Institut de la statistique Québec

QUÉBEC LONGITUDINAL STUDY OF CHILD DEVELOPMENT (QLSCD 1998-2002)

FROM BIRTH TO 29 MONTHS

Growing Up in a Changing Environment

COLLECTION Health and Wellness

Volume 2, Number 2

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Foreword

The publication of this second volume of the QLSCD 1998-2002 series is the result of close collaboration among university researchers, the public health network and the *Direction Santé Québec* [1] (Health Québec Division) of the *Institut de la statistique du Québec* – ISQ (Québec Institute of Statistics), who have been working on this project since 1996.

Two years after the publication of Volume 1 in this series, an interdisciplinary group of more than 80 researchers contributed to producing this second volume, which presents the very first longitudinal results of our survey. These much-anticipated results describe the environment and development of the children based on the first three data collections conducted when they were 5, 17 and 29 months of age. To fully comprehend the importance of these data on early childhood, I would like to remind the reader of the primary goal of the Québec Longitudinal Study of Child Development 1998-2002 as stated in Volume 1 of this series. The QLSCD will help gain a better understanding of the PRECURSORS of social adjustment by first studying adjustment to school, identifying adjustment PATHS and PROCESSES, and examining the CONSEQUENCES of these later in life.

By analyzing data from the first three years of the survey, the ISQ is pleased to be associated with the development of a such powerful survey and research instrument, and particularly with the accomplishment of a study that will serve both as a preventive tool and an aid in the design of effective early interventions. As Director General, I cannot help but take great pride in the model of partnership which has produced such impressive results, many of which may indeed be harbingers of the future.

Yvon Fortin
Director General

1. Certain French appellation 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.

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This analytical paper is also available in French. (Ce numéro est aussi disponible en version française sous le titre de « Grandir dans un environnement en changement » dans *Étude longitudinale du développement des enfants du Québec (ÉLDEQ 1998-2002) – De la naissance à 29 mois*, Québec, Institut de la statistique du Québec, vol. 2 , n^{o} 2).

A Word of Caution, Symbols and Abbreviations can be found in Section "Review of the Methodology and Caution"

Acknowledgements

Given that the QLSCD 1998-2002 has been in existence for more than six years, the task of thanking each person who has collaborated on the project seems daunting, and frankly, nearly impossible. Each year new colleagues join those who have been with us from the very beginning, and they in turn have faced innumerable logistical and methodological challenges, whether in terms of the contents of the survey or navigating their way through a world of knowledge which is in a state of constant progress.

Indeed, the network of university researchers associated with the QLSCD now stretches across Québec to include the rest of Canada and beyond our nation's borders. Hence the wealth of data from this survey is being disseminated through a variety of channels, whether in post-doctoral work being pursued by young researchers outside of Québec, or the multiplier effect of seasoned veterans constantly establishing new international working relationships in this era of the globalization of knowledge. This multiplication of partnerships is closely linked to the exceptional leadership shown by the scientific director of the QLSCD. In addition to contributing to the advance of knowledge, our "conglomerate" of research teams has resulted in the injection of significant funds devoted to analyzing the wealth of data being generated. Indeed, the pooling of research funds obtained through the excellence of the scholars involved has maximized the investment in the QLSCD 1998-2002 by the *ministère de la Santé et des Services sociaux*, sole sponsor of the project's 10 data collections, surveys and pretests.

New partners in our public health network are constantly joining this ever-expanding group of researchers. Increasing numbers of health professionals are becoming actively involved in the QLSCD, coming from the *ministère de la Famille et de l'Enfance*, the education network, etc.

The increase in the number of external experts and growing complexity of this first provincial longitudinal study has led to more ISQ staff devoting their time, in whole or in part, to the QLSCD. New statisticians from the *Direction de la méthodologie et des enquêtes spéciales – DMES* are now associated with the survey. Their tasks include addressing all questions related to the sample design, analyzing the results of the annual data collections in terms of response rates, and producing the weights required to infer the results to the population of children targeted by this large-scale survey. They also provided support to QLSCD researchers in conducting statistical analyses published in this report. With regards to the *Direction Santé Québec (DSQ)*, chief architect of the QLSCD, it was necessary to hire two people experienced in longitudinal analyses to consolidate the rather small team who have been overseeing the surveys year after year, with all the intense concentration of energy this implies. By coordinating the work of numerous partners, developing new tools and instruments to understand the real world of the growing child, closely collaborating with the survey firm collecting the data, and participating in the dissemination of knowledge by publishing original analyses, the seven members of the *Direction Santé Québec* QLSCD team have accomplished their mission with remarkable success.

Over the years, another partnership that continues to flourish is the one we have with the coordinators of the National Longitudinal Study of Children and Youth (NLSCY, Canada). The fact that these pioneers allowed the QLSCD to use certain instruments administered by the CAPI (Computer Assisted Personal Interview) has meant that our Québec longitudinal study is complementary and comparable to this large-scale Canadian study, and at a reasonable cost.

Québec hospitals, who continually face many challenges because of increasing demands for efficiency, are also important partners in our study, as are birthing centres. They manage to weather whatever storms they face by continuing each year to provide certain data from the medical records of the mothers and children. These data are sent to us with the strict proviso that the mothers have furnished prior written consent.

The *Bureau d'interviewers professionnels (BIP)*, the survey firm, continues to be an indispensable partner in arranging and conducting this first large-scale survey of a cohort of Québec children. BIP, masterfully managed with a hands-on approach by its president, is responsible for organizing and ensuring the smooth functioning of the annual data collections in both the pretests and surveys. Their data is of invariably high quality, and the data banks they produce biannually retain a high degree of reliability. BIP's team of interviewers[2] and recruiters, skilfully supervised by a seasoned veteran of field work, has become expert in winning and maintaining the loyalty of the some 2,000 families who annually participate.

Finally, we would like to single out the exceptional participation of Québec families. We truly believe that the success of the QLSCD comes first and foremost from the hours of precious time they grant us every year, during which we feel privileged to share moments in the lives of their little munchkins who, in 2000, were 2½ years of age.

Acknowledging how difficult it is to truly thank everyone who contributed to the day-to-day accomplishment of this Québec first, we would like to cite the words of Serge Bouchard:

> Progress is a totally collective process in both time and space. We owe so much to others... We desire a society of good people..., because there is a link between individual and collective excellence.[3]

A heartfelt thank-you!

Mireille Jetté
Coordinator
Direction Santé Québec,
Institut de la statistique du Québec

2. All the interviewers in this survey were women.

3. BOUCHARD, Serge (2001). "Je ne suis pas seul sur terre", *Le Devoir Édition Internet*, 23 juillet. (Unofficial translation).

Introduction to QLSCD 1998-2002

When this second report is published, the children in the QLSCD study will have begun their fifth year on this planet. Despite the use of extraordinary tools to closely monitor their development, it is obvious that, in early childhood, development is too fast for science to keep up with.

In our first report, we described our observations concerning the data collected five months after birth. Because of the cross-sectional nature of these observations, our study was limited to describing the characteristics of the children and their families. We mainly wanted to describe the situation of babies born in Québec in 1997 and 1998. Bursting with enthusiasm and eager to understand things, the researchers who, at the time, provided the broad strokes of analyses to explain the observed characteristics were fully aware those were just the first in a long series of analyses designed to provide a deeper understanding of children's development.

This second report, however, is based on the collective data gathered when the children were respectively 5, 17 and 29 months old. At last, we can now describe the changes that occur in the lives of children and their families from birth to the third year. This is the first time that such a large sample of Québec newborns has been studied as intensively during early childhood. As far as we know, this is the very first time since science began studying children's developmental that researchers have tried to understand the factors leading to academic success or failure by collecting data as frequently as this from such a large sample of such young children.

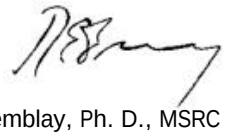
Researchers now have available more data than ever before about this stage of life. But this abundance of data has a perverse effect. If cross-sectional studies allow us to draw conclusions on the causes of problems observed, why shouldn't we go ahead and indulge in longitudinal data as well? When one has access to data available to no one else, it is easy to forget the limitations of such data. However, while the researchers involved in drafting this report tried to obtain the maximum benefit from prospective longitudinal data collected at three different stages during early childhood (at 12-month intervals), they also accepted to respect the limitations of this data.

This prospective longitudinal study allows us to describe the changes over time for each measured variable concerning each individual. The researchers thus recorded the changes during the first three years of the children's lives. Profiles of children, parents and families as well as some developmental trajectories were drawn based on the data collected during these three stages. These original results should facilitate discerning the beginning of the course taken by the children and their families. However, it is important to remember that these results only described the first three points of a curve that ideally should comprise fifteen points of time. Since in most cases, it is not very likely that behaviour is consolidated at 2½ years, we asked the authors to primarily limit themselves to describing the development of observable changes. It is obviously too early in the child's life for us to attempt causal analyses in order to identify determinants, especially since these would only be associations. Finally, whenever we approach a problem, our questions are generally much too simplistic. Longitudinal studies such as the QLSCD indicate that there are many ways to observe a problem and that it is dangerous to draw definitive conclusions after the first analyses, no matter how brilliant these appear to be.

It is important to remember that the main objective of the QLSCD is to understand the paths during early childhood that lead to success or failure once the child enters the school system. In order to successfully reach this objective, we must obviously wait for information collected once the child begins school. The QLSCD children will complete their first school year in the spring of 2005. At the time when this report will be published, they will be old enough to enter Junior Kindergarten, which some of them will do in September 2002. Data collection is also planned for the end of Junior Kindergarten year (spring 2003) and at the end of Senior Kindergarten (spring 2004). If, as desired, these significant data collections are funded, the information generated will allow us to check the level of preparation for school at the entry into the first cycle of elementary school. Later during this longitudinal study, description of the developmental trajectories of these children is planned throughout their school years. If, following the example of many researchers in Québec, the

Québec Government confirms its financial involvement in pursuing QLSCD throughout the children's elementary and secondary school, we can increase our understanding of the factors that lead to academic success and therefore be in the best possible position to improve support to the all-too-many children for whom school is an endless succession of failures.

Through recent discoveries about the development of the human brain, we have come to see the importance of investing early in children's development, just as it is important to invest early in our pension plans. Longitudinal studies on the development of children must obviously be based on the same principle. They must begin as soon as possible, and this is what the *ministère de la Santé et des Services sociaux* did as early as 1997, by investing nearly $5 million in a study on Québec children aged 5 to 54 months old. And obviously, just like for a pension plan, in order for these investments to bear fruit and provide the best possible returns, they must be maintained and even increased.



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Review of Methodology and Caution

The Québec Longitudinal Study of Child Development (QLSCD 1998-2002), launched in 1998, is being conducted on a cohort of nearly 2,000 children surveyed annually from the age of 5 months to approximately 4 years. This second volume covers longitudinal data from the first three rounds when the children were approximately 5, 17 and 29 months of age respectively.

The longitudinal analyses of data collected in the 1998, 1999 and 2000 rounds allow inferences to be made to the population of children born in Québec in 1997 and 1998 (singleton births) who in 2000 were still living in Québec or who had only left the province temporarily. Therefore, in terms of the methodological approach, choosing not to sample children from those who arrived in Québec after birth limits inferences to this population.

Participation of families in the 1999 and 2000 rounds of QLSCD was excellent. Indeed, 94% of families who participated in the 1998 round continued to participate in the second and third rounds, for a 71%[1] longitudinal response rate for the two main questionnaires, the Interviewer Completed Computerized Questionnaire (ICCQ) and the Interviewer Completed Paper Questionnaire (ICPQ). Response rates for the Self-Administered Questionnaire for the Mother (SAQM) and Self-Administered Questionnaire for the Father (SAQF) remained stable from 1998 to 2000, namely 96% for the former and 90% for the latter, among annual respondents to the ICCQ. However, since respondent families were not necessarily the same from one round to the next, the weighted proportion of families who participated in all the rounds was lower, namely 92% for the SAQM and 83% for the SAQF, among respondents to the ICCQ in all three rounds (n = 1,985). The longitudinal response rates of these instruments, obtained by multiplying the weighted proportion of longitudinal respondents to the SAQM or SAQF by the longitudinal response rate of the ICCQ, were 65% and 59% respectively.

1. The unweighted number of families who responded to QLSCD went from 2,120 in 1998 to 2,045 in 1999, to 1,997 in 2000. The number of families who participated in the three rounds of the survey was 1,985 (namely 94% of the 2,120 families in the first round).

It was decided to minimize potential biases induced by non-response by adjusting the weights based on characteristics differentiating respondents from non-respondents for the five major instruments of QLSCD – the ICCQ, ICPQ, SAQM, SAQF and the IST (Imitation Sorting Task testing cognitive development). Since only respondents to the 1998 round were eligible for longitudinal study, longitudinal weights were based on the cross-sectional weights of the ICCQ calculated in 1998. In addition, for longitudinal analyses involving data from the SAQM, SAQF or IST, an additional adjustment to the weights was required to compensate for overall longitudinal non-response in each of these instruments. Unfortunately, in the third round as in the first, even though the response rates of non-resident fathers improved, it was impossible to weight their data since response rates to the SAQFABS were still too low.

Moreover, given QLSCD's complex sample design, it was important that the variance associated with the estimates was correctly identified. This required using a software program that could take into account the complex sample design, otherwise the variance would tend be underestimated, thereby resulting in a threshold of statistical significance that would be too low. SUDAAN (Survey Data Analysis; Shah *et al.*, 1997) was therefore used for prevalence estimates, chi-square tests, repeated measures analyses of variance, linear regressions, logistic regressions and Cox regressions. The threshold of significance for these statistical tests was set at 0.05. With regards to other tests not supported by SUDAAN such as the McNemar, the threshold was lowered to 0.01 to prevent identifying results as significant that might not be, given the complex sample design.

All the data presented that have a coefficient of variation (CV) higher than 15% are accompanied by one or two asterisks to clearly indicate their variability.

