not, is living in the household Weights: APOIPCM, APOIPCMM This variable provides a means to identify fathers of Description: aboriginal origin, regardless of other stated origins, The variables ASDJD4AA to ASDJD4AG are not exclusive. Question: CQCI-Father, SOC-Q4 Variable: ASDJQ04P Derivation: ASDJD4AE=1 if ASDJQ04P=16 if not ASDJD4AE=0

Code	Category	n weighted	%
0	No	1,943	97.3
1	Yes	54	2.7
	Total	1,997	100.0
	Unknown	226	

AFRICAN/HAITIAN ETHNIC ORIGIN (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD4AF

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify fathers of African or Haitian ethnic origin, regardless of other stated origins. The variables ASDJD4AA to ASDJD4AG are not exclusive.
- Question: CQCI-Father, SOC-Q4
- Variables: ASDJQ040, ASDJQ04T
- Derivation: ASDJD4AF=1 if ASDJQ04O=15 or ASDJQ04T=20

If not ASDJD4AF=0

Code	Category	n weighted	%
0	No	1,951	97.7
1	Yes	46	2.3
	Total	1,997	100.0
	Unknown	226	

OTHER ETHNIC ORIGINS (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD4AG

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIPCM, APOIPCMM

Description: This variable provides a means to identify fathers whose ethnic origin is other than those included in the variables ASDMD4AA to ADSDMD4AG. The following origins, regrouped due to small numbers, are included: Chinese or South Asian, Métis, Inuit as well as those given as "Arabic-speaking of Maghreb and of Middle East," "Spanish-speaking of the Americas" and other unspecified origins. The variables ASDED4AA to ASDED4AG are not exclusive.

- Question: CQCI-Father, SOC-Q4
- Variables: ASDJQ04J, ASDJQ04N, ASDJQ04Q, ASDJQ04R, ASDJQ04U, ASDJQ04V, ASDJQ04W

Derivation: ASDJD4AG=1 if ASDJQ04J=10 or ASDJQ04N=14 or ASDJQ04Q=17 or ASDJQ04R=18 or ASDJQ04U=21 or ASDJQ04V=22 or ASDJQ04W=23

Code	Category	n weighted	%
0	No	1,703	85.3
1	Yes	294	14.7
	Total	1,997	100.0
	Unknown	226	

LANGUAGE(S) OF CONVERSATION OF FATHER/SPOUSE LIVING IN THE HOUSEHOLD - ASDJD05

- Population: All children targeted by ELDEQ whose father, biological or not, is living in the household
- Weights: APOIPCM, APOIPCMM
- Question: CQCI-Father, SOC-Q5
- Variables: ASDJQ05A to ASDJQ05S
- Derivation: ASDJD05=1 if ASDJQ05A=1 or ASDJQ05B=2 and ASDJQ05C to ASDJQ05S=0

ASDJD05=2 if ASDJQ05A=1 and ASDJQ05B=2 and ASDJQ05C to ASDJQ05S=0

ASDJD05=3 if ASDJQ05A=1 and ASDJQ05B=2 and (ASDJQ05C=3 or ASDJQ05D=4 or ASDJQ05S=19)

ASDJD05=4 if ([ASDJQ05A=1 and ASDJQ05B=0) or (ASDJQ05A=0 and ASDJQ05B=2]) and (ASDJQ05C=3 or ASDJQ05D=4 or ASDJQ05S=19)

ASDJD05= UNKNOWN if one of the variables ASDJQ05A to ASDJQ05S is missing

Code	Category	n weighted	%
1	French or English only	851	42.2
2	French and English only	805	39.9
3	French and English + other language(s)	238	11.8
4	French or English + other language(s)	124	6.1
	Total	2,018	100.0
	Unknown	205	

FIRST LANGUAGE(S) LEARNED BY THE FATHER/SPOUSE LIVING THE HOUSEHOLD - ASDJD06

Population: All children targeted by ÉLDEQ whose father, biological or not, is fiving in the household

Weights: APOIPCM, APOIPCMM

Question: COCI-Father, SOC-Q6

Variables: ASDJQ06A to ASDJQ06S

Derivation: ASDJD06=1 if ASDJQ06B=2

ASDJD06=2 if ASDJQ06A=1 and ASDJQ06B=0

ASDJD06=3 if ASDJQ06A=0 and ASDJQ06B=0 and (ASDJQ06C=3 or ASDJQ06D=4 or ASDJQ06S=19)

ASDJD6A= UNKNOWN if one of the variables ASDJQ06A to ASDJQ06S is missing

Code	Category	n weighted	%
1	French	1,534	76.0
2	English (not French)	168	8.3
3	Neither French nor English	316	15.7
	Total	2,018	100.0
	Unknown	205	

Note: The categories are exclusive. The first category includes fathers/spouses for whom one of the first languages learned was French. The second category includes fathers/spouses who learned only English or English and one other language (excluding French). Fathers/spouses whose maternal language (first language learned) is neither French nor English are regrouped in the third category.

LANGUAGE(S) SPOKEN MOST OFTEN AT HOME (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ASDJD6A

- Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household
- Weights: APOIPCM, APOIPCMM
- Question: CQCI-Father, SOC-Q6A
- Variables: ASDJQ6AA, ASDJQ6AB, ASDJQ6AC
- Derivation: The 3 variables used to calculate this index have the values 0 or 1; 0 or 2 and 0 or 3, respectively. To calculate this variable, the following equation may be used:

First ASDJD6A=missing

LANGUEP=ASDJQ6AA + (10*ASDJQ6AB) + (100*ASDJQ6AC)

Thus

ASDJD6A=1 if LANGUEP=20

ASDJD6A=2 if LANGUEP=1

ASDJD6A=3 if LANGUEP=300

ASDJD6A=4 if LANGUEP=21

ASDJD6A=5 if LANGUEP=301 or LANGUEP=320 or LANGUEP=321

Otherwise, ASDJD6A= Unknown

Code	Category	n weighted	%
1	French only	1,571	77.9
2	English only	217	10.7
3	Neither French nor English	161	8.0
4	French and English only	28	1.4
5	French or English + other language(s)	41	2.0
	Total	2,018	100.0
	Unknown	205	

REPORTED LEVEL OF SYMPTOMS OF DEPRESSION (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - ADPJS01

Population:	All children targeted by ÉLDEQ whose father, biological or not, is living in the household.
Weights:	APOIQAP, APOIQAPM
Description:	Scale from 0 to 36
Questions:	QAAP, Q40 à Q51A
Variables:	AQPJQ40 à AQPJQ51A
Derivation:	If AQPJQ45=1, 2, 3 or 4 then AQPJQ45=5 - AQPJQ45
	If AQPJQ47=1, 2, 3 or 4 then AQPJQ47=5 - AQPJQ47
	If AQPJQ49=1, 2, 3 or 4 then AQPJQ49=5 - AQPJQ49
	If the number of valid responses to AQPJQ40, AQPJQ41, AQPJQ42, AQPJQ43, AQPJQ44, AQPJQ45, AQPJQ46, AQPJQ47, AQPJQ48, AQPJQ49, AQPJQ50, AQPJQ51 and AQPJQ51A is equal to or greater than 6 then:
	 the missing variables were replaced by the mean of the valid variables;
	- ADPJS01 = sum of (AQPJQ40, AQPJQ41, AQPJQ42, AQPJQ43, AQPJQ44, AQPJQ45, AQPJQ46, AQPJQ47, AQPJQ48, AQPJQ49, AQPJQ50, AQPJQ51 and AQPJQ51A) - 13.
	- IT NOT, ADMJSUT IS UNDERINED.

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Scores vary from 0 to 30.

