ECONSTOR
Make Your Publications Visible.

A Service of

ZBW Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Lebihan, Laetitia; Haeck, Catherine; Lefebvre, Pierre; Merrigan, Philip

Working Paper

Universal Childcare and Longer-Run Effects on Parental Health and Behaviors: Evidence from a Canadian Universal Child Care Program

Research Group on Human Capital - Working Paper Series, No. 15-04

Provided in Cooperation with:
University of Quebec in Montreal, School of Management Sciences (ESG UQAM), Research Group on Human Capital (GRCH)

Suggested Citation: Lebihan, Laetitia; Haeck, Catherine; Lefebvre, Pierre; Merrigan, Philip (2015) : Universal Childcare and Longer-Run Effects on Parental Health and Behaviors: Evidence from a Canadian Universal Child Care Program, Research Group on Human Capital - Working Paper Series, No. 15-04, Université du Québec à Montréal, École des sciences de la gestion (ESG UQAM), Groupe de recherche sur le capital humain (GRCH), Montréal

This Version is available at:
https://hdl.handle.net/10419/209562

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

Research Group on Human Capital
Working Paper Series

Universal Childcare and Longer-Run Effects on Parental Health and Behaviors: Evidence from a Canadian Universal Child Care Program

Working Paper No. 15-04

Laëtitia Lebihan, Catherine Haeck, Pierre Lefebvre and Philip Merrigan

November 2015

http://grch.esg.uqam.ca/working-papers-series/?lang=en

Universal child care and longer-run effects on parental health and behaviors : Evidence from a Canadian universal child care program

Catherine Haeck, Laëtitia Lebihan, Pierre Lefebvre and Philip Merrigan *

November 2015

In this paper, we study the long-run impact of a universal child care policy in Quebec on parental health and parenting practices. Using data from the National Longitudinal Survey of Child and Youth, we follow treated families for more than 9 years and investigate the impact well beyond the first few years of the policy. A non-experimental evaluation framework based on multiple pre- and post-treatment periods is used to estimate the policy effects. We show that the policy increased mothers' depression scores with preschool children as well as scores of inappropriate parenting behavior. The policy increased hostile and aversive parenting and reduced positive interaction and consistent parenting. However, negative effects of the program on parental behaviors vanish when the child is in school. Moreover, we find that this pattern persists even ten years after the implementation of the reform.

Key words : universal child care, parental health and behaviors, longer-run effects, child care policy, natural experiment.

JEL Classification : I31, J18, J20

*Université du Québec à Montréal. The study is based on Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY). The data are available at the Quebec Inter-university Center for Social Statistics (QICSS). All computations and interpretation of these data are our own. This research was funded by the Fonds québécois de la recherche sur la société et la culture and the QICSS.

1 Introduction

In the last decades, there has been a sharp increase in the participation rate of mothers in the labor market in developed countries. In Canada, the employment rate of mothers with children under the age of six has risen from 31.4 percent in 1976 to 67.8 percent in 2012 (Canadian Labour Force Survey). Although this has had a positive effect on family incomes, it has also made parenting a more demanding and stressful task given the increased time and pressure from work. Concurrently, a growing demand for child care by parents raised the attention of policy makers toward public or subsidized child care programs. The idea that child care subsidies should no longer be limited to low-income families, but be universal, as it is the case in most European countries, is slowly emerging as a model for North American governments, particularly in Canada. Moreover, advocates of a universal child care system argue that it is important to invest in young children through quality child care because early childhood is a critical period of human development and that the returns are higher when interventions are performed in the early years (Cunha and Heckman, 2010 ; Baker, 2011).

Studies estimating the effects of universal child care policies have focused mainly on their impact on maternal employment and child development (see Baker (2011) for a review). However, as explained by Herbst and Tekin (2014), a full evaluation of child care subsidies requires a thorough understanding of the ways in which subsidies influence both parents and their children. When mothers reallocate their time from home to the labor market, this is accompanied by a change in the nature of time spent with the child, affecting not only children's well-being but also parents' well-being or behavior. Indeed, there is a vast literature showing how maternal well-being affects by itself a child's well-being and his development (NICHD, 1999, 2003 ; Almond and Currie, 2011).