N.B. For further information on the survey's methodology, please read Number 1 of both Volume 1 and Volume 2. For more detailed information on the sources and justifications of questions used in the first three rounds of QLSCD as well as the components of the scales and indexes, please read Number 12 of both Volume 1 and Volume 2.

Caution

Unless indicated otherwise, “n” in the tables represents the sum of the individual weights reset to the size of the initial sample. This quantity is used to estimate the prevalences, and is slightly different from the real sample, namely the number of children in a given sub-group. In the body of the text, the number presented to describe the sample size also represents the sum of the individual weights reset to the size of the initial sample. This occurs when an analysis concerns a particular sub-group. The weighted frequency in these cases serves only as a link with the tables. The real sample size, and coefficient of variation remain the quantity to interpret as far as the precision of the estimates is concerned.

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.

Symbols

.. Data not available
... Not applicable (N/A)
- Nil or zero
p < Refers to the threshold of significance

Abbreviations

CV	Coefficient of variation
Not signif.	Not significant


In
2002...
I'll be 5 years old !

1. Introduction

From one generation to the next, children are born and raised in a family environment very different from the one their parents grew up in. While, thirty years ago, most children were born to married parents in their first union, today's children emerge into a far more diversified context. For the majority of young couples becoming parents in Québec, cohabitation is now the chosen pathway (Duchesne, 1997; Dumas and Bélanger, 1997; Lapierre-Adamcyk *et al.*, 2000; Neill *et al.*, 1999). In addition, a higher proportion of children are born into a single-parent family, or into a two-parent family in which one parent or the other already has an experience of conjugal life (Marcil-Gratton and Juby, 2000). For some children, this means sharing their everyday life from birth with half-siblings from an earlier union of one or both parents.

In a context of high conjugal mobility, the experience of single-parent family life after parents separate has become the reality of a rising proportion of children even during the pre-school years (Marcil-Gratton, 1998). To these children are added others, born outside a union, who live with a single parent, most often their mother, throughout early childhood (Le Bourdais and Neill, 1999). Both groups of children are likely to see various individuals enter their family environment - a parent's new partner, a stepsibling with whom they have no biological or adoptive link, or even a half-sibling from the new union.

Although most children emerge unscathed from "broken homes", research on this topic generally agrees that pre-school children whose parents separate are a little more at risk of certain health or adjustment problems, at least in the short term, even when other pre-disposing factors are controlled for (Amato and Booth, 1996). More recently, studies based on longitudinal data have shown that a better understanding of the association between the family types within which children live and problems of social or school adjustment can only be reached using an approach that takes the diversity of children's family pathways from birth into account (Pagani *et al.*, 1997). The importance of the number and type of family transitions, and the sequence of changes in children's lives, can no longer be ignored.

The QLSCD 1998-2002 contains precisely the kind of information that makes it possible to trace the family pathways taken by children from birth. Although, at this point, our aim is not to relate family trajectories to the different indicators of child development collected at the survey, it is nonetheless essential to describe children's principal family transitions in order to gain a deeper insight into how certain events, such as parental separation early in life or multiple stepfamily episodes, are linked to their health and well-being. The data are presented in the first part of this paper.

Family mobility or, to be more specific, parental separation and the arrival of a new parent figure, is only one feature of the environment in which children grow up nowadays. Whether linked to family mobility or not, economic insecurity is another situation faced by many children during early childhood. In Canada, for example, 29% of children under six years old spent a period of at least a year below the low-income threshold between 1993 and 1998 (Morrissette and Zhang, 2001).

In recent decades, numerous studies have clearly indicated that children from underprivileged backgrounds are more susceptible to health and developmental problems given the sum of unfavourable social and sanitary conditions often present in their environment. However, the debate is far from closed as to the factors mediating the observed associations. Furthermore, as mentioned in the *Priorités nationales de santé publique 1997-2002*, very little is known as yet about the impact the duration of poverty has on young children's growth and development (MSSS, 1997)

One of the main reasons for this lack of knowledge is the absence, until recently, of longitudinal data in Québec that make it possible to identify the spells of time spent by children in poverty. In this respect, the QLSCD represents a valuable and extremely rich source of information. Data collected from approximately 2,000 children, from birth to the age of five years, should throw new light on the links between poverty and child development in Québec. This being said, the second part of this text has a far

more modest objective; its aim is to explore the characteristics of children from families with some experience of temporary or prolonged economic hardship. Detailed information on children's family pathways should also help us reach a better understanding of the complex articulation between family trajectories and the economic circumstances within which young children evolve.

Using data collected during the 1998, 1999 and 2000 QLSCD rounds, we will attempt to evaluate the extent to which the family context at birth influences children's trajectories. With 2% of children already experiencing some change in their family situation between birth and approximately five months (Desrosiers, 2000), how has the situation evolved two years later? We will also explore what happens to children who spent their first months of life in a household with an inadequate income. How many witnessed an improvement in their family's financial situation and how many experienced persistent economic difficulties? To what extent is the entry into, and exit from, an episode of low income associated with household characteristics and with children's family pathways? These are the questions central to the present paper.

2. Studying the changing nature of children's family and economic environment: the relevance of the longitudinal approach

Many studies based on longitudinal data have shown how important it is to take account of the whole set of family transitions that children live in order to understand more fully how children's family structure is linked to various problems of development.

Analysing a cohort of children aged 12-17 years, for example, Kiernan and Hobcraft (1998) found that the impact of living with a single-parent on the risk of social and school adjustment problems varies according to whether or not the stability of the family environment since birth was controlled for. Certainly, the experience of single-parent family life is different for children born and raised in this situation than for children whose parents separate. Other studies also highlight the benefits of a stable single-parent family compared with multiple family transitions (Acock and Demo, 1994).

The impact of entering and leaving conjugal unions is also the central theme of a recent study (Hetherington and Stanley-Hagan, 2000). Findings show that children living in stepfamilies experience poorer academic achievement than children from two-parent intact families; they are also more prone to behaviour or emotional problems. However, these differences are reduced, or even disappear, in the few years following the creation of the new family unit. Furthermore, children tend to adapt better to stepfamilies formed when they are young (Hetherington, 1992). Results from another longitudinal survey conducted in Québec converge, revealing that, once pre-separation family factors are taken into account, remarriage has no effect on children's behaviour, other than playing a minor protective role for hyperactive behaviour if it occurs before puberty (Pagani *et al.*, 1997). The study also demonstrated the importance of clearly defining what is meant by "behaviour problems", as children respond differently according to the particular behavioural dimension assessed (ex.: anxiety, aggression, oppositional behaviour or hyperactivity).

Although the effect on children of family reconstitution tends to decrease with time, it is nonetheless important to underline that these new unions are often more fragile (Desrosiers *et al.*, 1995). What is more, Amato and Booth (1991) find that an additional separation disturbs children even more than their parents' divorce, while others focus on the cumulative negative effect of multiple family transitions (Kurdek *et al.*, 1995). All this points to the importance of acquiring a better knowledge of children's family trajectories before attempting to study their impact on school and social adjustment.

Family mobility, or more specifically, the termination of their parents' union, is evidently only one of the changes that children are exposed to during their first years of life. In addition to family change, the family's financial situation may also alter. These changes may themselves result from, or be the cause of, the family transitions that children live through.

Even if most children emerge unharmed from difficult circumstances (Haggerty *et al.*, 1994), economic hardship may act as an important stress factor compromising both the implementation of the parental role and many aspects of children's development (Guo and Harris, 2000; Hanson *et al.*, 1997; MSSS, 1998; Takeuchi *et al.*, 1991). Income loss and economic insecurity have been linked to an increased risk of union breakdown (Bumpass *et al.*, 1991; Yeung and Hofferth, 1998), greater residential mobility (Yeung and Hofferth, 1998), and frequent changes in childcare arrangements.

Recent longitudinal studies demonstrate nonetheless the importance of looking at the duration and severity of poverty in any attempt to improve our understanding of the link between adverse living conditions and child development. Thus, children living in extreme or chronic poverty are more likely to have educational difficulties, physical and health problems, or socio-emotional problems (Duncan and Brooks-Gun, 1997) and to live in high risk

environments in terms of schools, neighbourhood or housing (Rank, 2000).

Some recent Canadian studies have used prospective longitudinal data to document the number and the duration of periods of low income among individuals and families. These studies have attempted to determine the characteristics of individuals who experience prolonged rather than transitory poverty. According to Morrissette and Zhan (2001), children under the age of 6 years, irrespective of the type of family in which they live, and all individuals living in single-parent families, are proportionally more numerous than the rest of the population to experience long periods of low income. Thus, between 1993 and 1998, around 12% of Canadian children under the age of 6 years lived in low-income families for four years or more compared with approximately 8% of the Canadian population as a whole. The corresponding proportion for those living in single-parent families was 32%. Immigrants admitted to Canada within the previous ten years were also more likely to live long periods in poverty, mainly because of higher unemployment rates and lower qualification levels among these groups (Finnie, 2000). Finally, other studies demonstrate that the longer individuals spend in such impoverished circumstances, the lower their chances of escaping a year later (Huff-Stevens, 1994; Laroche, 1997).

Why do some families manage to pull themselves out of poverty while others remain there? Picot *et al.* (1999) found that movements below and above the low-income threshold among Canadian children between 1993 and 1994 were due, in similar proportions, to changes in family composition and in their parents' employment situation (pay and number of hours worked); this applied as much for children from single-parent as from two-parent families.[1] This study also highlights the importance of being qualified, particularly for single-parents. Beyond qualifications, however, a double-income stands out as the predominant factor in helping people out of periods of poverty. Thus, according to Gascon (2000), while poverty among two-parent families could be all but eliminated in Canada if both members of the couple worked full-time, almost half the single-parent families would be poor despite full-time employment. Even with a university diploma, these families maintain a very high predicted poverty level, suggesting that a single breadwinner with at least one dependent child is nowadays not enough to generate an income adequate to meet a family's basic needs.

Identifying and understanding the links uniting family and socio-economic trajectories with the development of preschool children means that we need to acquire a deeper knowledge of the changes occurring in their environment. For this reason, this paper is dedicated to describing changes in children's family and economic situation, from birth to 2½ years. Thus, the first section will focus on family pathways, and the second on transitions into and out of low-income status according to certain family characteristics. Finally, economic changes will be examined in the light of family trajectories in such a way as to connect these two aspects of the child's environment.

3. Children's family pathways

3.1 Data

The data used to chart Québec children's family pathways from birth to approximately 2½ years old (29 months) come from two sections of the Interviewer Completed Computerized Questionnaire (ICCQ) – one, administered every two years, dealing with family history and legal custody, and the other, describing the relationship between household members. The first section contains detailed, dated information on the conjugal and parental history of the two biological parents. This was administered for the first time at the QLSCD first round (1998), when the child was aged about five months, to one of the two biological parents. It was updated at the third round (2000) in order to include subsequent events: parents' separation, new unions, the arrival of half-siblings in the family environment. Except in a few cases, the parent responding to this section was the mother. Used in conjunction with this information, the household members matrix made it possible to know the composition of the household at each of the three survey rounds.

The analytical sample is composed of 1,991[2] cases and includes all target children who participated in the 1998 and 2000 survey rounds and for whom the necessary information for reconstructing the family pathways during the period is available. Note that, of the 2,120 children eligible to be followed longitudinally, 1,997 took part in the 2000 round. Some cases have been excluded, however, due to missing or inconsistent information.[3] Moreover, target children living with their biological mother and a new partner at their birth were excluded from the analysis given their small number.

3.2 The variables : constructing a family typology

The study of the family life course is based essentially on the child's residential environment. To be more specific, only relationships linking a target child to parents in the household (including the biological parent's new partner) are the focus here, as are those linking the child to other children normally residing in the household.[4] Our aim is, therefore, to describe the child's immediate family, irrespective of whether another family unit shares the same household or whether other individuals, relatives (aunts, uncles) or non-relatives (roommates) are present.[5] Nor does the typology selected to present the profile of family trajectories take account of the type of union chosen by parents. However, such conjugal arrangements are fully dealt with in the analysis of the determinants of early family breakdown (see Number 11, Part II of the present collection).

Centred on the residential unit, this approach does not make it possible to describe the wider family environment within which children are raised. For instance, the target child's half-siblings who normally reside outside the surveyed household are not taken into account. QLSCD first round data showed that approximately 3% of children born in a two-parent "intact" family according to the residential definition have half-siblings who were not living in the same household. In the vast majority of cases, this non-resident sibling group were the father's children (Marcil-Gratton and Juby, 2000); the data do not allow us however to evaluate the contact that children have with this extra-residential network.

Moreover, this study of children's changing family situation includes only events occurring in the environment of the responding biological parent. However, it may be that, after parents separate, a child lives in a single-parent family with the responding parent and in a stepfamily with the other parent. This other parent may even have experienced the end of the second union during the period under observation. In the present case, the analysis only includes the single-parent episode lived by the child. There are two reasons for this decision. First, information about the family and conjugal history of non-responding parents is less complete than that of the responding biological parent; for example, no information is available on the conjugal trajectories of fathers who were not living with the mother at the child's birth (9%). In addition, while the method used to reconstitute family pathways has the advantage of taking the sequencing of events into consideration, it does not make it possible to include two family

episodes occurring simultaneously (see the presentation of the method below).

This procedure has the obvious consequence of under-estimating the family mobility experienced by children following their biological parents' separation. Note that, at the 1998 round, only 5% of children born to a single parent lived in shared custody whereas, at the 2000 round, approximately 11% of those living in a single-parent family were in this situation. In addition, among the former group, a sizeable proportion had no contact with their other parent.[6] The pathways described here should, therefore, be taken to reflect the situation lived by children *most of the time* during the period covered.

In the ensuing analysis, only events leading to following changes in the family configuration have been considered:

- those arising from the separation of parents living in the surveyed household, whether or not they are biological[7];
- those resulting from the responding biological parent's (essentially the mother's) entry into a union with a new partner or with the other biological parent;
- those occurring after the arrival or departure from the surveyed household of half-siblings, insofar as this event leads to a change in the configuration of the family within which the target child lives;
- those leading to the entry into another type of family (ex.: foster family).