FEELING OF SELF-EFFICACY (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - APAJS01

Population:	All children targeted by ÉLDEQ whose father, biological or not, is living in the household
Weights:	APOIQAP, APOIQAPM
Description:	Scale from 0 (Not at all) to 10 (Exactly)
Questions:	SAQF, Q15, Q17, Q19, Q21, Q24, Q39
Variables:	AQPJQ15, AQPJQ17, AQPJQ19, AQPJQ21, AQPJQ24, AQPJQ39
Derivation:	If the number of valid responses to AQPJQ15, AQPJQ17, AQPJQ19, AQPJQ21, AQPJQ24 and AQPJQ39 is equal to or greater than 4 then:
	APAJS01 = mean of (AQPJQ15, AQPJQ17, AQPJQ21, AQPJQ21, AQPJQ24 and AQPJQ39).
	If not, APAJS01 is undefined.

Scores vary from 1 to 10.

PERCEPTION OF PARENTAL IMPACT (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - APAJS02

Population:	All	children	targeted	by	ÉLDEQ	whose	father,
	biol	ogical or r	not, is living	g in t	he house	hold	

Weights: APOIQAP, APOIQAPM

- Description: Scale from 0 (Not at all) to 10 (Exactly)
- Questions: SAQF, Q14, Q23, Q29, Q34, Q37
- Variables: AQPJQ14, AQPJQ23, AQPJQ29, AQPJQ34, AQPJQ37
- Derivation: If the number of valid responses to AQPJQ14, AQPJQ23, AQPJQ29, AQPJQ34 and AQPJQ37 is equal to or greater than 3 then:
 - APAJS02=10- mean of (AQPJQ14, AQPJQ23, AQPJQ29, AQPJQ34 and AQPJQ37).

If not, APAJS02 is undefined.

Scores vary from 0 to 10.

COERCIVE TENDENCES (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - APAJS03

Population:	All children targeted by ÉLDEQ whose father, biological or not, is living in the household
Weights:	APOIQAP, APOIQAPM
Description:	Scale from 0 (Not at all) to 10 (Exactly)
Questions:	SAQF, Q18, Q20, Q22, Q25, Q28, Q32, Q35
Variables:	AQPJQ18, AQPJQ20, AQPJQ22, AQPJQ25, AQPJQ28, AQPJQ32, AQPJQ35
Derivation:	If the number of valid responses to AQPJQ18, AQPJQ20, AQPJQ22, AQPJQ25, AQPJQ28, AQPJQ32 and AQPJQ35 is equal to or greater than 4 then:
	APAJS03=mean of (AQPJQ18, AQPJQ20, AQPJQ22, AQPJQ25, AQPJQ28, AQPJQ32 and AQPJQ35).

If not, APAJS03 is undefined.

Scores vary from 0 to 9.4.

PARENTAL AFFECTION/PLEASURE (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - APAJS04

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIQAP, APOIQAPM

Description: Scale from 0 (Not at all) to 10 (Exactly)

Questions: SAQF, Q14A, Q14B, Q38A, Q38B, Q38C

- Variables: AQPJQ14A, AQPJQ14B, AQPJQ38A, AQPJQ38B, AQPJQ38C
- Derivation: If the number of valid responses to AQPJQ14A, AQPJQ14B, AQPJQ38A, AQPJQ38B and AQPJQ38C is equal to or greater than 3 then:

APAJS04 = mean of (AQPJQ14A, AQPJQ14B, AQPJQ38A, AQPJQ38B and AQPJQ38C).

If not, APAJS04 is undefined.

Scores vary from 1.2 to 10.

PARENTAL OVERPROTECTION (FATHER/SPOUSE LIVING IN THE HOUSEHOLD) - APAJS05

All children targeted by ÉLDEQ whose father, Population: biological or not, is living in the household Weights: APOIQAP, APOIQAPM Description: Scale from 0 (Not at all) to 10 (Exactly) Questions: SAQF, Q26, Q30, Q31, Q33, Q36 Variables: AQPJQ26. AQPJQ30. AQPJQ31 AQPJQ33. AQPJQ36 Derivation: If the number of valid responses to AQPJQ26, AQPJQ30, AQPJQ31, AQPJQ33 and AQPJQ36 is equal to or greater than 3 then: APAJS05 = mean of (AQPJQ26, AQPJQ30, AQPJQ31, AQPJQ33 and AQPJQ36). If not, APAJS05 is undefined.

Scores vary from 0 to 10.

PERCEPTION OF CHILD'S QUALITIES (FATHER/SPOUSE LIVING IN THE HOUSEHOLD - APAJS06

Population: All children targeted by ÉLDEQ whose father, biological or not, is living in the household

Weights: APOIQAP, APOIQAPM

- Description: Scale from 0 (Not at all) to 10 (Exactly)
- Questions: SAQF, Q13, Q16, Q27, Q38
- Variables: AQPJQ13, AQPJQ16, AQPJQ27, AQPJQ38
- Derivation: If the number of valid responses to AQPJQ13, AQPJQ16, AQPJQ27 and AQPJQ38 is equal to or greater than 3 then:

APAJS06= mean of (AQPJQ13, AQPJQ16, AQPJQ27 and AQPJQ38).

If not, APAJS06 is undefined.

Scores vary from 0 to 10.

CHARACTERISTICS RELATING TO THE HOUSEHOLD

SIZE OF THE HOUSEHOLD- AREFD01

Population:	All children targeted by ÉLDEQ.
Weights:	APOIPCM, APOIPCMM
Description:	Number of persons living in the household
Question:	CQCI, DEM-Q2
Variables:	AAGE_1 to AAGE_12
Derivation:	As there are no missing values (UNKNOWNS) to the variable AAGE_X for household members who are present, the derivative variable AREFD01 = number

Code	Category	n weighted	%
2	2	50	2.2
3	3	837	37.6
4	4	887	39.9
5	5	291	13.1
6	6	103	4.6
7+	7+	55	2.5
	Total	2,223	100.0

of AAGE. X for which the value is known.

INCOME SUFFICIENT LEVEL – AINFD3A

Population: All children targeted by ELDEQ.

Weights: APOIPCM, APOIPCMM

- Description: Categorization of children based on whether the income of the household falls below the low-income cut-off defined by Statistics Canada for the reference year 1997 (1992 baseline). The low-income cut-off takes into account the size of the household and size of the area inhabited (see Table A.1 in the Annex).
- Questions: CQCI-PMK, INC-Q3, INC-Q3A to INC-Q3G and complementary derivative variables for the size of the household and size of the area inhabited (see below).
- Variables: AREFD01, AINFD03 (gross income recoded)

AINFQ03 (gross household income, not recoded: this variable is not distributed out of respect for confidentiality)

POP_TOT (total population), RUR_PC (percentage of the population living in a rural area; these variables are not distributed)

To obtain the preceding two variables, each survey household was first given a code signifying the municipality – a long and complex procedure. To do so, we used the *Tables officielles de données territoriales du ministère de la Santé and des Services sociaux (Système d'information territoriale M22)* (MSSS, 1998). They provided a means to identify the connection between the postal code and municipal code. However, for a relatively large number of households – 10 of them – we were unable to identify the municipal code using this strategy, notably, when the postal code encompassed more than one municipality or when the information available to us made no distinction between a "village" and a "parish." The attributions were then done manually using other strategies, for example, by referring to the *Directory of Canadian Postal Codes* issued by Canada Post, which allows crossreferencing by the postal code as well as the house number and street name.

After assigning to each household a municipal code, a second round of matching was undertaken using a file from the 1996 Census to obtain the size of the area inhabited (POP_TOT) and the percentage of the population living in a rural area (RUR_PC); these are necessary in calculating the low-income cut-off.

The programming details for this index are very complex and will not be presented here. Rather, let us examine the method by which the income level was attributed for each household.

Derivation:

For recorded household size (AREFD01), according to the size of the area in which the child lived (POP_TOT), household income is compared to the low-income cut-off defined by Statistics Canada for 1997 (1992 baseline). For example:

AINFD3A = 2 if AREFD01 = 2 and POP_TOT is between 30,000 and 99,999 persons and AINFQ03 is less than \$18,534.