The first major study having examined the effects of universal child care on both child and parental outcomes is that of Baker, Gruber and Milligan (2008) who perform an evaluation of the major child care reform in the province of Quebec in Canada implemented in the late nineties. In 1997, the Quebec government started the graudual implementation of a low-fee child care policy. From then on, child care spaces could be purchased by parents for $5 per child per day. The reform was phased in to include all Quebec's children less than 6 years of age (not in publicly provided kindergartens) as of September 2000. This policy had the effect of draining a large proportion of children from informal care and maternal care towards regulated child care. Indeed, the number

of regulated child care spaces in Quebec increased from 78,864 in September 1997 to 258,366 as of March 2013 (Ministre de la Famille et des Ainés, 2013). More importantly, as a result of the policy, women's labor force participation increased by 14.5 percent in Quebec by 2003 (Baker et al., 2008).[1] No policy of this magnitude affecting mothers of preschool children was enacted in the other Canadian provinces between 1998 and 2008 (Haeck et al., 2013).

Baker et al. (2008) also show that the reform had a negative effect on several parental (with at least one child 0-4) and child (children 0-4) outcomes. In particular, the policy had a negative effect on parents' health and on parenting behavior. In a more recent study, Kottelenberg and Lehrer (2013) confirm these results by including additional years of data (up to 2007) and alternative estimation methods. Although Baker et al. (2008) and Kottelenberg et al. (2013) study the effect of the policy on parents' oucomes, there is little emphasis on these results and the authors focus more on maternal employment and children's well-being. We propose an extension of Baker, Gruber and Milligan (2008) study (henceforth referred to as BGM) in two ways.

First, the effects on parents are studied over a longer observation period, namely until 2009. In fact, the effects measured by BGM are based on the period 2000-03, the early years of the program implementation, which could have generated some frictions. A period of adjustment should be necessary for both parents and children as well as for the government for the policy to function efficiently. Thus, a range of parenting behaviors and health indicators may change, especially in the short-run, as subsidized women with little employment experience adjust to the dual demands of paid work and childrearing (Herbst and Tekin, 2014). Also, the network has expanded significantly since 2000-2003, efforts have been undertaken to try to improve quality in child care services, and the number of families benefiting has greatly increased. Thus, we verify whether the effects estimated by BGM is the result of a transition to the new child care policy or if they persist over time. Kottelenberg and Lehrer (2013) extended the observation period to 2007 but estimated the average effect of the reform on all treated irrespective of the treatment period. Our empirical strategy account for the gradual implementation of the policy and of the possibility that the effects of treatment may be different each year since the beginning of the policy.

Second, contrary to BGM and Kottelenberg et al. (2013) who focus their study only

1. Using the Survey of Labour and Income Dynamics (SLID) data, Lefebvre and Merrigan report similar results : an increased participation of women in the labor market of 13 percent and an increase in annual hours worked of 22 percent (Lefebre and Merrigan, 2008).

on children aged 0 to 4, we extend the analysis to parents with children aged between 5 to 9 years. To take into account a major parental leave reform in 2000 across Canada and in 2006 in Quebec, we exclude mothers of children below the age of 1 from our analysis. We also include 5 year olds not in school in our sample (not included in the BGM sample). Subsequently, we estimate the effects of the reform on parents when a child enters school (at age 5 or 6), and when the child is 7-9 years of age. This analysis beyond the age of 5 can determine whether the adverse effects identified for parents during pre-school years persist during elementary school years or otherwise dwindle over time. To our knowledge, studies on the effects of universal child care on parental outcomes, as the child gets older, are very scarce. Documenting the long run effects of universal child care on parents is crucial to our understanding of the overall impact of such reforms, in particular once the parents are no longer directly affected by the program. Thus, we analyze the effects of the reform on parental outcomes for parents with children from three age groups : 1-5 years old not in school, 5-6 years old and 7-9 years old, the latter two in school.

These two features allow for a consideration of the longer-run effects of Quebec's reform in two ways : long-run effects in terms of network expansion and long-run effects on the life of beneficiaries. To our knowledge, this is the first study addressing the longer-term effects of the low-fee child care reform on parental health and parental practices. [2]

We use data from the NLSCY (National Longitudinal Survey of Children and Youth), which constitute a representative sample of the Canadian population of children. To estimate the effects of the child care program, we rely on a non-experimental evaluation framework based on multiple pre-and post-treatment periods. So, we compare Quebec parents before and after the reform to comparable parents in the Rest of Canada.

We show that the policy increased mothers' depression scores with preschool children as well as scores of inappropriate parenting behavior. The policy increased hostile and aversive parenting and reduced positive interaction and consistent parenting. However, negative effects of the reform on parental outcomes vanish when the child is in school. This suggests that the reform had no effects on parents, who benefited from the program when their child was less than 6, once their child is in school.

2. See Lefebvre, Merrigan and Verstraete (2009) and Lebihan, Haeck and Merrigan (2015) for an analysis of long-term effects of Quebec's family policy on maternal labor supply and child well-being, respectively.