From the basic information included (see box 1), three types of context at birth are considered in the analyses that follow:

- **Intact biological families** include only children living with their two biological or adoptive parents, irrespective of the type of conjugal union (marriage or common-law).[8]
- **Biological stepfamilies** comprise a couple living with the target child from their union and at least one child from an earlier union of one or other parent. The family "reconstitution" in this case results uniquely from the presence of a sibling group composed of half-siblings normally living in the household.
- **Single-parent families** regroup families in which the target child is living with a single parent.

To this are added other family types that become more numerous as the family landscape of the target child is transformed.

- **Stepfamilies** include a biological parent living with a partner who has no biological link to the target child. This partner may or may not have children from a previous union living in the household.
- **Other families** are those that include neither biological parent (ex.: foster family, grand-parents etc.).[9]

Box 1
Information used to reconstruct children's family pathways

1. Dated information from the "Family History and Custody" section of the ICCQ (CUS and CU2 sections):

   - the date (year and month) at the start and end of any conjugal union (common-law and marriage) entered into by responding biological parent, usually the mother (approximately 99%), since the child's birth.

2. Other dated information:

   - the target child's date of birth;
   - the date of each interview.

3. Information on the relationship between household members at each survey round, taken from the household members matrix (ICCQ sociodemographic component - section REL):

   - in conjunction with data from the family history section, information from this matrix serves mainly to link the target child to other children in the household. The information obtained at each round is used to estimate the moment at which household members, such as half-siblings or stepsiblings for whom no dated information is available, enter or leave the household. The process first involves verifying the presence or absence of the individual concerned at each round, and then estimating the time of their arrival or departure as falling in the middle of the reference period.

At this point, it is important to note that this study of family pathways ignores the birth of siblings or half-siblings.[10] This being said, the typology makes it possible to distinguish stepfamilies according to the nature of the family links uniting its members; to distinguish, in other words, biological stepfamilies (two biological parents with half-siblings present) from stepfamilies created by the arrival of a stepparent. This distinction is important given that the first type of family may be more stable than the second (Desrosiers *et al.*, 1995). Moreover, from the child's point of view, these families reflect very different realities: in the first case, the child lives with siblings who may "circulate" between different households, while in the second, the child himself is the one susceptible to share time between two dwellings. As the majority of respondents are mothers, this latter family configuration most often refers to a situation in which the child lives with his biological mother and a stepfather.

Table 3.1 first depicts the family situation of children at their birth, and then at each of the survey rounds, when they were aged 5 months, 17 months and 29 months respectively. Eight out of ten children were born in a family that included only biological parents and children from their union. One child out of ten lived with his two biological parents and half-siblings from a previous union of one or other parent (biological stepfamily) while a slightly lower proportion of children were born to parents who were not living together at their birth. Almost all these children were living with their biological mother.

Table 3.1
Distribution of children according to their family context from birth to approximately 29 months of age, Québec, 1998, 1999 and 2000

	Birth	5 months (1998)	17 months (1999)	29 months (2000)
		%		
Biological intact family	80.8	79.9	77.6	76.1
Biological stepfamily	10.4	10.3	9.6	8.9
Stepfamily	–	0.1 **	1.4 *	2.2 *
Single-parent family	8.7	9.4	10.6	12.7
Other family	–	0.3 **	0.7 **	0.1 **
Total n	**1,991**	**1,991**	**1,991**	**1,991**
%	**100.0**	**100.0**	**100.0**	**100.0**

* Coefficient of variation between 15% and 25%; interpret with caution.
** Coefficient of variation greater than 25%; imprecise estimate for descriptive purposes only.
Source: *Institut de la statistique du Québec*, *QLSCD 1998-2002.*

Clearly, the proportion of children living with both biological parents (biological intact family or biological stepfamily) decreases over time in favour of children living in a single-parent family. From the 1999 round on, stepfamilies became more prevalent although the proportion of children living with a stepparent, essentially a stepfather, by the age of 2½ years remains very low.

However, this series of "photographs" masks the changes occurring from one round to the next. From these data it is impossible to tell whether children in single-parent families at birth remained in this situation throughout the period. Similarly, the pathways followed by children who were living in stepfamilies at the 2000 round are unknown. Finally, this table conceals the movements in and out of relationships as some biological parents get together after the child's birth or are reconciled after a period of separation.

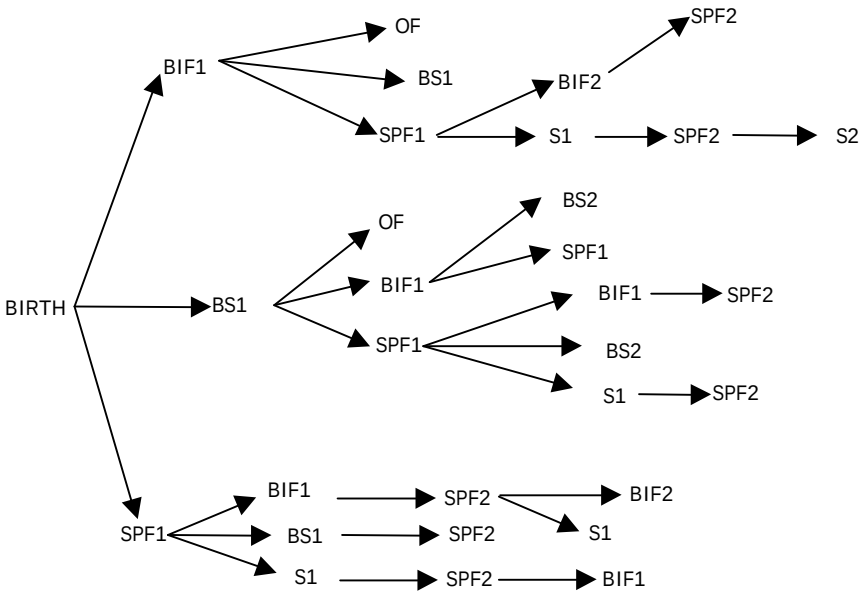
To clarify these questions, it is vital to examine children's family life course, and reconstruct, in other words, the sequence of family events children live. Using the method described below, we will attempt to find answers to questions such as: which are the most common family trajectories followed by young children born in Québec at the end of the 1990s? What is the likelihood that a child lives at least one episode with a single parent before the age of 2½ years? What is the probability that children born in a single-parent family live in an intact family when the custodial parent marries or starts living with their other biological parent, or in a stepfamily when a new partner arrives on the scene?

3.3 The pathways studied

Figure 3.1 presents the whole set of family changes that the children represented by QLSCD[11] are likely to experience. This diagram illustrates the structure of the process under study - the different family trajectories taken by children between birth and 29 months.

Constructed from the different family types presented earlier, the child's family life course starts at birth (BIRTH) and is followed through 9 possible states: BIF1, BIF2, BS1, BS2, SPF1, SPF2, S1, S2, OF (see Figure 3.1 for a definition of these abbreviations). The arrows represent changes of state, or transitions. For instance, the transition from state BS1 to SPF1 represents the passage from the first episode in a biological stepfamily to a first episode in a single-parent family.

Figure 3.1
Children's family pathways from birth to approximately 29 months, Québec, 1998, 1999 and 2000



BIF1: 1st episode in a biological intact family
BIF2: 2nd episode in a biological intact family
BS1: 1st episode in a biological stepfamily
BS2: 2nd episode in a biological stepfamily
SPF1: 1st episode in a single-parent family
SPF2: 2nd episode in a single-parent family
S1: 1st episode in a stepfamily
S2: 2nd episode in a stepfamily
OF: 1st episode in an other family

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

As the method used compels us to decide *a priori* the transitions to be studied, some possible transitions were excluded from the start - the direct transition from a biological intact family to a stepfamily, for example. In this analysis, all family episodes ending in separation are automatically followed by an episode in a single-parent family.[12] In addition, certain events are so rare that they are effectively "terminal". Once the state is reached, no exit is possible. This is the case for all transitions towards the "other" family (OF), towards a second biological stepfamily (BS2) or stepfamily (S2) episode. All other states are considered transitory, in the sense that they may lead to another family type.

3.4 Method

Two key concepts are essential to understand the present analysis: duration – the child's age when a family change occurs, and sequence – the complete series of different states or transitions lived by children. Establishing duration and sequence require information on the precise moment at which an event occurs.

Transition probabilities are estimated using the multiple decrement table method[13], the main difference here being that a series of tables are calculated. This approach means that probabilities are estimated not for the whole group of children but only for the sub-group following a similar pathway: they are conditional, therefore, on the sequence of transitions already made (Fernando, 1992, 1999). The first set of arrows in Figure 3.1 indicates the particular

family situation children are born into: biological intact family, biological stepfamily, and single-parent family.[14] Subsequently, each arrival point becomes, in its turn, a point of departure: for example, children born in a biological intact family are exposed to the risk of living a subsequent family episode, in an "other" family, in a biological stepfamily, or in a single-parent family. As there are several possible exits from a state, the risks associated with the events leading to these states are treated as competing.

In order to estimate the relative proportion of children taking different pathways, we used these transition probabilities to estimate sequence probabilities (see Annex 1). Estimating the whole set of trajectories allows us to determine the relative importance of each one, calculated by multiplying the cumulative probability of transition for each sequence. We will return to this when presenting the findings. It is also possible to calculate the probability that a child lives a particular event, irrespective of the pathway taken. Thus, the probability of living a second single-parent episode is calculated by taking each sequence leading to this state into account:

$$
\begin{aligned}
P(SPF2) = \\
&[P(SPF1_1) * P(BIF1_2|SPF1_1) * P(SPF2_3|SPF1_1, BIF1_2) + \\
&P(SPF1_1) * P(BS1_2|SPF1_1) * P(SPF2_3|SPF1_1, BS1_2) + \\
&P(SPF1_1) * P(S1_2|SPF1_1) * P(SPF2_3|SPF1_1, S1_2)] + \\
&[P(BIF1_1) * P(SPF1_2|BIF1_1) * P(S1_3|BIF1_1, SPF1_2) * \\
&P(SPF2_4|BIF1_1, SPF1_2, S1_3) + \\
&P(BIF1_1) * P(SPF1_2|BIF1_1) * P(BIF2_3|BIF1_1, SPF1_2) * \\
&P(SPF2_4|BIF1_1,SPF1_2,BIF2_3)] + \\
&[P(BS1_1) * P(SPF1_2|BS1_1) * P(BIF1_3|BS1_1, SPF1_2) * \\
&P(SPF2_4|BS1_1, SPF1_2, BIF1_3) + \\
&P(BS1_1) * P(SPF1_2|BS1_1) * P(S1_3|BS1_1, SPF1_2) * \\
&P(SPF2_4|BS1_1 ,SPF1_2, S1_3)]
\end{aligned}
$$

(where the index numbers represents the spell's number of each trajectory)

Given the model employed here (non-markovian), the standard error associated with these probabilities could not be calculated. In addition, probabilities estimated on fewer than 20 cases will not be commented on in the following text[15] due to their lack of precision.

3.5 Results: sequence probabilities

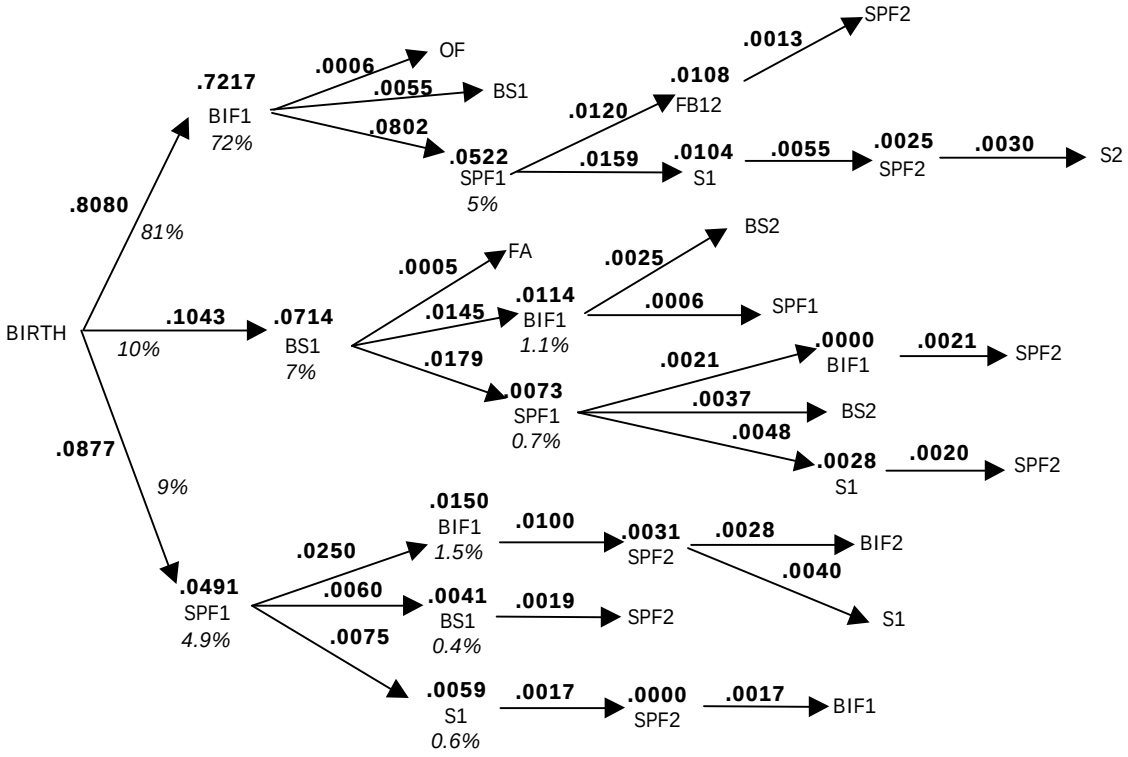
It is important to mention at the outset that, even if children belong to the same birth cohort, they are not all integrated in the same way into the life cycle of their respective family. For instance, 44% of children in the analysis are first children. Similarly, their parents have followed varied conjugal pathways: among children born in biological intact families, 80% had mothers for whom this was the first union; this was the situation for 71% of mothers in single-parent families and for only 27% of mother in biological stepfamilies (data not presented).