Some adjustments were made to take into account the following:

- Income is expressed as a range rather than as an exact figure (i.e., AINFQ03=UNKNOWN but AINFD03=known). As recommended by Wilms and Shields (1996), in calculating the level of socioeconomic status (see variable AINFD02), we used the middle point of the income category to define the household's "exact" income. Approximately 4% of households were affected. Note that the households (fewer than 1%) for which AINFQ03 is UNKNOWN and AINFD03 is greater than \$80,000 are all considered to have adequate income, regardless of the size of the household and area inhabited.
- 2) The size of the inhabited area is fewer than 30,000 persons and household income is set at the cut-off for an urban area of fewer than 30,000 persons and a rural area, for the size of household reported. For example, the household comprises 3 persons, the population of the inhabited area is 16,548 and the income ranges between \$18,703 and \$21,448 (see Table A.1).

In these cases (approximately 2% of households), we must determine if the household is in a urban or rural area.28 As there is no consensus between offices of statistics in Québec and Canada on the concepts "urban" and "rural" and the method of measuring them (Cunningham et al, 1997) and, taking into consideration the data for ELDEQ, we decided to use the following criteria: if more than 50% of the population lives in a rural area (RUR_PC greater than 50), we use the cut-off defined for a rural area. Note that for three-quarters of ambiguous cases, the percentage of the population living in a rural area is equal to 0 or 100. There were thus few children (less than 0.5%) living in a "mixed" area of fewer than 30,000 persons.

For more information on the concept "low income" and the basis of its calculation in ÉLDEQ, see Number 2 of this collection.

Code	Category	n weighted	%
1	Yes	1,577	72.5
2	No	599	27.5
	Total	2,176	100.0
	Unknown	47	· · · · · · · · · · · · · · · · · · ·

^{28.} Statistics Canada defines an urban area as one with a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square kilometre, based on the previous census population counts. In contrast, rural areas are sparsely populated lands. According to Statistics Canada, any area situated outside an urban area is considered to be rural (Cunningham et al, 1997).

MAIN INCOME SOURCE OF THE HOUSEHOLD- AINFD2A

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		10 Y L	

Weights: APOIPCM, APOIPCMM

- Description: Main source of income from all declared sources
- Questions: CQCI-PMK, INC-Q1, INC-Q2

Variables: AINFQ01A to AINFQ01N, AINFQ02

Derivation: AINFD2A=1 if (AINFQ01A=1 and AINFQ02=-4) or AINFQ02=1

> AINFD2A=2 if (AINFQ01B=2 and AINFQ02=-4) or AINFQ02=2

> AINFD2A=3 if (AINFQ01J=10 and AINFQ02=-4) or AINFQ02=10

AINFD2A=4 if (AINFQ01D=4 and AINFQ02=-4) or AINFQ02=4

AINFD2A=5 if (AINFQ01C=3 and AINFQ02=-4) or AINFQ02=3 or

(AINFQ01C=5 and AINFQ02=-4) or AINFQ02=5 or

(AINFQ01C=6 and AINFQ02=-4) or AINFQ02=6 or

(AINFQ01C=7 and AINFQ02=-4) or AINFQ02=7 or

(AINFQ01C=8 and AINFQ02=-4) or AINFQ02=8 or

(AINFQ01C=9 and AINFQ02=-4) or AINFQ02=9 or

(AINFQ01C=11and AINFQ02=-4) or AINFQ02=11 or

(AINFQ01C=12 and AINFQ02=-4) or AINFQ02=12 or

(AINFQ01C=13 and AINFQ02=-4) or AINFQ02=13 or

(AINFQ01C=14 and AINFQ02=-4) or AINFQ02=14 or

AINFD2A=UNKNOWN if AINFQ01A=REFUSAL, DON'T KNOW or MISSING or AINFQ02=REFUSAL, DON'T KNOW or MISSING

Code	Category	n weighted	%
1	Wages and salaries	1,671	76.1
2	Income from self- employment	164	7.5
3	Social assistance	254	11.6
4	Employment insurance	41	1.9
5	Other	64	2.9
	Total	29	100.0
	Unknown	2,223	

SOCIOECONOMIC STATUS - AINFDO8

Population: All children targeted by ÉLDEQ

Weights: APOIPCM, APOIPCMM

- Description: Socioeconomic status of the household based on level of education of the PMK and her/his spouse, if applicable, the occupational prestige score of the PMK and spouse and the gross income of the household.
- Questions: CAID-INT ("Who is the person best informed on the subject of ...?")

CQCI-Mother, EDA-Q1, EDA-Q4

CQCI-Father, EDA-Q1, EDA-Q4

CQCI-PMK, INC-Q3, INC-Q3A to INC-Q3G and complementary derivative variables.

Variables: A_PCM

AEDMQ01, AEDMQ04, APIMD01, ALFMD1B

AEDJQ01, AEDJQ04, APIJD0129, ALFJD1B

AINFQ03, AINFD03, AFAFD02

The programming for this index is very complex and is therefore not presented here. To create it we used the method proposed by Wilms and Shields (1996; see also Statistics Canada and Human Resources Development Canada, 1995). However, some adjustments were made in the calculation of the vears of schooling completed by the PMK and his/her spouse to take into account the specific characteristics of the school system in Québec. Thus, individuals who had some university and held a high school diploma were attributed 14 years of schooling rather than the sum of the years of primary and secondary schooling successfully completed, in accordace with the method developed by Wilms and Shields (1996). For more information on the modifications to level of schooling, please refer to the section on the derivative variables AEDMD02 and AEDJD02: "Highest diploma/degree attained."

Scores vary between -2.8 and 3.7 (mean = 1 and s.d. = 0)

Derivation

Note: Given the method of calculating this index, the socioeconomic status (SES) of single-parent families tends to be lower than that of other family types because household income is, in general, also lower. For these families, the SES nonetheless takes into account the single parent's level of schooling and occupational prestige score. In the majority of regression analyses for which the SES is used as the control variable, Wilms and Shields (1996) recommend the inclusion of a dichotomous variable to indicate whether it is a single- or two-parent family.

^{29.} Regrouping of occupations into 16 categories according to the Pineo Socioeconomic Classification of Occupations for the Census (1985). The variable APIMD01 is included in the file MOTHER101 while the variable APIJD01 is in the file FATHER101.

TYPE OF FAMILY AT THE TIME OF THE SURVEY (6 categories) – AFAFD01

Population: All children targeted by ELDEQ

Weights: APOIPCM, APOIPCMM

- Description: Type of family the child is living in at the time of the survey (6 categories).
- Questions: CQCI, REL-Q1A; CQCI-Child, CUS-Q6E, Q6G, Q7E, Q7G; SAQM, Q48
- Variables: ARE2Q3, ARE1Q3 to ARE1Q12, ARE3Q4 to ARE3Q12, ACSEQ06E, ACSEQ6GE, ACSEQ07E, ACSEG7GE, AQMMQ48,
- Derivation: The programming for this index is very complex and is therefore not presented here. In addition, the programming did not apply to all cases; some had to be classified manually. The families were categorized according to the definitions below.

Family type is determined based on the relations of the children and adults *present* in the household. This typology provides a description of the infant's family type. Intact two-parent families are only those in which the child lives with his/her two biological parents, regardless of the type of conjugal relationship (marriage or common-law). Reconstituted families are composed of a couple, married or common-law, living with at least one child not born to them. Single-parent families are those in which the children live with one parent. Note that only children living at least part of the time in the household, as described in the section CUSTODY, or whose normal residence is the household, as described in the section REL of the CQCI, are considered to be present. Thus, an infant is considered to be living in an "intact" two-parent family if one or the other of the parents has children from a previous relationship, but none of these children live in the household.