The outline of the paper is as follows. Section 2 reviews evidence from prior research and discusses the mechanisms by which such child care subsidies can influence parental outcomes. Section 3 describes the Quebec family policy. Section 4 presents the data set. In Section 5, we describe the empirical strategy. Econometric results on the impact of the program on parental outcomes and their interpretation are presented in Section 6. Section 7 concludes the paper.

2 Previous research on child care, maternal employment and parental outcomes

This section summarizes recent empirical research on the link between child care, maternal employment and parental outcomes. First, we review literature on the Quebec reform. Then, we review the evidence of maternal employment and child care (especially subsidized child care) on parental outcomes in other countries.

BGM analyse the impact of the Quebec child care policy on the use of child care, maternal employment and several outcomes for children and parents. They use the first two waves (1994-95 and 1996-97) and the last two waves (2000-01 and 2002-03) of the NLSCY, available at the time. Their study focuses on children 0-4 years old or parents with a child of that age. They show, among other things, that the new program increased mothers' depression scores and decreased the likelikood that fathers report being in excellent health. They also find that the Quebec family policy increased hostile and aversive parenting and decreased parental consistency.[3] Kottelenberg and Lehrer (2013) extend BGM by adding additional years (2004-05 and 2006-07). Using the same method as BGM (difference-in-difference), they confirm the negative effects of the family policy on Quebec's child and parental outcomes. Using alternative methods of estimation, they also show that most of the negative impacts are driven by families who only attended child care as a result of the policy. Brodeur and Connolly (2013) also study the effects of the policy change on parental subjective well-being. Using the Canadian General Society Survey, the authors estimate a triple-difference model using differences pre- and post-reform between Quebec and the Rest of Canada, and between parents with young children and those with older children. They find adverse effects of the policy on parents' life satisfaction.

Several studies on parental outcomes also found in other developed countries. Herbst

3. See Table A.1 in the Appendix for more details on these parental outcomes.

and Tekin (2014) estimate the impact of child care subsidy receipt on maternal health and the quality on child-parent interactions, using data from three nationally representative surveys in the United States. Their study is based on a program named the Child Care and Development Fund (CCDF) and these subsidies are granted conditional on the parents being engaged in paid employment, job training or education. Their analysis focuses on unmarried mothers because the program aims at raising work levels among economically disadvantaged women with young children. The authors report that child care subsidies are associated with worsened maternal health (overall health, anxiety, depression and parenting stress) and poorer interactions between parents and their children (psychological and physical aggression toward their children). Using data from the German Socio-Economic Panel, Kröll and Borck (2013) examine how mothers' health and mother-child interaction are affected by whether they use formal day care or not. Their estimation strategy consists in using local aggregate formal child care usage rates as an instrument for individual formal child care usage. They show that mothers are in a worse physical condition if their children attend formal care, but the effects are insignificant for mothers' mental health. As to mother-child interactions, they report that mothers with children in formal care interact with them more frequently. More generally, evidence shows that more hours spent in child care when children are aged 6 to 36 months is associated with lower maternal sensitivity and less positive engagement of the mother for her child. In contrast, when children reach the age of four and a half years until the first grade, the relationship between the duration of attendance and mother-child interaction depends on the race of children (NICHD, 2003). Therefore, more non-maternal child care experience across the first 3 years was associated with less maternal sensitivity and less positive engagement of mothers for white children, but it was the inverse for non-white children up to first grade. Negative associations between hours of care and sensitivity diminished over time for all children. Finally, Chatterji, Markowitz and Brooks-Gun (2013) analyse the effects of early maternal employment on maternal health and well-being when children are 6 months old in the United States. They show that maternal work hours are positively associated with depressive symptoms and parenting stress, and negatively associated with self-rated overall health. Interestingly, these effects do not seem to persist over time (Chatterji et al., 2011, 2013).

In sum, previous studies seem to suggest that child care subsidies and, more generally, maternal employment and child care use worsens maternal health and mother-child interactions. Herbst and Tekin (2014) discuss how child care subsidies receipt

affects parental well-being. First, there is an effect on time allocation caused by increased work (Brodeur et al., 2013). In this regard, the Quebec policy leads to a substantial change in maternal time allocation, from non-market activities (including time spent with children and leisure) to the formal labor market. Subsidized mothers may spend less time in leisure and relaxation activities. Second, change in child care subsidies may affect parental outcomes through increased household income, enlarging consumption possibilities. [4] Third, child care subsidies may change the nature and quantity of maternal time spent with children (BGM). Indeed, the Quebec policy has led to an increase in hours spent in child care for the child and the number of weeks worked for the mother (Haeck et al., 2015). The time spent by the mother with the child is thereby reduced, and therefore this may have implications for child and maternal well-being. Going back to the labor market, we know a busier schedule leads to more stress, especially if we must also reconcile work and family. Higher stress levels worsen health outcomes and reduce the quality of child-parent interactions. Habits and types of activities between the child and the parent can be changed, at least in the short-run, until the mother is physically and psychologically fit to work again, or work more intensively (Herbst and Tekin, 2014). Finally, long hours in day care, if of insufficient quality, may affect the child's behavior and temperament at home, increasing tensions within the household and affecting parental health and behavior.