Figure 3.2 presents the sequence probabilities for children between birth and 29 months.[16] First of all, 84% of children lived none of the family transitions under consideration: by the age of 2½ years, 72% were still living in a biological intact family, 7% in a biological stepfamily and 4.9% in a single-parent family.[17]

The proportion of children living at least one change (16% of all children) varies according to the family context at birth. To make it easier to read the results, Table 3.2 presents the principal changes observed.[18] Thus, approximately 11% of children born in biological intact families experience at least one transition while this proportion rises to 32% among children born in biological stepfamilies and to 44% for those born in single-parent families. Finally, around 6% of children live a second transition before the age of 2½ years.

Figure 3.2

Children's family pathways from birth to approximately 29 months: sequence probabilities, Québec, 1998, 1999 and 2000



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

Table 3.2

Proportion[1] of children experiencing certain family transitions between birth and the age of approximately 29 months, according to the family type at birth, Québec, 1998, 1999 and 2000

	Family type at birth			
	BIF1	BS1	SPF1	**Total**
No family change	89.3	68.5	56.0	**84.2**
At least 1 family transition	10.7	31.5	44.0	**15.8**
At least 2 family transitions	3.5	13.1	15.5	**5.5**
At least 1 single-parent family episode	9.9	17.2	100.0	**18.6**
At least 2 single-parent family episodes	0.8	3.9	15.5	**2.4**
The end of the 1st single-parent family episode by[2]:				
the mother's entry into a union with a new partner	2.0	4.6	8.5	**3.2**
the return of the biological father	1.5	5.6	37.3	**4.9**

1. Proportions are calculated using the sequence probabilities presented in Figure 3.2. For example, the percentage of children born in a biological intact family (BIF1) experiencing at least 1 family transition during the period under observation is estimated as the ratio of the probabilities of leaving the state to that of being into it, thus: (0.0006 + 0.0055 + 0.0802)/0.8080 = 0.1068 or 10.7%.
2. These proportions include all states following the first single-parent family episode irrespective of their order in the sequence.

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

Table 3.3 presents some of the family trajectories taken by children between birth and approximately 29 months. A look at the transitions made by children born in biological intact families (81%) shows that parents' separation constitutes the main event modifying their family environment. In fact, the transition to a single-parent family (BIF1 → SPF1) accounts for 93% of the changes happening in the life of these children. The other possible changes, the passage towards "other family" or towards a biological stepfamily (with the arrival of half-siblings), are far less common. In total, during the period under observation, 8% (0.0802) of children make the transition from BIF1 to SPF1.

Table 3.3
Sequence probabilities and distribution of certain family transitions made by children between birth and approximately 29 months, Québec, 1998, 1999 and 2000

Family Pathways	Sequence Probabilities	Distribution of transitions
		%
BIF1 → OF	0.0006	0.7
BIF1 → BS1	0.0055	6.4
BIF1 → SPF1	0.0802	92.9
Total	**0.0863**	**100.0**
BIF1 → SPF1 → BIF2	0.0120	43.0
BIF1 → SPF1 → S1	0.0159	57.0
Total	**0.0279**	**100.0**
BS1 → OF	0.0005	1.5
BS1 → BIF1	0.0145	44.1
BS1 → SPF1	0.0179	54.4
Total	**0.0329**	**100.0**
BS1 → SPF1 → BIF1	0.0021	19.8
BS1 → SPF1 → BS2	0.0037	34.9
BS1 → SPF1 → S1	0.0048	45.3
Total	**0.0106**	**100.0**
SPF1 → BIF1	0.0250	64.9
SPF1 → BS1	0.0060	15.6
SPF1 → FR1	0.0075	19.5
Total	**0.0385**	**100.0**

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

The pathways taken by children born into biological stepfamilies (10%) may be marked not only by parental separation but also by the departure of half-siblings. Indeed, as the data in Table 3.3 show, 54% of first transitions for these children reflect the passage towards a single-parent family episode (BS1→SPF1) and 44% towards an episode in a biological intact family (BS1→BIF1).

As for children born within a single-parent family (9%), Table 3.3 shows that 80% of first transitions are caused by the return of the biological father (SPF1→BIF1 + SPF1→BS1 = 64.9% + 15.6%). In all, around 37% of children born in these circumstances experienced their father's homecoming while 9% saw their mother enter a union with a new partner during the period under observation (Table 3.2). It is worth noting that, among the former children, the majority were still living with their father when aged about 2½ years old ((0.0150 + 0.0028 + 0.0041 + 0.0017)/ (0.0250 + 0.0060 + 0.0017 = 72% - Figure 3.2).

Summing all the probabilities of living at least one single-parent episode shows that almost one child in five (19%) had this experience by the age of 2½ years (Table 3.2). Almost half of these children (47%) were born in this situation, while the rest (53%) arrived there when their biological parents separated. Not all remain there, however: as Table 3.1 showed, only around 13% of children were living in a single-parent family at 2½ years old. The sequence probabilities show that (Figure 3.2), effectively, approximately 5% (0.0491 + 0.0031 + 0.0019) of all children are born to and remain with a single parent. Others have both parents present at birth and only later find themselves in this situation, at some point before the age of 2½ years (0.0522 + 0.0013 + 0.0025 + 0.0006 + 0.0073 + 0.0021 + 0.0020 = 7%).

Now, comparing children born within biological intact families with those born in biological stepfamilies shows that the former are less likely to experience their parents' separation than the latter (10% v. 17%; Table 3.2). This being said, while the vast majority of children experience a single-parent episode only once, some live at least two - the case for only 2.4% of the total number of children.

The way in which a single-parent family episode ends depends on the context at birth. As we saw, for children born in this situation, the mother's entry (or re-entry) into a union with the child's biological father is the most common exit (80%) from the first period in a single-parent family. Among children born in biological two-parent families, intact or stepfamilies, a first single-parent family episode is far more likely to end with the arrival of a new partner (BIF1→SPF1→S1 = 57% and BS1→SPF1→S1 = 45% compared with SPF1→ S1 = 20%) (Table 3.3).

In Table 3.1, we saw that the relative proportion of children living with their two biological parents declined between birth and 2½ years (form 91% to 85%). This small decrease conceals a more complex set of movements in and out of unions. Indeed, while 79% of children born in two-parent families remain there for the first 2½ years of life (0.7217 + 0.0714), around 6% arrive in this situation following one or more transitions (Figure 3.2). In the same way, the relative weight of children living in a single-parent family at 2½ years (13%; Table 3.1) is not only caused by separations, but also by the "stability" of the life course of many children born in this situation.

These findings give an account of the wider observed trends. As the analysis is based on the mobility of the responding parent, a certain number of movements or events remain invisible. Nevertheless, this analysis has made it possible to chronicle more fully the growing diversity and complexity of the family life course traversed by recent generations of children in Québec. In this respect, it should be remembered that 16% of children had already seen their family environment transformed in one way or another by the age of 2½ years.

The analysis also reveals that approximately one-fifth (19%) of the children covered by the QLSCD experienced life in a single-parent family before reaching the age of 29 months. Comparing these results with those based on NLSCY data suggests that this phenomenon is progressing: 16% of Québec children born 10 years earlier (1987/1988) had lived in a single-parent family before their third birthday (Marcil-Gratton, 1998).[19] A look at the different family pathways of the QLSCD children shows, on the other hand, that a first single-parent family episode between birth and 2½ years is followed, in 42% of cases, by the entry or re-entry into a union. For many children, this union is with their biological father.

As already mentioned, family change is not the only type of event likely to transform a child's environment. In particular, a shift in their economic circumstances can have a substantial effect on their life. This topic is explored in the following section.

4. Periods of low income

Today, many children are exposed to the difficult financial circumstances experienced by their parents, whether the result of union breakdown, or of finding and keeping paid employment. Infants are particularly vulnerable (Ross *et al.*, 1996), because of the drop in work income (ex.: maternity leave among working mothers) that often accompanies the birth of a new baby. Finding a job, or returning to work, can be particularly difficult for mothers who have the sole responsibility of a young child.

What proportion of children experienced at least one low-income period since their birth? Among children born in difficult financial circumstances, how many saw their situation improve? For what percentage was this situation of economic insecurity a prolonged one? Is it possible to characterize households experiencing persistent rather than temporary poverty? These are the main questions raised in the following analyses, questions that are of crucial importance in a study devoted to child development. Certainly, as *La Politique de santé et du bien-être* underlines, "the majority of poor families succeed in providing an suitable environment for their children" (MSSS, 1992). However, as a whole host of studies in recent decades have concluded, young children living in poverty are more at risk of a whole set of problems that may compromise their health and development (see, among others, Brooks-Gunn and Duncan, 1997; Seccombe, 2000; Séguin *et al.*, 2001; Wade *et al.*, 1999). Children starting life in extreme poverty are particularly likely to suffer in all sorts of ways: low birth weight, multiple health problems, lack of stimulation and socialization, nutritional deficiencies, conditions of housing and the physical environment that do not promote healthy development, not to mention that services for young children in underprivileged surroundings are often poorly integrated and sporadic (RRSSS of Montréal-Centre, 1998).

Over and above its intensity, the number of years spent in poverty, and the age at which it is experienced by the child, appear to be just as important for certain aspects of development. For example, from a number of longitudinal studies carried out in the United States, Brooks-Gunn and Duncan (1997) showed that children living several years in a low-income household were more at risk than other children of presenting physical health problems or other developmental difficulties, even after controlling for a set of factors such as parenting, family structure, mother's age or education, ethnic affiliation, neighbourhood quality, and the like. The study also revealed that children who experience poverty during the preschool years, or during the early school years, are more likely to drop out of high school than those living it later on in childhood or adolescence. From this, it is easy to understand the importance of identifying not only the pervasiveness of child poverty at a given moment but also the length of time spent in impoverished circumstances.

In this study, we assume that children living in a low-income household are experiencing economic hardship. A household is classified as "low-income" if the gross annual income from all sources[20] is below the cut-off (before tax) defined by Statistics Canada according to the size of the family unit and of the region of residence. More precisely, the low-income cut-off (LICO) corresponds to the level of income beyond which a household spends, on average, for food, clothing and lodging a proportion of its pre-tax income superior to 20% to that spent by the average family.[21]

According to Statistics Canada, low-income cut-offs do not represent official poverty levels. It should be noted, however, that individuals below the LICO may find themselves in financial hardship because they spend a greater proportion of their budget purchasing basic essentials than does a family of a similar size living in a similar region. Even within this group, however, some households are worse off than others. In order to evaluate the level of income inadequacy, in some analyses, children belonging to household with an income less than 60% below the low-income threshold have been set apart from those whose family income is situated between 60 and less than 100% below the LICO (Séguin *et al.*, 2001) (see box 2).

Box 2
Low Income Measurement

Besides the low-income cut-off, other methods can be used to evaluate the incidence of low income in a given population. For instance, the after-tax low income measure (LIM) corresponds to half the median family after-tax income adjusted for family size. The evaluation of low income may vary considerably depending on the measure used, or for the same indicator, according to the selected threshold (Jean, 2001). Whatever the case, low-income indicators (LICO, LIM) are relative; they are closer to an indicator of inequality than of poverty in that they evaluate low income relative to a reference population.

In the present study, because information on the gross rather that the net (after tax) income was collected, the pre-tax low-income cut-offs defined by Statistics Canada for each of the years covered have been used to evaluate the incidence of low income (for further details on measurement of income and other QLSCD socio-economic status measures, see Desrosiers, 2000 and Number 12 of the present volume). An analysis conducted by Noreau *et al.* (1997) reveals that the transition rates (below and above the low income threshold) are only marginally affected when based on pre-tax rather than after-tax low-income cut-offs.

From the outset, questions on household income were asked at each of the survey rounds when the children were approximately 5 months (1998 round), 17 months (1999 round) and 29 months (2000 round), and refer to the gross household income in the year preceding the survey. A child is considered as being in a situation of persistent or chronic low-income if the household in which he lives fell below the low-income cut-off from birth to 29 months. The evaluation of income adequacy on an annual basis means that, evidently, short episodes of poverty remain invisible.[22]

The following section tackles the entries into and exits from financially difficult situations experienced since birth by the children covered by the QLSCD. Using simple cross-tabulations, it also attempts to identify the main sociodemographic characteristics of households experiencing persistent economic hardship. The analyses are essentially descriptive in nature; their aim is to provide a preliminary image of the low-income trajectories of the Québec children covered by QLSCD, and to identify the particular characteristics of children living a given number of low-income episodes from birth. This first portrait will provide the basis for more in-depth analyses of the determinants of certain types of low-income trajectories among young children.

4.1 Low income: entries and exits

The proportions of children living in a low-income household are presented in Table 4.1, for each period of the study. For comparability, only children participating at all three survey rounds (n = 1,985), and for whom the information is available at each round have been included in the analytical sample, leaving a total of 1,905 children.[23] As Table 4.1 shows, just over a quarter of children lived in a low-income household between birth and five months. This proportion declined to 23% at the 1999 round, and to 21% at the 2000 round.[24] Among these low-income children, the data also show that the difference between income and the low-income cut-off had dropped from 42% at the 1998 round to 38% a year later, a level that remained stable in the following year. In other words, not only did low income become less frequent from the 1999 round, the gap in average incomes in relation to the low-income cut-off also grew smaller. This is clearly visible when we examine the proportion of children living in extremely poor households: from the 1999 round, the relative size of this group declines. As will be seen later, such factors as the entry into, or return, of mothers to the labour force could explain this overall improvement in children's financial circumstances during their first years of life.

From the distributions observed each year, it is not possible to appreciate the movements into and out of economic hardship. While approximately a quarter of children live in a low-income household during any given year, the data in Table 4.2 indicate that one third of children were, in fact, exposed to at least one period of poverty between birth and 2½ years. For about half of these children (17%) this situation was temporary, while the other 16% experienced

chronically difficult living conditions from birth to the age of 2½ years. In total, 6% of children lived in a household with a very inadequate income (inferior to 60% of the LICO) from birth (data not presented).