Once the family is identified, the reconstituted families are classified according to the source of the children who are living in it. Four types of reconstituted family have been retained for the survey:

reconstituted families composed of, in addition to the children of the infant's biolgical parents, children born to the mother in a previous relationship (reconstituted – CPU mother);

reconstituted families composed of, in addition to the children of the infant's biological parents, children born to the father in a previous relationship (reconstituted – CPU father);

reconstituted families composed of, in addition to the children of the infant's biological parents, children born to the father and to the mother in previous relationships (reconstituted – CPU mother and father);

reconstituted families composed of the infant's biological parent and the brothers and/or sisters, if applicable, born to that parent and his/her new spouse.

Because, for the 1998 collection of the survey, the single parent is in almost all cases the biological mother, single-parent families are not identified here by the sex of the parent.

Not considered part of this typology are persons outside the immediate family circle formed by the single parent and her/his children or the couple and their children. Others who might be related (e.g., grandparents, aunt, couisin, etc.) or not related (e.g., boarders) to the infant are nonetheless counted as members of the household (see AREFD01).

The residual category "UNKNOWN" includes children living in foster homes and those whose family situation is not known.

Code	Category	n weighted	%
1	Intact	1,771	80 .0
2	Reconstituted - CPU mother	134	6.0
3	Reconstituted – CPU father	82	3.7
4	Reconstituted – CPU mother and father	20	0.9
5	Reconstituted – new spouse of biological parent	4	0.2
6	Single-parent	203	9.2
	Total	2,214	100.0
	Unknown	9	

Note : CUP signifies children of a previous union.

FAMILY TYPE AT THE TIME OF THE SURVEY (3 categories) - AFAFD02

Population:	All children targeted by ÉLDEQ
Weights:	APOIPCM, APOIPCMM
Description:	Type of family the child is living in at the time of the survey
Variable:	AFAFD01
Derivation:	Regrouped in 3 categories of the variable AFAFD01
	AFAFD02=1 if AFAFD01=1

AFAFD02 =2 if AFAFD01=2, 3, 4 or 5

AFAFD02=3 if AFAFD01=6

Code	Category	n weighted	%
1	Intact	1,771	80.0
2	Reconstituted	240	10.8
3	Single-parent	203	9.2
	Total	2,214	100.0
	Unknown	9	

TWO BIOLOGICAL PARENTS LIVING IN THE HOUSEHOLD - AREFD02

Population: All children targeted by ÉLDEQ

Weights: APOIPCM, APOIPCMM

- Description: This variable provides a means to identify children whose two biological parents are living together.
- Question: CQCI, REL-Q1A

Variables: ARE1Q3 and ARE2Q3

Derivation: For the 1998 ELDEQ collection, person 1 is the mother, biological or not, present in the household and person 3 is the biological father or the spouse of person 1.

Thus, it is possible to identify households formed by a couple, that is, those for whom the relationship between person 1 and person 3 is "spouse," "common-law partner" or "unrelated person" and where the relationship between the target child and person 3 is "biological child."

AREFD02=1 if (ARE1Q3= "A0" or ARE1Q3= "B0" or ARE1Q3= "Y1") and ARE2Q3= "E1"

and those where the relationship between the target child and person 3 is not one of a biological child.

AREFD02=2 if ARE2Q3 is not equal to "E1."

The other households in which the two biological parents do not live together are those formed by the father only, that is, those for which ARE1Q3=MISSING and ARE2Q3= "E1" (identified manually).

After inter-instrument validation some cases were classified UNKNOWN.

Code	Category	n weighted	%
1	Yes	2,008	90.6
2	No	209	9.4
	Total	2,217	100.0
	Unknown	6	

BIOLOGICAL FATHER LIVING IN THE HOUSEHOLD – AREFD2A

Population: All children targeted by ÉLDEQ

Weights: APOIPCM, APOIPCMM

- Description: Presence of the biological father in the household in which the child is living at the time of the survey
- Question: CQCI, REL-Q1A

Variable: ARE2Q3

Derivation: AREFD2A=1 if ARE2Q3="E1"

Otherwise, AREFD2A=2

After inter-instrument validation some cases were classified UNKNOWN.

Code	Category	n weighted	%
1	Yes	2,009	90.6
2	No	208	9.4
	Total	2,217	100.0
	Unknown	6	

BIOLOGICAL FATHER PRESENT IN THE HOUSEHOLD (if biological mother is present) – AREFD03

Population:	All children targeted by ÉLDEQ
Weights:	APOIPCM, APOIPCMM
Description:	This variable provides a means to distinguish children living with their two biological parents from those living with only their biological mother. Excluded from this typology are, for example, children living with their single father or children living in foster homes. This variable is useful in identifying mothers eligible to answer the questions about the absent biological father (SAQM - Section 6).
Question:	CQCI, REL-Q1A
Variables:	ARE1Q3 and ARE2Q3 or AREFD02
Derivation:	AREFD03=AREFD02

except foster families and single fathers, which are excluded from this typology (some manually identified cases)

Code	Category	n weighted	%
1	Yes	2,007	90.7
2	No	206	9.3
	Total	2,213	100.0
	Unknown and excluded from typology	10	
CONJUGAL SITUATION OF THE PARENTS AT BIRTH OF THE CHILD - ACSED01

- Population: All children targeted by ÉLDEQ
- Weights: APOIPCM, APOIPCMM
- Description: Conjugal history of the parents
- Questions: CQCI, CUS-Q3A, CUS-Q3B, CUS-Q5A, CUS-Q5B
- Variables: ACSEQ03A, ACSEQ03B, ACSEQ05A, ACSEQ05B
- Derivation: ACSED01=1 if ACSEQ03B=2

ACSED01=2 if ACSEQ03B=1

ACSED01=3 if ACSEQ03A is equal to or greater than 2

ACSED01=4 if ACSEQ05B=1 or ACSEQ05B=3

ACSED01=5 if ACSEQ05A=2 or ACSEQ05B=2

Code	Category	n weighted	%
1	Married	413	18.6
2	Married preceded by common-law union	562	25.4
3	Common law	1,055	47.6
4	Separated	84	3.8
5	Never lived together	103	4.6
	Total	2,217	100.0
	Unknown	6	

TYPE OF FAMILY AT BIRTH OF THE CHILD - AUSED02

- Population: All children targeted by ÉLDEQ
- Weights: APOIPCM, APOIPCMM
- Description: Type of family that the child lived in at the time of birth
- Questions: CQCI, CUS-Q4, CUS-Q5B, CUS-Q6E, CUS-Q6G, CUS-Q7E, CUS-Q7G, CUS-Q20B, CUS-Q20C, CUS-Q21B, CUS-Q21C

CQCI-DEM (child's date of birth)

Variables: ACSEQ04, ACSEQ05B, ACSEQ06E, ACSEQ6GE, ACSEQ07E, ACSEQ7GE, ACSEQ20B, ACSEQ20C, ACSEQ21B, ACSEQ21C

ADNED01

Derivation: ACSED02=1 if ACSEQ06E=2 and ACSEQ07E=2 or ACSEQ07E=-2

ACSED02=2 if ACSEQ6GE is greater than 0 or ACSEQ7GE is greater than 0

ACSED02=3 if ACSEQ6GE=0 and ACSEQ7GE is different from 0 or ACSEQ6GE=0 and ACSEQ7GE=0

ACSED02=4 if ACSEQ6GE is different from 0 and ACSEQ07GE=0

ACSED02=6 if ACSEQ04 is between 1 and 4

Two cases were manually classified in the third category (reconstituted families comprising a spouse other than the biological father at the child's birth). They correspond to the following conditions:

ACSEQ04=3 and (ACSEQ20B or ACSEQ20C is less than the child's date of birth).

Code	Category	n weighted	%
1	Intact	1,730	78.0
2	Intact - CPU	61	2.8
3	Reconstituted – CPU mother	155	7.0
4	Reconstituted – CPU father only	85	3.8
6	Single-parent	185	8.4
	Total	2,217	100.0
	Unknown	6	

Note: CPU signifies children of a previous union. Code 5, initially attributed to households that included the CPUs of both spouses, was eliminated, and these households were included in the third category.