Table 4.1
Proportion of children living in a household whose income is moderately or very inadequate, and the income deficit in relation to the low-income cut-off, Québec, 1998, 1999 and 2000

	1998 (5 months)	1999 (17 months)	2000 (29 months)
		%	
Percentage living in a low-income household	**26.3**	**23.4**	**21.3**
Moderately inadequate income	11.7	12.1	11.4
Very inadequate income	14.6	11.3	9.9
Income deficit[1] / LICO (%)	**41.8**	**37.7**	**36.1**
n	**1,905**	**1,905**	**1,905**

1. Low-income cut-off (LICO) before tax, minus the gross annual household income.
Source: *Institut de la statistique du Québec*, *QLSCD 1998-2002.*

Table 4.2
Distribution of children aged around 29 months according to the number of periods spent below the low-income cut-off (before tax) since birth, Québec, 1998, 1999 and 2000

	%	n
None	**67.3**	**1,282**
At least one year below the LICO since birth	**32.7**	**623**
One or two periods	17.2	327
1998 only	5.1	97
1998-1999	4.2	79
1998-2000	1.5 *	29
1999 only	2.2 *	41
1999-2000	1.5 *	29
2000 only	2.7 *	52
All three periods	**15.5**	**296**
Total	**100.0**	**1,905**

* Coefficient of variation between 15% and 25%; interpret with caution.
Source: *Institut de la statistique du Québec*, *QLSCD 1998-2002.*

What proportion of children born in difficult circumstances experienced an improvement in their situation?

The QLSCD data reveals that around four children in ten born in a low-income household (1998 round) saw their situation improve at some point (Table 4.2).[25] Of the children spending the first months of life in a low-income household, around a quarter were no longer experiencing the same difficulties a year later. In the same way, of all children living a period of low-income at around 17 months, the situation had changed for about 27% of them later on.[26]

Table 4.3 shows that movements out of and into poverty are normally due to a substantial change in income. Indeed, the increase in median income for households leaving the low-income category in 1999, for example, is equal to $13,500. For households crossing the threshold in the opposite direction between 1998 and 1999, the median difference observed is just as striking (-$13,000). By comparison, for households remaining below the low-income cut-off in 1998 and 1999, the median rise in income was only $1,500. Disparities of the same scale are observed for the period 1999-2000.[27] This suggests that important events occurred in the households experiencing a change of status: changes in the employment or conjugal situation, for example.

The findings taken as a whole suggest that the period surrounding the arrival of a child involves a significant loss in income for a sizeable proportion of households – that is to say, an income decline sufficiently large to push a certain number of households below the low-income cut-off. What are the characteristics of households experiencing chronic financial difficulties?

Table 4.3
Distribution of children by low-income transition group, and the median income variation for the periods 1998-1999 and 1999-2000, Québec, 1998, 1999 and 2000

	%	Median Income variation ($)[1]	n
1998-1999			
Above the low-income cut-off in 1998 and 1999	70.0	2,000	1,333
Below the low-income cut-off in 1998 and 1999	19.7	1,500	375
Exited low-income status in 1999	6.6	13,500	125
Entered low-income status in 1999	3.7	-13,000	71
Total	**100.0**	**2,000**	**1,905**
1999-2000			
Above the low-income cut-off in 1999 and 2000	72.4	5,000	1,379
Below the low-income cut-off in 1999 and 2000	17.1	1,000	325
Exited low-income status in 2000	6.3	13,500	121
Entered low-income status in 2000	4.2	- 10,000	80
Total	**100.0**	**3,000**	**1,905**

1. The median variation is estimated by first calculating, for each period, the difference between one year's gross annual income and that of the preceding year. The median variation corresponds to the median (i.e. the value that divides the sample into two equal halves) of the weighted distribution obtained in this way.

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

4.2 Characteristics of children living in households with chronic financial difficulties

In the wake of other Canadian research, the 1998 round data revealed that five-month old infants of young, uneducated mothers, as well as children from large families, from single-parent families or from those with a single-income were more likely to be living in a low-income household (Desrosiers, 2000).

What is the situation two years later?

Table 4.4 presents the distribution of children according to the number of low-income episodes lived since birth and various sociodemographic characteristics of the household or the mother that might be related. Some concern the household profile at the child's birth (ex.: family type, mother's age and immigration status) while others refer to the composition of the household in which the child lived at five months (ex.: number of children living in the household). Table 4.5 presents this distribution in terms of the household's socio-economic situation in the year preceding the first survey round in 1998 (ex.: the household main source of income) or at the time of the first round (ex.: mothers' paid employment at that time).[28]

Table 4.4
Distribution of children aged approximately 29 months according to the number of periods spent below the low-income cut-off (before tax) since birth, and various sociodemographic characteristics of the family[1], Québec, 1998, 1999 and 2000

	Number of low-income periods			At least one low-income period	n
	0	1-2	3		
	%				
Mother's age group at birth					
Under 20 years	20.9 *	29.0 *	50.2	79.1	66
20-24 years	46.5	32.4	21.2	53.5	424
25-34 years	77.9	11.7	10.5	22.1	1,167
35 years and over	65.5	13.8 *	20.7 *	34.5	247
Family type at target child's birth					
Intact	74.2	14.5	11.3	25.8	1,547
Biological stepfamily	61.0	21.1 *	17.9 *	39.0	201
Single-parent	6.7 **	38.9	54.4	93.3	154
Mother's immigrant status					
Non immigrant	72.3	16.1	11.6	27.7	1,634
European immigrant	64.1	18.4 **	17.5 **	35.9 *	55
Non-European immigrant	29.4	25.2 *	45.4	70.6	214
Mother's education					
No high school diploma	37.7	26.4	35.9	62.3	362
High school diploma	58.3	23.6	18.1	41.7	513
Post-secondary diploma (other than university)	75.5	15.3	9.2 *	24.5	551
University degree	89.8	5.4 *	4.8 *	10.2 *	478
Number of children in the family					
1	68.9	17.0	14.1	31.1	805
2	69.2	16.5	14.3	30.8	767
3	67.8	17.3 *	14.9 *	32.2	227
4 or more	40.6	23.0 *	36.4	59.4	105

1. The relation between the number of low-income periods and each of these variables is significant at the 0.05 level (Chi-square test). Apart from the variables "mother's age group at birth" and "family type at birth", all sociodemographic characteristics refer to the situation observed at the first survey round (1998) when children were aged about 5 months.

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

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

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

As shown in Table 4.4, mothers' age at birth stands out as being strongly associated with the number of low-income episodes. Half the children born to a mother aged less than 20 years lived in chronic poverty from birth, compared with around 11% to 21% of children born to older mothers. The mother's immigrant status also appears closely linked to the number of periods spent in a low-income household: 45% of children born to non-European immigrant mothers experienced persistent low-income from birth – the situation for approximately one-fifth of children of European immigrant mothers and one-tenth of mothers born in Canada. The difference between the two latter categories is not significant, however. Interestingly, for children of immigrant mothers, the number of low-income episodes seem to be closely related to the time elapsed since their arrival in Canada: 44% of those whose mother immigrated less than 10 years earlier experienced three periods of low-income, the case for around one-third (32%) of those whose mother immigrated 10 years or more before ($p < 0.05$; data not presented).

The relationship between mother's level of education and the frequency of low-income episodes is a clear and negative one. The higher the mother's education, the lower the proportion of children experiencing multiple low-income episodes since birth: 36% of children whose mother had no high school diploma at the 1998 round had lived in a low-income household up to the age of 2½ years compared with 18% of children whose mother had a high school diploma, 9% whose mother had a post-secondary diploma (though lower than university) and around 5% of children with mothers with a university degree.

With regard to the family situation, the data presented in Table 4.4 show that only children from families with at least four children stand out from the others (36% compared with around 15%). The more impoverished circumstances of children living with a single biological parent, normally the mother, at birth is clear; more than half lived in a household with an inadequate income for the entire first 2½ years of life. In comparison, only 11% of children born into biological intact families and 18% of those born into biological stepfamilies were exposed to persistent poverty.

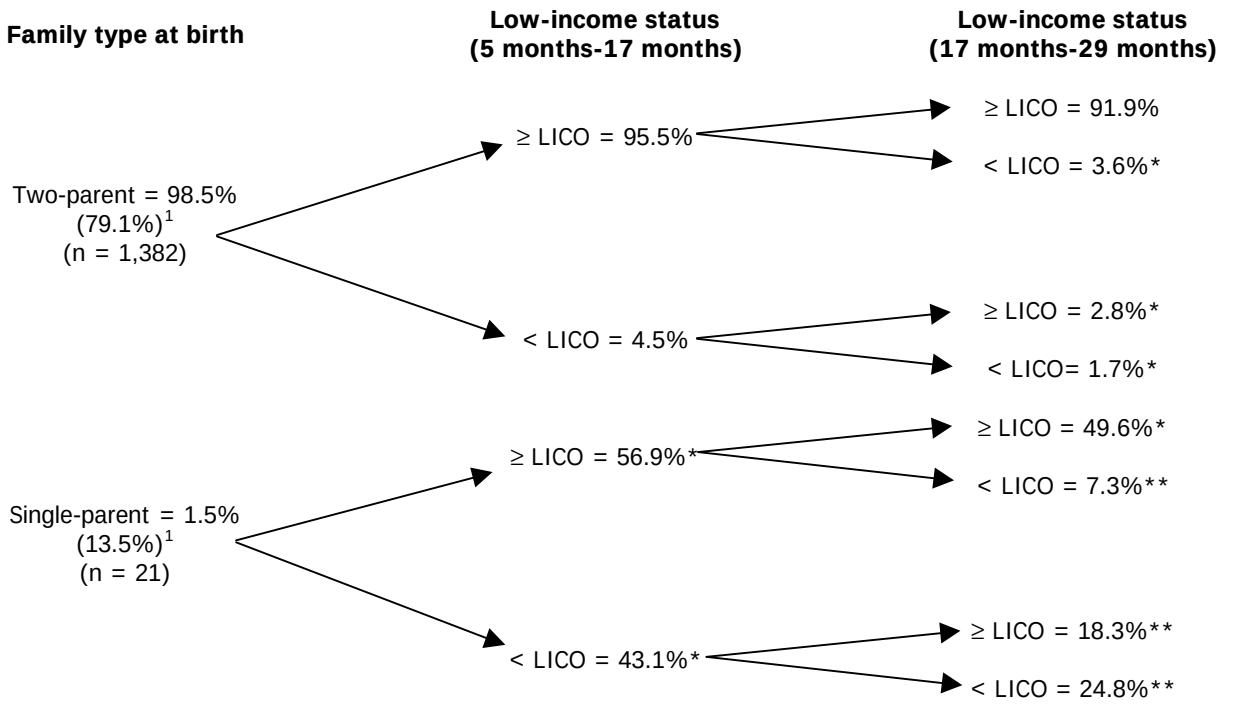
Certainly, several of the characteristics associated with the economic conditions in which young children are raised are strongly interrelated. For example, immigrant mothers who arrived in Canada less than 10 years earlier are significantly less likely to have been employed in the months preceding their child's birth (47%) than those immigrating 10 or more years before (64%) ($p < 0.05$; data not presented). Moreover, mothers having a child outside a union are on average younger and less educated than those living in a two-parent family (intact or step), a fact that may account for their greater vulnerability. For instance, almost half the mothers who were without a partner at their child's birth (45%) had not completed high school compared with only 17% of mothers in two-parent families ($p < 0.05$; data not presented). A detailed look at the data shows, however, that for single mothers, a better education is no guarantee of a better financial situation, as a similar proportion of mothers with a high school diploma as with a higher level of education (around 55%) had lived constantly below the low-income threshold since their child's birth. The situation is completely different for mothers in two-parent families. Thus, 31% of children from two-parent families in which the mother had no high school diploma experienced three low-income periods compared with only 14% of those whose mother had a high school diploma, around 7% of those whose mother had a post-secondary diploma, and around 4% of those whose mother had a university degree ($p < 0.05$; data not presented). Put differently, it is clear that, at equal education levels, single-mothers start with a disadvantage.

Along the same lines, Figure 4.1 illustrates the fact that even when income is above the low-income threshold in the few months surrounding the child's birth – the case for around one-tenth of single mothers – those who were not living in a couple at the birth are less likely to maintain this level of income subsequently (50%) than their counterparts in two-parent families (92%). Could it be that it is more difficult for a single-mother to remain in the work force or to hold down full-time employment after the birth? Does this mean that at equivalent qualifications, single mothers do not have access to the same type of jobs as mothers in a couple because they have to fulfil alone the daily responsibilities of parenthood? Is the lower proportion of single-parent families that succeed in maintaining an adequate

income after the child's birth a direct result of the absence of a second employment income to compensate the decrease in the number of hours worked by mothers or their, possibly temporary, withdrawal from the labour force?

Figure 4.1

Distribution of children living in a household above the low-income threshold at birth according to family type at birth, and low-income status at approximately 17 and 29 months, Québec, 1998, 1999 and 2000



1. Proportion of children living in a low-income household among all children belonging to this family type.
* Coefficient of variation between 15% and 25%; interpret with caution.
** Coefficient of variation greater than 25%; imprecise estimate for descriptive purposes only.
Source: *Institut de la statistique du Québec, QLSCD 1998-2002.*

More generally, what is the nature of the link between parents' labour force participation during the period surrounding the birth and the economic difficulties to which young children are exposed?

The QLSCD data first shows that 81% of children living in families for whom social assistance was the principal source of income at the 1998 round had lived continuously in a low-income household since birth (Table 4.5). Approximately two-thirds of these children remained in a household supported principally by welfare payments up to the age of 2½ years. Despite a change in their main source of income, the other one-third of households had not succeeded in pulling themselves above the low-income threshold (data not presented).

Table 4.5
Distribution of children aged approximately 29 months (%) according to the number of periods spent below the low-income cut-off (before tax) since birth, and various socio-economic characteristics, Québec, 1998, 1999 and 2000

	Number of low-income periods			At least one low-income period	n
	0	1-2	3		
Household main source of income during the 12 months preceding the 1998 survey round					
Salaries and wages	78.9	15.4	5.7	21.1	1,455
Self-employment income	67.9	24.5 *	7.6 **	32.1	140
Social assistance	-	18.6 *	81.4	100.0	204
Other[1]	30.3 *	31.8 *	37.9	69.7	89
Family situation at the 1998 survey, and parents' employment status in the preceding 12 months					
Two-parent families					
Two parents employed	84.8	12.5	2.7 *	15.2	1,227
One parent employed	52.6	25.5	21.9	47.4	433
Neither parent employed[2]	..	..	99.0	..	67
Single-parent families					
Single parent employed	15.6 **	55.1	29.4 *	84.4	52
Single parent not employed	1.8 **	27.3 *	70.9	98.2	112
Mother in paid employment at the 1998 survey round					
Yes	74.2	21.1	4.7 **	25.8	327
No	65.6	16.4	18.0	34.4	1,549
Income adequacy during the 12 months preceding the 1998 survey round					
Adequate	91.3	8.7	...	8.7	1,404
Moderately inadequate	...	60.0	40.0	100.0	223
Very inadequate	...	25.5	74.5	100.0	278

1. Includes pensions, worker's compensation, dividends and interest, child tax benefit, unemployment insurance and other state benefits, rental income, scholarships and other non-specified income sources.
2. The sample size makes it impossible to divide children according to the number of low-income episodes.

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

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

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

In addition, for around 7% of children living in a household supported principally by a salary (5.7%) or self-employment income (7.6%) in the year preceding the child's birth the economic situation was also difficult throughout the first 2½ years of life (Table 4.5). These findings highlight the importance of mothers' employment income as a means of protecting young children from economic hardship. Among children whose mothers worked full or part time when they were 5 months old, around 5% experienced chronic poverty from birth – the experience of 18% of children whose mother was not working at the time.

The data in Table 4.5 also demonstrate the more difficult situation of children living in single-income families compared with families with two breadwinners. In fact, among children in two-parent families, those with only one parent employed during the year preceding the first survey round are markedly more likely to experience prolonged poverty. Thus, 22% of children living in a two-parent single-income family had been raised since birth on a low income compared with 3% of those living in a double-income family. The situation of the former group is very close to that of children whose single parent was working during the year preceding the QLSCD first round (29%).

Curiously, almost all infants living at five months in a two-parent family with no employment income experienced chronic poverty up to 2½ years, while only 71% of children born to a single parent who was not working followed this trajectory. In other words, almost 30% of children with a single parent not in the labour force (i.e. who had not been employed during the year preceding the survey) had a change in status at some point. We will see later that change in their conjugal situation undoubtedly allowed certain mothers to pull themselves above the low-income threshold after their child's birth.

We also investigated whether the severity of financial difficulties during the first few months of life influenced the number of low-income episodes. Findings reveal the unenviable lot of children born into the most impoverished households: among those whose family income was very insufficient at the 1998 round (i.e. more than 60% below the LICO), three-quarters remained below the threshold throughout the first 2½ years of life compared with 40% among infants belonging to households with moderately inadequate incomes. Clearly, the former group had more ground to make up.

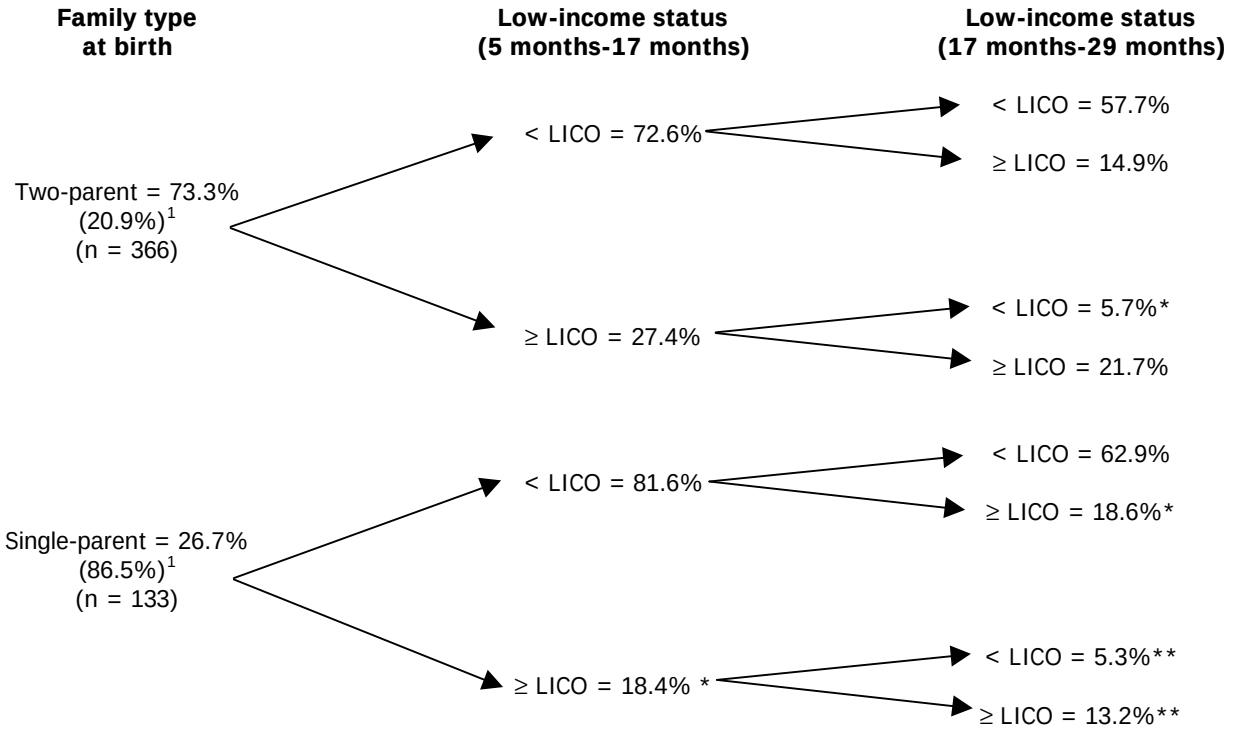
What about children with a transitory experience of low income; those who, in other words, lived one or two episodes rather than none at all?

Tables 4.4 and 4.5 suggest that, in addition to the "at-risk" groups already identified, certain children are more often exposed to transitory economic hardship than others are, in that they are more likely to experience one or two low-income periods. This is the case, for example, for children whose mother was aged 20-24 years at the birth (32%) or who were not educated beyond the high school diploma (24%), as well as those living in a household whose principal income source in the year preceding the 1998 survey round was self-employment income (around 25%) or another income source (around 32%).

Moreover, temporary low-income episodes (one or two low-income periods) are more prevalent among children born to an employed single parent (55%) than among children born in a single-income two-parent family (26%). This result may reflect the difficulty single mothers have remaining in full time employment after the birth of a child.

Finally, whatever the family circumstances surrounding the birth, the fact of being born into a situation of financial insecurity seems to be a serious handicap to families. Among children born in a low-income family, 63% of those whose parents were not living together at their birth, and 58% of those whose parents were together, had not managed to leave this situation two years later (see Figure 4.2). By comparison, Figure 4.1 shows that, among children spending infancy in a household with an adequate income, around one-quarter of those born to a single-parent and around 2% of those born to a couple spent the next two periods in a situation of economic insecurity.

Figure 4.2
Distribution of children living in a low-income household at birth according to family type at birth, and low-income status at approximately 17 and 29 months, Québec, 1998, 1999 and 2000



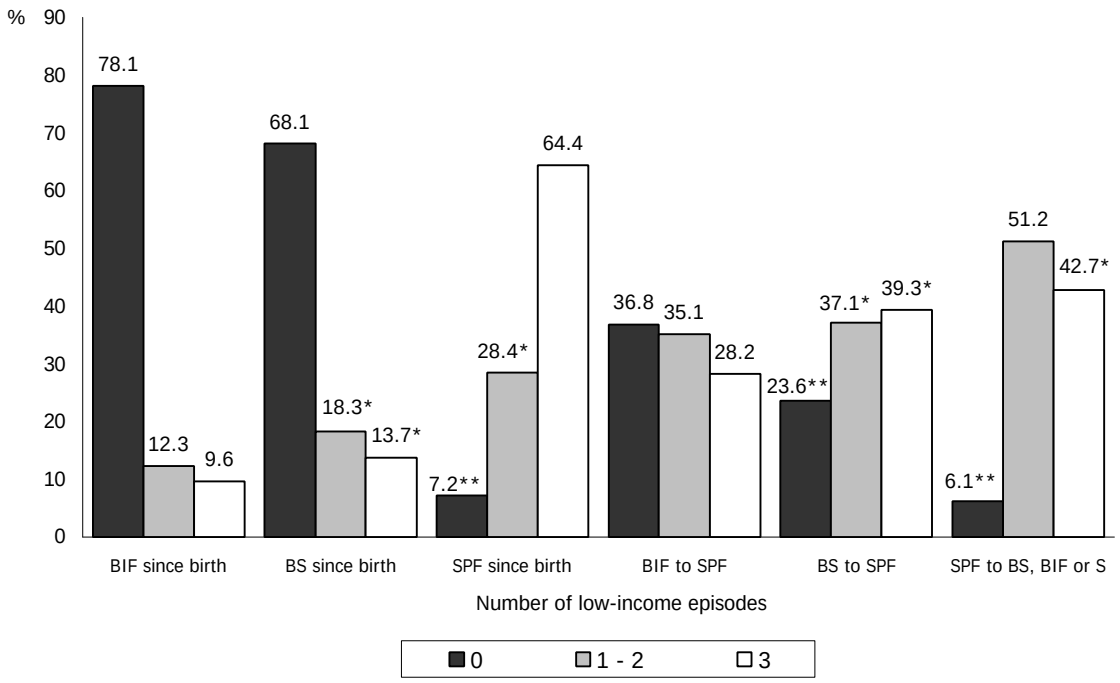
1. Proportion of children living in a low-income household among all children belonging to this family type.
* Coefficient of variation between 15% and 25%; interpret with caution.
** Coefficient of variation greater than 25%; imprecise estimate for descriptive purposes only.
Source: *Institut de la statistique du Québec*, *QLSCD 1998-2002.*

4.3 Parents conjugal transitions and children's low-income experience

As we saw, a sizeable proportion of children experience change in their family situation in the first 2½ years of life. How far can such changes as a single parent's forming a union or a couple separating lead to a change in low-income status?

The data in Figure 4.3 illustrate the important influence family change has on the economic mobility of the QLSCD children.[29] Visibly, children who lived exclusively with one parent since birth are the least well-off, in financial terms: 64% lived prolonged economic insecurity from birth, the situation for around 43% of those whose family situation changed with the reappearance of the biological father (BIF or BS) or the arrival of a new partner in the household (S). As might be expected, two-parent intact families whose situation remained the same since birth occupied the most enviable position: only 10% of them had experienced prolonged low-income. This percentage rose to 14% in biological stepfamilies. Between these two extremes are found children from two-parent families that separate: between approximately 28% and 39% of them lived below the low-income cut-off for the length of the period under observation.

Figure 4.3
Distribution of children aged approximately 29 months according to the number of episodes spent in a low-income household (before tax) since birth and certain family trajectories, Québec, 1998, 1999 and 2000



BIF = biological intact family
BS = biological stepfamily
SPF = single-parent family
S = stepfamily
* Coefficient of variation between 15% and 25%; interpret with caution.
** Coefficient of variation greater than 25%; imprecise estimate for descriptive purposes only.
Source: *Institut de la statistique du Québec*, *QLSCD 1998-2002.*

Overall, the findings in Figure 4.3 illustrate the close link between parents' conjugal trajectories and the movement of children in and out of financial hardship. They also demonstrate how important it is to consider children's family transitions in the search for a better understanding of the relationship between economic insecurity and family type. Thus, children who live with a single parent following their parents' separation are considerably less at risk of prolonged or chronic poverty (approximately 28% to 39% respectively according to the type of two-parent family) than those who had always lived with a single mother (64%). Figure 4.3 also shows the intimate relationship between a single mother's entry into a union and the end of economic hardship among children born outside a union; the financial situation is far more likely to improve at some point for children who experienced the arrival of their father or another parental figure into their household than among those whose mother remained alone. Does this mean to say that children born to a single mother have a better chance of moving out of economic insecurity if their mother finds a partner rather than a job? Unfortunately, the numbers are too small to push this analysis further. Given the nature of the data, establishing a causal relationship between conjugal mobility, on the one hand, and the children's transitions in and out of poverty, on the other, is not an easy task. According to current research, economic insecurity can be as easily the cause as the consequence of parental separation (Bumpass *et al.,* 1991). One thing is sure, however: rare is the conjugal status change that is not accompanied by an increase or loss of employment income. According to QLSCD data, the passage from a two to a one-parent family is almost always accompanied by a loss of household employment income that may eventually be partially compensated, one might expect, by child support; conversely, a single parent's entry into a union generally means adding an employment income to the household. Thus, as Figure A.3 (Annex 2) in the appendix shows, among the 10% of children who lived one of these family transitions (8.8% + 1.3%), almost all (8.8%) also saw this change reflected in the number of employment incomes in the household.

It would be of great interest, in subsequent research, to separate the impact labour force changes have on movements out of poverty made by young children in single-parent families from those resulting from conjugal change, particularly in view of the severe problems single mothers with young children may face integrating into the labour force (Desrosiers, 2000). In this respect, QLSCD data presented in the appendix Figure A.3 (Annex 2) suggest that children born to an single mother who was not working at the time of their birth (1PAR - 0EP) could be more at risk of seeing their family situation change (passage to two-parent family: 1PAR - 0EP to 2PAR – 1 or 2 EP) (around 2%) than to see their mother integrated into the work force (1PAR – 0EP to 1PAR – 1EP) (around 1%). The observed percentages are however based on small numbers and need to be interpreted with caution.