WORKFORCE ACTIVITY OF THE PARENTS - ALFFD01

Population	All children	tarneted	hy É	έin	FO
F OPUIALION.	All children	largeleo	Dy c	ĽU	PEQ

Weights: APOIPCM, APOIPCMM

- Description: Number of parents who worked during the 12 months preceding the survey
- Questions: CQCI, REL-Q1A and complementary derivative variables
- Variables: ARE1Q3, ALFMD1B, ALFJD1B
- Derivation: ALFFD01=1 if ALFMD1B=1 and ALFJD1B=1

ALFFD01=2 if (ALFMD1B=1 and ALFJD1B=0) or (ALFMD1B=0 and ALFJD1B=1)

ALFFD01=3 if ALFMD1B=0 and ALFJD1B=0

ALFFD01=4 if (ALFMD1B=1 and ARE1Q3 is missing) or (ALFJD1B=1 and ARE1Q3 is missing)

ALFFD01=5 if (ALFMD1B=0 and ARE1Q3 is missing) or (ALFJD1B=0 and ARE1Q3 is missing)

Code	Category	n weighted	%
1	Two-parent - 2 parents working	1,394	63.3
2	Two-parent - 1 parent working	525	23.8
3	Two-parent - no parent working	87	3.9
4	Single-parent – 1 parent working	62	2.8
5	Single-parent - no parent working	136	6.2
	Total	2,204	100.0
	Unknown	19	

LANGUAGE(S) SPOKEN MOST OFTEN AT HOME BY THE PARENTS – ASDFD6A

Population: All children targeted by ÉLDEQ

Weights: APOIPCM, APOIPCMM

- Description: Language(s) spoken most often at home by the parents or the single parent
- Questions: CQCI-Mother, SOC-Q6A; CQCI-Father, SOC-Q6A

Variables: ASDMQ6AA, ASDMQ6AB, ASDMQ6AC

ASDJQ6AA, ASDJQ6AB, ASDJQ6AC

Derivation: To calculate this variable, the following method of counting may be used:

First, set ASDFD6A=missing

If ASDMQ6AA=1 or ASDJQ6AA=1 then LANGUAGE=1

If ASDMQ6AB=2 or ASDJQ6AB=2 then LANGUAGE= LANGUAGE+20

If ASDMD6AC=3 or ASDJQ6AC=3 then LANGUAGE= LANGUAGE+300

Thus

ASDFD6A=1 if LANGUAGE=20

ASDFD6A=2 if LANGUAGE=1

ASDFD6A=3 if LANGUAGE=300

ASDFD6A=4 if LANGUAGE=21

ASDFD6A=5 if LANGUAGE=301 or LANGUAGE=320 or LANGUAGE=321

Otherwise ASDFD6A=Unknown

Code	Category	n weighted	%
1	French only	1,669	75.2
2	English only	224	10.1
3	Neither French nor English	179	8.1
4	French and English only	76	3.4
5	French or English and other language(s)	71	3.2
	Total	2,219	100.0
	Unknown	4	

FAMILY FUNCTIONING - AFNFS01

- Population: All children targeted by ELDEQ
- Weights: APOIPCM, APOIPCMM
- Description: Scale from 0 to 36. A low score signifies a family that is functional.
- Questions: CQCI-PMK, FNC-Q1 to FNC-Q1L
- Variables: AFNFQ01 to AFNFQ01L
- Derivation: If AFNFQ01A=1, 2, 3 or 4 then AFNFT01A=4 AFNFQ01A;

If AFNFQ01B=1, 2, 3 or 4 then AFNFT01B=AFNFQ01B - 1;

If AFNFQ01C=1, 2, 3 or 4 then AFNFT01C=4 - AFNFQ01C;

If AFNFQ01D=1, 2, 3 or 4 then AFNFT01D=AFNFQ01D - 1;

If AFNFQ01E=1, 2, 3 or 4 then AFNFT01E=4 - AFNFQ01E;

If AFNFQ01F=1, 2, 3 or 4 then AFNFT01F=AFNFQ01F - 1

If AFNFQ01G=1, 2, 3 or 4 then AFNFT01G=4 - AFNFQ01G;

If AFNFQ01H=1, 2, 3 or 4 then AFNFT01H=AFNFQ01H - 1;

If AFNFQ01I=1, 2, 3 or 4 then AFNFT01I=4 - AFNFQ01I;

If AFNFQ01J=1, 2, 3 or 4 then AFNFT01J=AFNFQ01J - 1;

If AFNFQ01K=1, 2, 3 or 4 then AFNFT01K=4 - AFNFQ01K;

If AFNFQ01L=1, 2, 3 or 4 then AFNFT01L=AFNFQ01L - 1;

If the number of missing variables to AFNFT01A, AFNFT01B, AFNFT01C, AFNFT01D, AFNFT01E, AFNFT01F, AFNFT01G, AFNFT01H, AFNFT01I, AFNFT01J, AFNFT01K and AFNFT01L is less than or equal to 3 then:

AFNFS01A = 12* (mean of [AFNFT01A, AFNFT01B, AFNFT01C, AFNFT01D, AFNFT01E, AFNFT01F, AFNTT01G, AFNFT01H, AFNFT01I, AFNFT01J, AFNFT01K, AFNFT01L]).

If not, AFNFS01A is undefined.

Scores vary from 0 to 36.

Note: The questions in Section FNC of the CQCI are formulated as positives or negatives, on an alternating basis. For the 6 scale items formulated in the negative, the following calculations were used "AFNFT01A=4 - AFNFQ01A." They provide a means to recode the responses in such a way that a high value corresponds to a higher degee of disfunctional family. The minimum value of each of the 12 items in the scale was set at 0, and the maximum value was set at 3. The final calculation combines the 12 variables to create the index AFNFSOIA, which varies from de 0 to 36.

UNSAFE NEIGHBOURHOOD / PEOPLE DON'T HELP EACH OTHER (according to the PMK) – ASFFS01A

- Population: All children targeted by ÉLDEQ
- Weights: APOIPCM, APOIPCMM
- Description: Scale from 1 to 4
- Questions: CQCI-PMK, SAF-Q5A, SAF-Q5B, SAF-Q6A to SAF-Q6E
- Variables: ASFFQ05A, ASFFQ05B, ASFFQ06A to ASFFQ06E
- Derivation: If the number of valid responses to ASFFQ05A, ASFFQ05B, ASFFQ06A, ASFFQ06B, ASFFQ06C, ASFFQ06D and ASFFQ06E is equal to or greater than 4 then:

ASFFS01A=mean of (ASFFQ05A, ASFFQ05B, ASFFQ06A, ASFFQ06B, ASFFQ06C, ASFFQ06D and ASFFQ06E).

If not, ASFFS01A is undefined.

Scores vary from 1 to 4.

SOCIAL PROBLEMS IN THE NEIGHBOURHOOD (according to the PMK) – ASFFS01B

- Population: All children targeted by ÉLDEQ
- Weights: APOIPCM, APOIPCMM
- Description: Scale from 1 to 3
- Questions: CQCI-PMK, SAF-Q7A to SAF-Q7F
- Variables: ASFFQ07A to ASFFQ07F
- Derivation: If the number of valid responses to ASFFQ07A, ASFFQ07B, ASFFQ07C, ASFFQ07D, ASFFQ07E and ASFFQ07F is equal to or greater than 4 then:

ASFFS01B=mean of (ASFFQ07A, ASFFQ07B, ASFFQ07C, ASFFQ07D, ASFFQ07E and ASFFQ07F).

If not, ASFFS01B is undefined.

Scores vary from 1 to 3.

LEVEL OF VERBALIZATION OF THE MOTHER DURING THE VISIT (according to the interviewer) – AIFFS01A

Population:	All children targeted by	ÉLDEQ
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Weights: APOIPCM, APOIPCMM

Description: Scores for this scale vary from 11 to 49.