Finally, note that, in Figure 4.3, compared with children living in intact two-parent families, those born to parents with children from a previous union (biological stepfamilies) tend towards greater financial insecurity, irrespective of whether or not the couple separated subsequently (see also Table 4.4). These results partly reflect the different composition of these two groups and particularly the conjugal and parental histories of their parents. Children from biological stepfamilies are more likely, for example, to be born to little-educated mothers (no high school diploma: 30% v. 15%), who were not working at their birth or at five months (39% v. 27%) and who had become first-time mothers during adolescence (data not presented).

5. Conclusion

Since the early 1970s, when divorce rates started to climb, many studies from Europe, the United States and Canada, investigated the impact separation and divorce have on children. Research using a cross-sectional or longitudinal approach revealed that, even if most children of divorce come through it unscathed, life in a single-parent family or stepfamily is associated with a slightly higher risk of various adjustment and health problems, at least in the short-term (Bernier *et al.*, 1994; Cheal, 1996). Other research in the United States found that, compared with children with married parents, those whose parents were divorced were more likely to experience educational difficulties, emotional or behaviour problems, or long-term health problems (for a review, see Amato, 2000). Certain longitudinal studies have even suggested that certain negative repercussions of parents' divorce do not appear until much later (Cherlin *et al.*, 1998). Certainly, it is still too early to verify if such tendencies are present among children in Québec. The data of future rounds of the QLSCD 1998-2002 will make it possible, however, to understand the effect that early parental separation may have on the children's social and educational adjustment in Québec, at least in the short term.

In the meantime, the analysis of family pathways has shown that, among children born in Québec at the end of the 1990s, around one-fifth had lived in a single-parent family at some point before the age of 2½ years. Among these children, more than half (53%) were confronted by this situation following the break up of their parents' union while a quarter had lived it from birth. Finally, one child in five (21%) born to a single-parent had seen the family situation change subsequently.

For a sizeable proportion of children born outside a union, the first family transition occurs when their father takes up residence with their mother. In fact, just over one-third of these children saw their father integrated into the household after their birth, and for almost seven out of ten children he was still present when the child was 2½ years old. Among children born in two-parent families, family composition has an influence on their subsequent family life course. Thus, 11% of children born in a biological intact family lived at least one family transition in the 2½ years after their birth. In comparison, 32% of children born in a biological stepfamily, i.e. with half-siblings present, experienced at least one change. Overall, the latter appear to have lived through their parents' separation a little more frequently than children born in a two-parent intact family (17% v. 10%).

Finally, totalling all the family transitions, we estimate that around one child out of six experiences one of the selected transitions between birth and the age of 2½ years. However, this proportion could well be higher. Remember that, for reasons already given, for children living in a single-parent household, only changes in the life of the parent living with the child, almost always the mother, were taking into consideration. This approach could lead to a slight underestimation of children's family mobility given that men are more likely to enter a union following separation (Desrosiers *et al.*, 1999; Villeneuve-Gokalp, 1991). It should be repeated here that approximately one-tenth of children in a single-parent household at 2½ years were in shared custody. As the QLSCD collected detailed information on the conjugal and parental trajectories of both biological parents after separation, on the arrangements surrounding the separation and on the type of contact between the child and the non-resident parent, more in-depth analyses could be conducted at some point to provide a better picture of the complexity of the family situations lived by children experiencing their parents' break up.[30]

As for the economic situation, the analysis has shown that one-third of children in Québec aged around 2½ years in the year 2000 had been exposed at some point to at least one low-income period since birth. Approximately half (that is, 16% of all the children) had experienced prolonged economic hardship up to the age of 2½ years. In total, 6% of children lived in a household whose income was grossly inadequate, that is to say more than 60% below the low-income cut-off, since birth.

The analysis has also highlighted certain sociodemographic characteristics of the households in which children lived chronic economic deprivation. For

example, young children of mothers who gave birth in their teens, who were non-European or recent immigrants (less than 10 years), and who had little education (no high school diploma), as well as children of birth order four and above, or who were born to a single mother, are considerably more likely to have lived continuously below the low-income cut-off since birth. Although several of these characteristics are linked, the analysis showed that, at equal qualifications, mothers who were not in a couple at their child's birth start with a handicap. Thus, whatever the mother's level of qualifications, approximately half the children born outside a union were raised in chronic poverty, while a much lower proportion of children born in a two-parent family (from 4% to 31% depending on the mother's diploma) were in this situation.

Beyond the family situation in itself, the importance of two parental incomes for protecting young children from economic hardship also stands out. Indeed, children living in single-income two-parent families during the year of their birth are much more likely to have lived continuously in a low-income household than those belonging to a double-income family (22% v. 2.7%). Among children whose single parent was in employment, 29% were in this situation.

In the same vein, the economic situation at the child's birth was shown to play a crucial role in the family's immediate future, irrespective of family type. Whatever the family context, the fact of finding oneself in precarious economic circumstances in the period surrounding the birth, seems a serious handicap for families: among children born in a low-income household, 63% of those whose parents were not living together and 58% of those whose parents were married or cohabiting had still not emerged from this situation after two years. Their mother's entry into a conjugal union, by bringing an extra employment income into the household, proved to be a successful way out of difficult financial circumstances for children born to a single-mother. In contrast, parental separation sends a proportion of children from two-parent families below the low-income threshold at some point. In addition, children born in a biological stepfamily, a family that includes children born within an earlier union of one or other parent, experience greater economic insecurity than those born in an intact family. These results, as we saw, partly reflect the conjugal and parental pathways taken by their parents, with children of biological stepfamilies more likely, for example, to be born to a mother who had her first child during adolescence or to have experienced an early break up of their parents' union.

In this sense, data from the first three QLSCD rounds provide evidence of the close link between the conjugal trajectories of parents and children's movements in or out of poverty. They illustrate the importance of considering children's family transitions in the search for an improved understanding of the relationship between financial insecurity and family structure.

Comparing QLSCD data with those collected in the Canadian national survey (NLSCY) suggests that children born in Québec at the end of the 20th century are more likely than earlier generations to experience life in a single-parent family before their third birthday. Data from different sources concur that the growing precocity of single-parent family life results not so much from the modest rise in out-of-union births in Québec, as from the increase in early parental separation. Only by following children through time will it be possible to determine whether this change will be accompanied by an increase in other family transitions among preschool children.

Already, the rise in (early) parental separation is of concern to policy makers and others involved in family issues. In 1997, for instance, the Québec government instituted compulsory mediation when parents separate in order to facilitate the separation process for parents and their children. At the same time, other groups, such as the *Conseil de la famille et de l'enfance*, underlined the importance of efforts aimed to prevent conjugal problems among couples with children, given the human costs associated with conjugal disharmony (*Conseil de la famille*, 1996, 1997; *Société canadienne de pédiatrie*, 2001). Indeed, among the numerous sources of tension leading to conjugal breakdown, are undoubtedly certain pressures associated with the social organisation of the family, an area in which intervention is possible: the difficulty of reconciling work and family, for instance, or the problems encountered by young parents attempting to enter the labour force. In this respect, the QLSCD is one of

the rare data sources in Québec that may help uncover the determinants of early parental separation (see Number 11 of this volume).

How do changes in economic circumstances, such as losing a job or cutting down the number of hours worked, affect conjugal stability? Apart from movements below and above the low-income cut-off, what proportion of children experience a significant reduction in living standards when their parents separate? What is the impact of an important change in living standards on the development and well-being of children of separated parents, once other factors, such as characteristics of the child and the context surrounding the separation (ex.: level of agreement between the parents, contact with the non-custodial parent) are taken into account? More generally, which factors make it possible to counter the negative influence of financial and social insecurity on preschool children's health and development? These are only a few of the many questions it will be possible to investigate in the near future.

Notes

1. In this study, the low-income measure used corresponds to 50% of the median family income adjusted according to adult equivalents for 1993.

2. This number is equal to the sum of weights of an unweighted sample of 1,990 children.

3. Two children living in a foster family at the 1998 round were excluded from the analysis because of a total absence of information about their family pathway since birth. Three other cases were dropped because of uncertainty about the family life course or missing information at the 2000 round.

4. We refer here to the sibling group comprising biological siblings (same father, same mother), half-siblings (one common biological parent) and stepsiblings (no common biological parent).

5. This approach conceals the fact that certain children, especially those belonging to particular ethnic groups, have daily access to an extended family network (ex.: several nuclear families coresiding in the same household) and the fact that in several single-parent households, for instance, another adult, such as the maternal grandmother, may also take on parental responsibilities. QLSCD data indicate that almost 28% of children with a single-parent at the first round of the survey (1998) were living in a multigenerational household, the case for approximately 2% of those living in a two-parent family. However, the small numbers compel us to concentrate on the parent-child unit without distinguishing between single family and other types of household.

6. 29% of children born outside a union had no contact with their other parent at five months.

7. This separation is normally the result of union breakdown. In only three cases did the separation occur as a result of the death of one of the parents.

8. As indicated earlier, at times one or both biological parents of the target child has one or more children from a previous union of whom none live in the household. Given the approach used here, these families (around 3%) are included in the category “biological intact families”. No information is available on the contact the child has with this extra-residential network.

9. In this analysis, the category “other family” is essentially made up of children in foster families.

10. In all, the biological mother of 17% of the children in the sample gave birth to at least one child during the period of observation.

11. As mentioned in Number 1 of this volume, this covers the children born in Québec in 1997-1998 who had not left the province permanently before the age of 29 months.

12. It is possible theoretically that the date of separation coincides with that of the entry into a new union. Since this transition is very rare, however, we decided to exclude this transition and require all separations between partners to be followed by a single-parent episode of at least 0.1 months – the smallest unit of time considered in the present analysis.

13. This involves calculating, at each interval of time, the probability attached to a group of children of living a given family event. For more detailed informations, see Burch and Madan, 1986.

14. The analysis requires that each child experience a first transition at birth (BIRTH -> BIF1; BIRTH -> BS1; and BIRTH -> SPF1). This is not, strictly speaking, a transition since children have not lived a change in their situation. This “artificial” transition is necessary to fulfil the requirements of the software used (see Annex 1).

15. Readers may refer to Figure A.2 in the Annex 1 for the number of weighted observations involved in each sequence.

16. Only the pathways observed in our sample have been included, the possibilities being, evidently theoretically more numerous.

17. As these probabilities correspond in reality to the state of departure, they are equivalent to simple proportion. An estimation of the coefficients of variation could therefore be carried out and the results show them to be lower than 15%. For the results relative to the first transition (BIF1 to SPF1; BS1 to SPF1; or SPF1 to BIF1), the coefficients of variation associated with the simple proportion estimates are also below 15%.

18. The proportions presented in this section are calculated by summing the sequence probabilities. As they depend on the time passed between the observed changes, the proportions obtained by the addition of sequence probabilities are not equivalent to simple proportions. Therefore, the precision of these estimates cannot be verified. The reader needs to exercise caution, particularly when the sum of probabilities includes transitions based on less than 20 cases.

19. This figure includes children born to a single-parent.

20. In the QLSCD, the income given is the income before tax and deductions, in the course of the twelve months preceding the survey, of all individuals normally living in the target child's household. This includes market income (ex.: salaries and wages from employment, investment income), transfer payments (ex.: unemployment insurance, social assistance payments, various child benefits) and other income.

21. For example, for a family of two adults and two children living in Montréal, the low-income cut-off before tax (based on 1992 income) for the reference year 1999 is established at $22,357 (Paquet, 2001).

22. The inverse seems less probable. In fact, one might imagine that a relatively small proportion of children from poor households would have had significant exits from low-income in a given year, because of the debts that these households tend to accumulate.

23. This number is equivalent to the sum of the weights of an unweighted sample of 1,912 children.

24. McNemar's marginal homogeneity test is significant at the 0.01 level for the drop observed both between the 1998 and 1999 rounds, and between the 1999 and 2000 rounds.

25. This percentage is estimated from the data in Table 4.2 in the following way: (5.1% + 4.2% + 1.5%) / (5.1% + 4.2% + 1.5% + 15.5%).

26. The first percentage is calculated as follows: (5.1% + 1.5%) / (5.1% + 4.2% + 1.5% + 15.5%) while the second result from the following calculation: (4.2% + 2.2%) / (4.2% + 2.2% + 1.5% + 15.5%) (Table 4.2). Note that the first case includes a small percentage of children who were living in a low-income household at the first round, who had exited this situation by the following year, but who had returned to it by the latest survey round. Excluding these cases leaves 19% of children who spent the first months of life in a low-income household in a better situation for the rest of the period under observation.

27. Among the respondents who participated in the three survey rounds and for whom information is available (n = 1,905), 6% declared an income bracket rather than the exact income at one or other of the survey rounds. Rather than exclude these cases, we used the mid-point in the category to calculate the median difference and for classifying children into one of four transition groups. This strategy gives results close to those obtained when only households for which the exact income is given are included; in this case, the differences for the period 1998-1999, for example, are $2,000, $1,000, $13,000 and - $13,000 respectively.

28. As the sociodemographic information on fathers not living in the household is lacking, and as almost all single parents are mothers, only mother data has been included here. For more details on the data collected from non-resident biological parents, the reader should refer to Number 1 of this volume.

29. Only changes due to the formation of a couple by a single parent or the separation of a couple, i.e. the passage from a single to a two-parent family or the inverse, have been considered here. These changes represent almost all (98%) of the family transitions observed. Other events, essentially the departure or arrival of half-siblings in the household, have not been examined.

30. As mentioned already, no information is available on the conjugal pathways of fathers who never lived with the child.