Questions: OFL, Q1, Q2, Q4 to Q11

Variables: AIFFQ01, AIFFQ02, AIFFQ04 to AIFFQ11

Derivation: If the number of valid responses to AIFFQ01, AIFFQ02, AIFFQ04, AIFFQ05, AIFFQ06, AIFFQ07, AIFFQ08, AIFFQ09, AIFFQ10 and AIFFQ11 is equal to or greater than 7 then:

- the missing variables were replaced by the mean of the valid variables;
- AIFFS01A=sum of (AIFFQ01, AIFFQ02, AIFFQ04, AIFFQ05, AIFFQ06, AIFFQ07, AIFFQ08, AIFFQ09, AIFFQ10 and AIFFQ11).

If not, AIFFS01A is undefined.

LEVEL OF STIMULATION OF THE CHILD DURING THE VISIT (according to the interviewer) – AIFFS01C

Population:	All children targeted by ÉLDEQ			
Weights:	APOIPCM, APOIPCMM			
Description:	Scores for this scale vary from 5 to 25.			
Questions:	OFL, Q26 to Q30			
Variables:	AIFFQ26 to AIFFQ30			
Derivation:	If the number of valid responses to AIFFQ26, AIFFQ27, AIFFQ28, AIFFQ29 and AIFFQ30 is equal to or greater than 3 then:			
	 the missing variables were replaced by the mean of the valid variables; 			
	- AIFFS01C=sum of (AIFFQ26, AIFFQ27, AIFFQ28, AIFFQ29 and AIFFQ30).			
	If not, AIFFS01C is undefined.			

Scores vary from 5 to 25.

Scores vary from 11 to 49.

Table A.1

Low-Income Cut-Off (1992 Baseline) as Defined by Statistics Canada for the Reference Year 1997 by Size of Family Unit and Size of Area Inhabited

	Size of Area Inhabited					
Size of Family Unit	500,000 inhabitants and over	100,000 to 499, 999	30,000 to 99,999	Less than 30,000 inhabitants ¹	Rural areas	
1 person			<	•••	~	
2 persons	21,760	18,664	18,534	17,245	15,038	
3 persons	27,063	23,213	23,050	21,448	18,703	
4 persons	32,759	28,098	27,903	26,964	22,639	
5 persons	36,618	31,409	31,191	29,023	25,307	
6 persons	40,479	34,720	34,478	32,081	27,975	
7 persons or more	44,339	38,032	37,766	35,140	30,643	

1. Includes cities between 15,000 and 30,000 inhabitants and small urban areas (less than 15,000 inhabitants).

Source: Statistics Canada (1998).

Name of the variable	Source(s)	Categories	Remarks
	Characteristics	related to the target child	
Soriables sociodémographiques ARGED01 Birth rank of the child	Master Birth Register - ISQ	1 to 5+	For the 1998 collection, this variable was also collected using the medical records. A file comprising the data drawn from these records will be distributed in 2001.
AGTED01	Master Rinth Register , ISO	56 to 65 weeks	
Gestational age			
APEED01 Prematurity	Master Birth Register - ISQ	1) Yes 2) No	Duration of pregnancy < 37 weeks. For the 1998 collection, this variable was also collected using the medical records. A file comprising the data drawn from these records will be distributed in 2001.
AMDED13 Low birth weight (< 2,500 g)	CQCI - Section MED amdeq13	1) Yes 2) No	For the 1998 collection, this variable was also collected using the medical records. A file comprising the data drawn from these records will be distributed in 2001.
AREED01 Number of brothers/sisters	CQCI – Section REL are2q4 to are2q12	0 to 4+	Includes siblings, biological or not, living in the same household (full or part time) as the child.
ASDED4AA	CQCI - Section SOC	0) No	
Ethnic origin: Canadian	asdeq04a	1) Yes	
ASDED4AC	CQCI - Section SOC	0} No	Includes persons of English, Scottish or Irish
Ethnic origin: British	asdeq04c,4e,4f	1) Yes	origin,

1. This table of the derivative variables was created to facilitate data analysis for those using the ÉLDEQ database (1998 collection, children 5 months old). The variables are regrouped and placed in the following order, those related to: the target child, the mother, the father/spouse living in the household, the household. The second column, "Source(s)," identifies the instruments and variables used to calculate the index. To see the specific questions used, please refer to Section 7 of this document.

Name of the variable	Source(s)	Categories	Remarks
	Characteristics re	elated to the target child	······································
ASDED4AD Ethnic origin: other European origins	CQCI - Section SOC asdeq04d.4g.4h.4i.4k,4I,4m,4s	0) No 1) Yes	Includes persons of Dutch, German, Italian, Jewish, Polish, Portugese, Ukrainian and Spanish origins.
ASDED4AE Ethnic origin: Aboriginal	CQCI – Section SOC asdeq04p	0) No 1) Yes	
ASDED4AF Ethnic orígin: African/Haitian	COCI – Section SOC asdeq04o, 4t	0) No 1) Yes	
ASDED4AG Ethnic origin: other	CQCI – Section SOC asdeq04j,4n,4q,4r,4u,4v,4w	0) No 1) Yes	Given their low representation, persons of Chinese or South-Asian, Métis, Inuit, Arabic- speaking of Maghreb and of Middle East, Spanish-speaking of the Americas and others were regrouped.
Temperament			
ATMES01 Perception of child's difficult temperament by mother	CQCI – Section TMP atmeq05,06,07,08,19,20,33		
ATMES03 Perception of child's difficult temperament by bio. father/spouse living in the household	SAQF aqpjq02.03.04,05.07,08,12		The convention used is based on that in the CQCI (Section TMP) but the information is drawn from the SAQF.
APRES01 Positive parenting practices (as reported by the PMK)	CQCI Section PAR apreq01,02,03,06,07a	Scale from 7 to 20	A high score indicates a high level of positive interactions.

1. No derivative variable was retained for hostile parenting practices (2 items only).

Name of the variable	Source(s)	Categories	Remarks		
Characteristics related to the mother					
Sociodemographic variables AAGMD01 Age group of the mother	CQCI – Section DEM aage_1	 Less than 20 years 20-24 years 25-29 years 30-34 years 35-39 years 40 years and + 			
AEDMD01 Highest level of education attained by the mother	CQCI – Section EDA aedmq01 to 04	 No high school diploma High school diploma Some post-secondary study (not including university) Vocational/Technical school diploma College (Junior) diploma Some university University degree 	This variable identifies the highest level of schooling attained. Persons who did not obtain a high school diploma but did complete post- secondary studies were classified according to the highest level of schooling attained.		
AEDMD02 Highest diploma/degree obtained by themother	CQCI – Section EDA aedmq01 to 04	 No high school diploma High school diploma Post-secondary diploma (not including university) University degree 			
ALFMD1A Paid work at the time of the survey	CQCI - Section LFS allmd01.08	0) No 1) Yes	Variable indicates if the person is working at the time of the study (n.b. does not include persons on parental leave, for example).		

Name of the variable	Source(s)	Categories	Remarks
	Characteristics	related to the mother	
ALFMD1B Paid work during preceding 12 months	CQCI - Section LFS alfmd02, 08	0) No 1) Yes	Variable indicates if the person worked (part- or full-time) some time during the preceding 12 months.
ALFMD1C Employment status of the principal employment	CQCI – Section LFS alfmq04	 -4) Not applicable (not working) 1) Part time (< 30 hours) 2) Full time 	
ASDMD1A Immigrant status	CQCI - Section SOC asdmq01,2aa	 Not an immigrant European immigrant Non-European immigrant 	The first category refers to persons born in Canada, regardless of ethnic origin. The second category includes persons born in the United States, Australia, New Zealand or in Europe. The third category incorporates persons born in all other countries.
ASDMD3A Number of years since first immigration	CQCI - Section SOC asdmq03	 -4) Not an immigrant 1) Less than 5 years 2) 5-9 years 3) 10 years and + 	
ASDMD4AA	CQCI - Section SOC	0) No	
Ethnic origin: Canadian	asdmq04a	1) Yes	
ASDMD4AB	CQCI – Section SOC	0) No	
Ethnic origin: French	asdmq04b	1) Yes	
ASDMD4AC	CQCI - Section SOC	0) No	Includes persons of English, Scottish or
Ethnic origin: British	asdmq04c.4e.ef	1) Yes	Irish origins.
ASDMD4AD Ethnic origin: other European origins	CQCI - Section SOC asdmq04d,4g,4h,4i,4k,4l,4m,4s	0) No 1) Yes	Includes persons of Dutch, German, Italian, Jewish, Polish, Portugese, Ukrainian and Spanish origins.

Name of the variable	Source(s)	Categories	Remarks
	Characteristic	cs related to the mother	
ASDMD4AE Ethnic origin: Aboriginal	CQCI – Section SOC asdmg04n	0) No 1) Yes	
ASDMD4AF Ethnic origin: African/Haitian	CQCI – Section SOC asdmq04o,4t	0) No 1) Yes	
ASDMD4AG Ethnic origin: other	CQCI – Section SOC asdmq04j,4n,4q,4r,4u,4v,4w	0) No 1) Yes	Given their low representation, persons of Chinese or South-Asian, Métis, Inuit, Arabic- speaking of Maghreb and of Middle East, Spanish-speaking of the Americas and other origins were regrouped.
ASDMD05 Language(s) of conversation of mother	CQCI – Section SOC asdmq05a to 05	 French or English only French and English only French and English + other language(s) French or Englsih + other language(s) 	
ASDMD06 First language(s) learned	CQCI – Section SOC asdmq06a to 06	 French English (not French) Neither French no English 	
ASDMD6A Language(s) spoken most often at home	CQCI - Section SOC asdmq6aa,6ab,6ac	 French only English only Neither French nor English French and English only French or English + other language(s) 	

Name of the variable	Source(s)	Categories	Remarks
	Characteristic	s related to the mother	
Conjugal support			
ASOMS01	SAQM	Scale from 0 to 10	
ADPMS01	aqmmq49 to q.53 CQCI - Section HLA	Scale from 0 to 36	
Reported level of symptoms of depression	ahlmq12a to q12m		
Maternal perceptions and cognitions			
APAMS01 Feeling of self-efficacy	SAQM agmmg23,25,27,29.32,47	Scale from 0 to 10	
APAMS02 Perception of parental impact	SAQM aqmmq22.31,37,42,45	Scale from 0 to 10	
APAMS03 Coercion	SAQM aqmmq26,28,30,33,36,40,43	Scale from 0 to 10	
APAMS04 Parental affection/pleasure	SAQM aqmmq22a,22b,46a,46b,46c	Scale from 0 to 10	
APAMS05 Oversprotection	SAQM agmmg34,38,39,41,44	Scale from 0 to 10	
APAMS06 Perception of child's qualities	SAQM aqmmq21,24,35,46	Scale from 0 to 10	

Name of the variable	Source(s)	Categories	Remarks
	Characteristics related to the fathe	r/spouse living in the househo	bld
Sociodemographic variables AAGJD01 Age group of biological father/spouse living in the household	COCI - Section DEM agge_ 3	 Less than 25 years 25-29 years 30-34 years 35-39 years 40 years and + 	The categories less than 20 years and 20-24 years were regrouped due to small numbers in the category less than 20 years.
AEDJD01 Highest level of education attained by the father/spouse living in the household	CQCI – Section EDA aedjq01 to 04	 No high school diploma High school diploma Some post-secondary study (not including university) Vocational/Technical school diploma College (Junior) diploma Some university University degree 	This variable identifies the highest level of schooling attained. Persons who did not obtain a high school diploma but did complete post- secondary studies were classified according to the highest level of schooling attained.
AEDJD02 Highest diploma/degree attained by the father/spouse living in the household	CQCI - Section EDA aedjq01 to 04	 No high school diploma High school diploma Post-secondary diploma (not including university) University degree 	
ALFJD1A Paid work at the time of the survey	CQCI – Section LFS alfjd01,08	0) No 1) Yes	This variable indicates if the person is working at the time of the survey (n.b., excluding those on parental leave, for example).

Name of the variable	Source(s)	Categories	Remarks
	Characteristics related to the	father/spouse living in the househo	ld
ALFJD1B Paid work during preceding 12 months	CQCI – Section LFS attjd02, 08	0) No 1) Yes	Variable indicates if the person worked (part- or full-time) at some time during the preceding 12 months
ALFJD1C Employment status of the principal employment	CQCI – Section LFS alfjq04	-4) Not applicable (not working)1) Part time! (< 30 hours)2) Full time	This variable identifies the person's work status in the principal employment in the preceding 12 months.
ASDJD1A Immigrant status	CQCI –Section SOC asdjq01, 2aa	 Not an immigrant European immigrant Non-European immigrant 	The first category refers to persons born in Canada, regardless of their ethnic origin. The second category includes persons born in the United States, Australia, New Zealand or in Europe. The third category incorporates persons born in all other countries.'
ASDJD3A Number of years since first immigration	CQCI – Section SOC asdjq03	 -4) Not an immigrant 1) Less than 5 years 2) 5-9 years 3) 10 years and + 	
ASDJD4AA	CQCI - Section SOC	0) No	
Ethnic origin: Canadian	asdjq04a	1) Yes	
ASDJD4AB	CQCI - Section SOC	0) No	
Ethnic origin: French	asdjq04b	1) Yes	·
ASDJD4AC	CQCI - Section SOC	0) N o	
Ethnic origin: British	asdjq04c,4e,ef	1) Yes	
ASDJD4AD Ethnic origin: other European origins	CQCI - Section SOC asdjq04d,4g,4h,4i,4k,4I,4m,4s	0) No 1) Yes	Includes persons of Dutch, German, Italian, Jewish, Polish, Portugese, Ukrainian and Spanish origins.

1. For more information on this topic, see Chen et al (1996)

Name of the variable	Source(s)	Categories	Remarks			
	Characteristics related to the father/spouse living in the household					
ASDJD4AE Ethnic origin: Aboriginal ASDJD4AF Ethnic origin: African/Hailian	CQCI – Section SOC asdj04p CQCI – Section SOC asdi04o, 04t	0) No 1) Yes 0) No 1) Yes				
ASDJD4AG Ethnic origin: other	CQCI - Section SOC asdjq04j,4n,4q,4r,4u,4v,4w	0) No 1) Yes	Given their low representation, persons of Chinese or South-Asian, Métis, Inuit, Arabic- speaking of Maghreb and of Middle East, Spanish-speaking of the Americas and other origins were regrouped.			
ASDJD05 Language(s) of conversation of the father/partner	CQCI – Section SOC asdjq05a to 05s	 French or English only French and English only French and English + other language(s) French or English + other language(s) 				
ASDJD06 First language(s) learned	CQCI – Section SOC asdjq06a to 06s	 French English (not French) Neither French nor English 				
ASDJD6A Language(s) spoken most often at home	CQCI – Section SOC asdjq6aa.6ab.6ac	 French only English only Neither French nor English French and English only French or English + other language(s) 				
Depression						
ADPJS01 Reported level of symptoms of depression	SAQF aqpjq40 to q.51a	Scale from 0 to 36				

Name of the variable	Source(s)	Categories	Remarks
	Characteristics related to the	father/spouse living in the household	1
Parental perceptions and cognitions			
APAJS01 Feeting of self-efficacy	SAQF aqpjq15.17,19,21,24, 39	Scale from 0 to 10	
APAJS02 Perception of parental impact	SAQF aqpjq14,23,29,34,37	Scale from 0 to 10	
APAJS03 Coercion	SAQF aqpjq18,20,22,25,28,32,35	Scale from 0 to 10	
APAJS04 Parental affection/pleasure	SAQF aqpjq14a,14b,38a,38b,38c	Scale from 0 to 10	
APAJS05 Overprotection	SAQF aqpjq26,30,31, 33,36	Scale from 0 to 10	
APAJS06 Perception of child's qualities	SAQF aqpjq13,16,27, 36	Scale from 0 to 10	