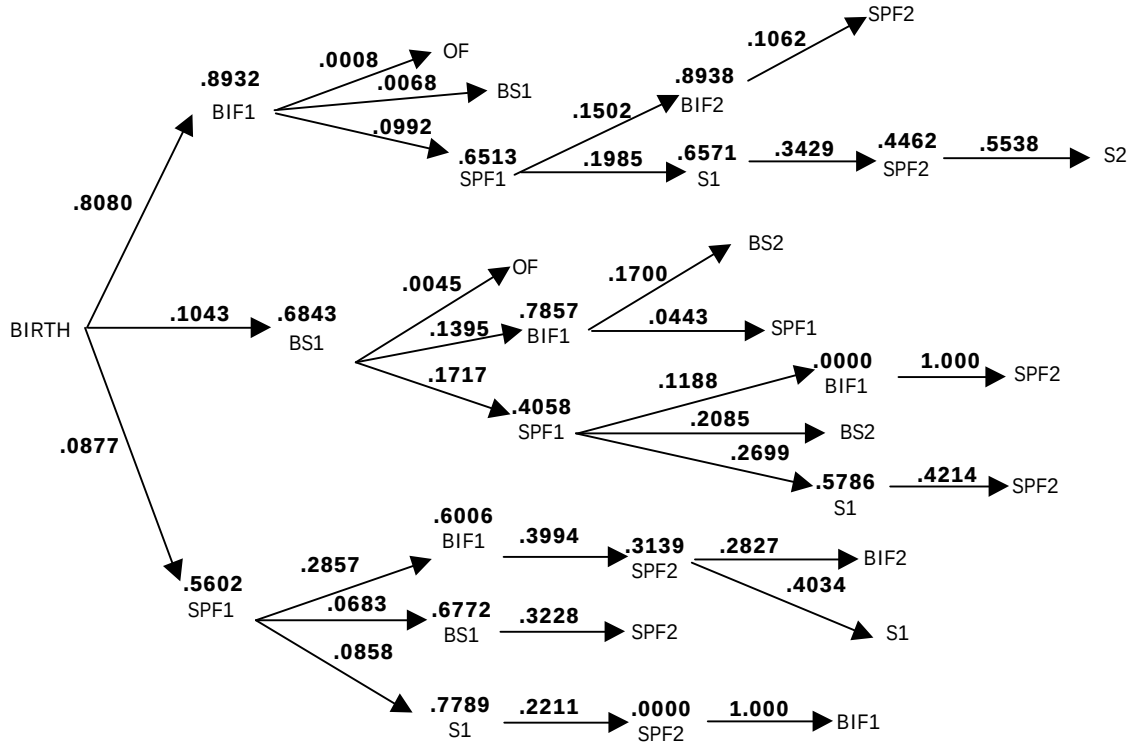
Annexes

Annex 1
Multiple-decrement life tables and transition probabilities

Children's family transition probabilities between birth and 29 months are presented in Figure A.1. As can be seen from the chart, it is possible to leave each family situation in a number of ways, thereby imposing the use of multiple-decrement life tables. Each branch comprises a proportion of children living a given transition (the figures indicated on the arrows) and a proportion remaining in the state (figures indicated above the states); the sum of the probabilities for each branch is always equal to 1.

The software, LIFEHIST, developed by Rajulton Fernando of the University of Western Ontario (Fernando, 1992, 1999), was used to calculate the transition probabilities. The model selected takes the ordered sequencing of events into account. The type of model that integrates past history into the calculation of probabilities is known as a non-Markovian model. Thus, the probability that a child experiences a first single-parent family episode differs according to whether it follows an episode in a biological intact family or an episode in a biological stepfamily. In addition, all states are renewable, meaning that a child may experience the same type of episode more than once, with each episode treated as distinct from one another; a child may experience two distinct single-parent family episodes, for example - the first at birth, and the second following a period in a stepfamily. The probability of living with a single parent will vary, therefore, according to whether it is a first or a second episode.

Figure A.1
Children's family pathways from birth to approximately 29 months: transition probabilities, Québec, 1998, 1999 and 2000



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

The calculation of the probability that a child born in a biological intact family (BIF1) makes a first transition, for example, takes into account all children exposed to the risk – all children, in other words, who were born within a BIF1. The probability for the three possible transitions out of this state (towards "other" family, OF; biological stepfamily, BS1 or single-parent family, SPF1) are estimated in the following manner:

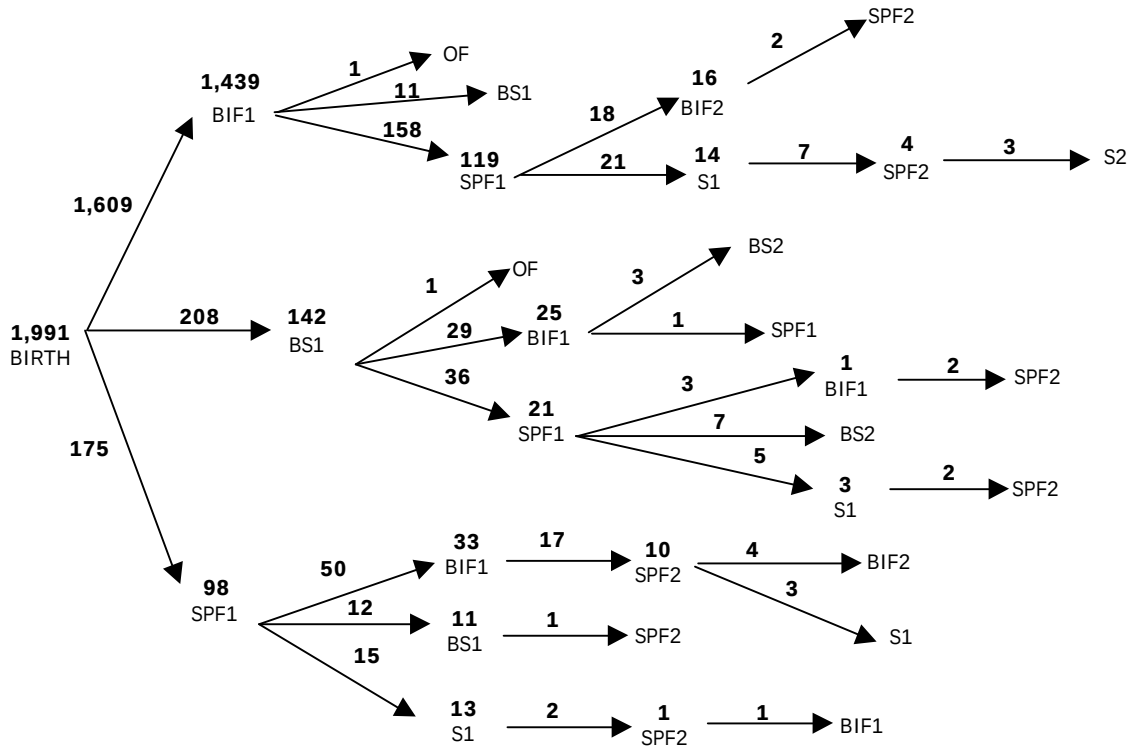
P(OF|BIF1) + P(BS1|BIF1) + P(SPF1|BIF1)
to which is added the probability of remaining in the state P(BIF1), giving:
0.0008 + 0.0068 + 0.0992 + 0.8932 = 1

with P as the probability and, for example, with P(SPF1|BIF1) signifying the conditional probability of entering a first single-parent family episode given the fact of first living an episode in a biological intact family.

Similarly, among children born in a biological intact family (BIF1) who experience a first single-parent family episode (SPF1), the probability of remaining in this state is equal to 0.6513, of moving on to a stepfamily (S1) to 0.1985, and of moving to a second episode in a biological intact family (BIF2) equal to 0.1502. The sum of these probabilities is once again equal to 1.

This process, repeated for each state, gives only a fragmented image of children's family pathways. The interest here is in using these probabilities to estimate the relative proportion of children following the different sequences of transitions. These transition probabilities are nonetheless essential for calculating sequence probabilities – the only probabilities commented upon in this text.

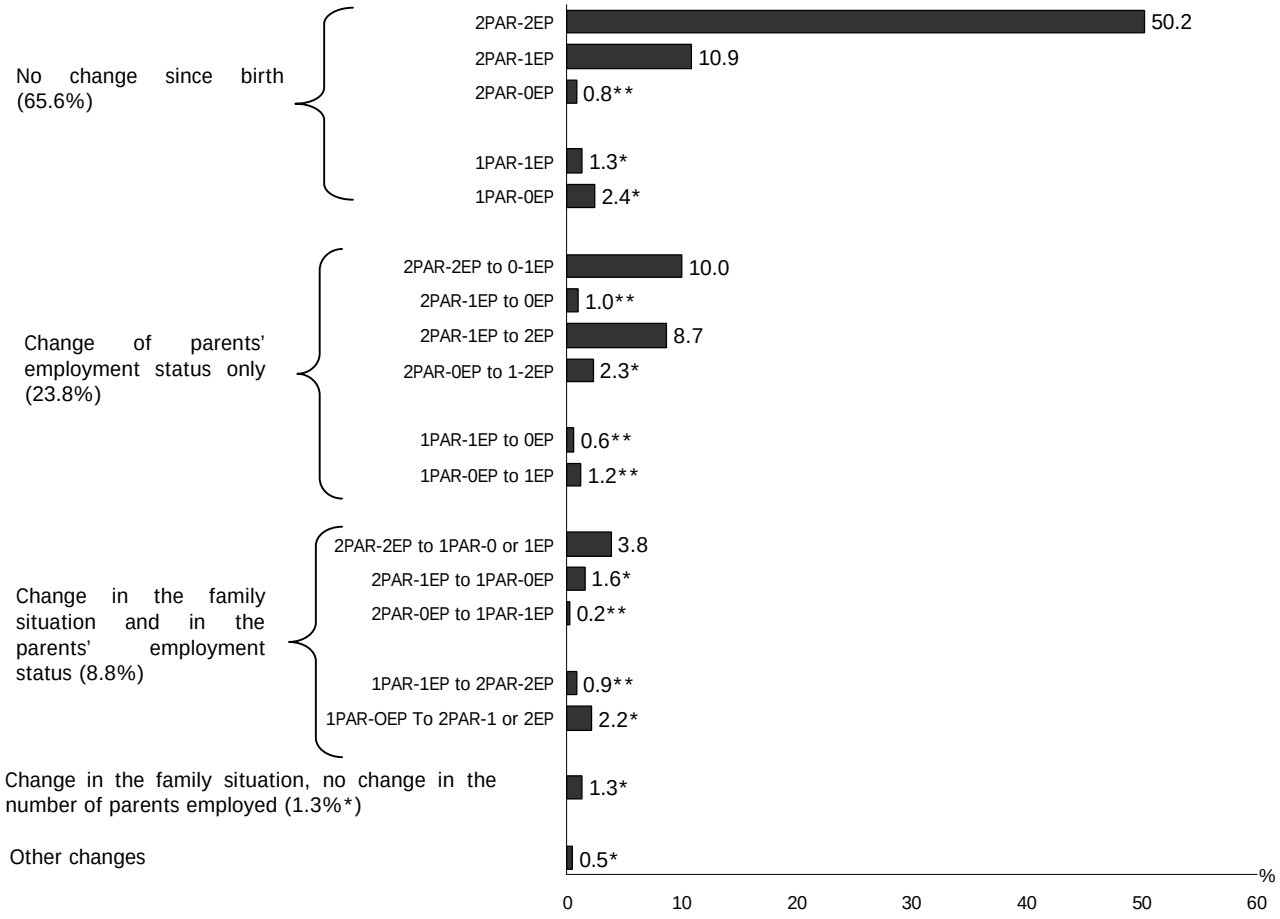
Figure A.2
Children's family pathways from birth to approximately 29 months: number of observations (weighted), Québec, 1998, 1999 and 2000



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

Annex 2

Figure A.3
Distribution of children aged approximately 29 months according to certain transitions in the family situation and in their parents' employment status since their birth, Québec, 1998, 1999 and 2000



2PAR = two-parent family
1PAR = single-parent family
2EP = 2 employed parents
1EP = 1 employed parent
0EP = no employed parent
* Coefficient of variation between 15% and 25%; interpret with caution.
** Coefficient of variation greater than 25%; imprecise estimate for descriptive purposes only.
Source: *Institut de la statistique du Québec*, *QLSCD 1998-2002.*

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Glossary

Direction de la méthodologie et des enquêtes spéciales, ISQ	Methodology and Special Surveys Division, ISQ
Direction des normes et de l'information, ISQ	Standards and Information Division, ISQ
Direction Santé Québec, ISQ	Health Québec Division, ISQ
Institut de la statistique du Québec	Québec Institute of Statistics
ministère de la Famille et de l'Enfance	Ministry of Family and Child Welfare
ministère de la Santé et des Services sociaux du Québec (MSSS)	Ministry of Health and Social Services of Québec
Personne qui connaît le mieux l'enfant (PCM)	Person Most Knowledgeable (PMK)

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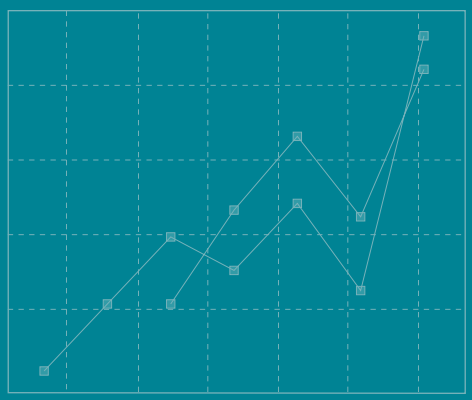
As a result of their parents' conjugal mobility, children today are far more likely than earlier generations to live multiple family transitions at a young age. These family changes are often accompanied by major fluctuations in income. However, children's experience of both family transitions and low-income episodes can have a number of short or long term consequences on their development, depending on the point in time at which they occur and the way in which they are integrated into the life course. Based on data from the first three QLSCD 1998-2002 survey rounds, this paper first describes certain changes in children's family environment and in their family's economic situation between birth and approximately 2½ years. This is followed by a presentation of the links between the number of low-income periods experienced by children and the socio-demographic characteristics of families. Finally, economic changes are explored in the light of family pathways in such a way as to bring together these two aspects of a child's environment. In the medium term, these data could be used to throw more light on the antecedents of children social adjustment as they enter school.



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