Name of the variable	Source(s)	Categories	Remarks		
Characteristics related to the household					
Sociodemographic variables					
AREFD01 Household size	CQCI – Section REL aage_1 to aage_12	2 to 7+			
	CQCI – Section INC ainfq03, ainfd03				
AINFD3A Income sufficient level	CQCI – Section REL Arefd01 (derivative variable <i>size of household</i>)	1) Yes 2) No	Variable based on Statistics Canada's low- income cut-off for the reference year 1997 (1998 collection) (1992 baseline). These cut-offs take into account the size of the household and of the		
	Conversion files for postal codes Total population and percentage of the rural population		area inhabited.		
AINFD2A Main source of household income	CQCI – Section INC (subgroup of the variable ainfd02 based on ainfq01a to ainfq01n and ainfq02)	 Salaries and wages Income from self- employment Social assistance 			
		4) Employment insurance5) Other			

Name of the variable	Source(s)	Categories	Bemarks
	Characteristics relate	ed to the household	
AINFD08 Socioeconomic status	Characteristics relate CQCI - CAID A PCM CQCI- Section INC ainfq03 and ainfd03 AFAFD02 (derivative variable family type) MOTHER CQCI - Section EDA aedmq01, aedmq04 CQCI - Section LFS alfmd1b, apimd01 FATHER/SPOUSE	E1: Scores vary from - 2,8 (lower SES) to 3.7 (higher SES)	Combination of measurements describing the occupational prestige score, education level, and economic status of the parents of the child. This measurement is calculated on the basis of five sources: the level of education of the PMK, the level of education of the spouse, the prestige of the PMK's occupation, the prestige of the spouse's occupation and the level of household income. ¹
	CUCI - Section EDA aedig01, aedig04		
	CQCI - Section LFS alfjd1b, apijd01		

1. For more information on the calculation and interpretation of this variable, see Statistics Canada and Human Resources Development (1995) and Wilms and Shields (1996).

Name of the variable	Source(s)	Categories	Remarks
	Characteristics related	to the household	······································
AFAFD01 Family type at the time of the survey (6 categories)	CQCI - Section REL are2q3, are1q3 to are1q12, are3q4 to are3q12 CQCI - Section CUS acseq06e, acseq06ge, acseq07e, acseq07ge SAQM aqmmq48	 Two-parent intact Reconstituted (mother) Reconstituted (father) Reconstituted (mother + father) Reconstituted (new spouse of the parent biological) Single-parent 	The second category regroups families that include children of only the mother's previous union. The third, the children of only the father's previous union, while the fourth category includes children from previous unions of the mother and the father. The few cases of biological parent living with a spouse who is not the biological parent of the target child make up the fifth category. Foster families and other families in which neither of the biological parents of the target child is present are not included in this typology.
AFAFD02 Family type at the time of the survey (3 categories)	AFAFD01 (derivative variable family type at time of the survey – 6 categories)	 Two-parent intact Reconstituted Single-parent 	The second category includes families in which at least one of the children living the household is from a previous union of one or the other of the spouses. Foster families and other families in which neither of the biological parents of the target child is present are not included in this typology.
AREFD02 Two biological parents living in the household (at the time of the survey)	CQCI - Section REL are1q3, are2q3	1) Yes 2) No	
AREFD2A Biological father living in the household	CQCI – Section REL are2q3	1) Yes 2) No	

Name of the variable	Source(s)	Categories	Remarks
	Characteristics related	to the household	
AREFD03 Biological father living in the household (if mother biological present)	CQCI – Section REL are1q3, are2q3	1) Yes 2) No	This variable provides a means to identify from among the biological mothers who responded those who were not living with the biological father at the time of the survey. Excluded are families in which the biological mother is absent (e.g., single-parent families headed by the father and foster families in which neither the biological mother nor biological father lived in the household). This variable may thus be used to identify, among the mothers who responded, those who are eligible to answer the questions on the absent father biological.
ACSED01 Conjugal situation of the parents at the birth of the child	CQCI - Section CUS acseq03a, 03b, 05a, 05b	 Married Married after living common law Common law Separated Never lived together 	
ACSED02 Family type at the birth of the child	CQCI – Section CUS acseq04, 05b, 06e, 06ge, 07e, 07ge, 20b, 20c, 21b, 21c CQCI- Section DEM adned01 (date of birth of the child)	 Two-parent intact without CPU* Two-parent intact with CPU* not living in the household Reconstituted (mother or m+f) Reconstituted (father only) Single-parent CPU indicates children of a previous union 	

Name of the variable	Source(s)	Categories	Remarks
	Characteristics	related to the household	
ALFFD01, BALFFD01 Workforce activity of the parents (preceding 12 months)	MOTHER CQCI – Section LFS aflind1b FATHER/SPOUSE CQCI- Section LFS alfjd1b CQCI - Section REL are1q3	 Two-parent family, 2 parents working Two-parent family, 1 parent working Two-parent family, neither parent working Single-parent family, parent working Single-paernt family, parent not working 	
ASDFD6A Language(s) spoken most often at home – two- or single-parent household	CQCI - Section SOC asdmd6a, asdjd6a CQCI - Section REL are1q3	 French only English only Neither French nor English French and English only French or English + other language(s) 	
Family functioning AFNFS01 (as reported by the PMK) Neighbourhood	CQCI – Section FNC afnfq01a to 01	Scale from 0 to 27	A low score indicates a functional family.
ASFFS01A Perception of unsafe neighbourhood/people don'k help each other (according to the PMK)	CQCI - Section SAF asffq05a.05b. 06a to 06e	Scale from 1 to 4	

Name of the variable	Source(s)	Categories	Remarks
	Characteristics relate	d to the household	
ASFFS01B Perception that the neighbourhood has few social problems (according to the PMK)	CQCI – Section SAF astfq07a to astfq07f	Scale from 1 to 3	
Observations of family life			
AIFFS01A Level of verbalization of mother during the visit (according to the interviewer)	OFL Aiffq01. 02,04 to 11	Scle with scores varying from 11 to 49	
AIFFS01C Level of stimulation of the child during the visit (according to the interviewer)	OFL aiffq26 to 30	Scale with scores varying from 5 to 25	

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Glossary

Formulaire Bulletin de naissance vivante Centre d'étude du sommeil Centre de la petite enfance Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Montréal-Centre Direction de la santé publique de la Régie régionale de la santé et des services sociaux de Québec Commission d'accès à l'information du Québec - CAI Conseil québécois de la recherche sociale (CQRS) Département des sciences des aliments et de nutrition, Université Laval Département de médecine sociale et préventive, Universite Laval Direction de la méthodologie et des enquêtes spéciales, ISQ Direction de la technologie et des opérations statistiques, ISO Direction des normes et de l'information, ISQ Direction Santé Québec, ISQ Étude des jumeaux nouveaux-nés au Québec – ÉJNQ Fichier maître des naissances Fonds de la recherche en santé du Québec (FRSQ) Fonds pour la formation de chercheurs et l'aide à la recherche (FCAR) Groupe de recherche en nutrition humaine Groupe de recherche sur l'inadaptation psychosociale chez l'enfant - GRIP Institut de la statistique du Québec Laboratoire de recherche de l'École de psychologie de l'Université Laval La Politique Familiale Le Rapport Bouchard (1991) « Un Québec fou de ses enfants » Les Priorités nationales de santé publique ministère de l'éducation ministère de la Famille et de l'Enfance ministère de la Justice ministère de la Recherche, Science et Technologie ministère de la Santé et des Services sociaux du Québec (MSSS) ministère de la Sécurité publique ministère de la Solidarité sociale Politique de la santé et du bien-être Service la recherche Service de support aux opérations de la Régie de l'assurance-maladie du Québec - RAMQ

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