3 The Quebec 1997 child care policy

We provide below a brief overview of Quebec's child care policy. [5]

In the late 1990's, the government of Quebec initiated the gradual implementation of a universal low-fee child care program for children less than 6 years old not in kindergarten. This low-fee was established at $5 per day per child. In September 1997, only children aged 4 as of September 30^{th} 1997 were eligible for low-fee child care. In September 1998, children aged 3 (on September 30^{th} 1998) were eligible for subsidized child care. In September 1999, children aged 2 (on September 30^{th} 1999) were also eli-

4. Using Statistics Canada's annual 1997 to 2009 Survey on Households Spending, Haeck, Lefebvre and Merrigan (2014) document the increase in the maternal share of total household income in Quebec and use an instrumental variables approach to estimate the impact of the share of female income in the household on intra-household expenditures. The authors report that more income in the hands of mothers impacts the expenditure structure within the household by raising budget shares on expenditures related to children, family goods and services with positive externalities.

5. For more details, please refer to BGM, Lefebvre and Merrigan (2008) and Haeck et al. (2015).

gible for low-fee child care. Then, in September 2000, children aged less than 2 years old were eligible for low-fee child care. Thus, by September 1^{st} 2000, all children under 71 months became eligible for subsidized child care, with the exception of children who were 5 years old (60 months) by September 30^{th} and who were registered in a public kindergarten. In 2004, the price of low-fee child care was increased from \$5 to \$7 per day per child.

The policy pursued two objectives : i) increase mothers' labor force participation while balancing the needs of the workplace and the home, and ii) enhance child development and equal opportunities. Basically, the government set up strategies allowing, gradually, preschool-age children to attend regulated child care. One important piece of the puzzle was the development of center-based child care services as "Centre de la Petite Enfance (CPE)" (Centers for young children) and home-based care with a regulated provider supervised by the CPE of the same neighborhood (ideally). Concurrently, the government of Quebec implemented new standards such as the necessity for providers to hire qualified employees, the conformity to a children/educator ratio according to the age of children, and the introduction of educational training programs specializing in child care in post-secondary institutions (Giguère and Desrosiers, 2010). Overall, the total number of regulated spaces more than tripled between 1997 and 2013, from 78,864 to 258,366 regulated spaces, and significant public funds are allocated to Quebec's child care policy (\$2.3 billion for fiscal year 2012-2013) (Treasury Board of Canada, Budget 2012-2013). In contrast, the number of subsidized child care spaces in the Rest of Canada (RofC) was relatively small compared to Quebec and changed little between 1997 and 2009 (Haeck et al., 2015). This reform drastically changed maternal labour force participation and the way in which preschool children were cared for in Quebec, while no comparable changes were observed elsewhere in Canada. Figure 1 presents the mean hours (conditional and not conditional to the use of child care) per week that children aged 1 to 4 spent in their primary care arrangement, but also the labor force participation of mothers (two-parent and single-parent families) and fathers (in two-parent families) for these children in Quebec and the RofC. Haeck et al. (2013, 2015) show that not only more children started to attend child care in Quebec following the reform, but the intensity of care for those attending child care increased. Concerning the labor force participation, the main changes are for mothers. Indeed, for two-parent families in Quebec, mothers' labour supply increased in most waves, starting at 55 percentage points in 1994 and reaching 76 percentage points in 2008. In contrast, no significant changes in the hours of care and maternal labor force participation has occured in the

RofC. For single mothers, there are large increases of labor force participation for both Quebec and the RofC, but the original gap, in favour of mothers in the RofC is totaly closed by 2008.

This child care reform was combined with other family programs in Quebec for school-age children. First, free public full-day kindergarten for children aged 5 replaced half-day kindergarten. Second, in September 1998, before- and after-school daycare began to be offered to children aged 5 to 12 for the same fee as the low-fee child care ($5 per day per child in 1998 and $7 in 2004). However, the new child care subsidies for children less than 5 years-old are by far the most significant aspect of the new family policy.

4 Data

To estimate the long-run effects of the reform on parents, we use the National Survey Longitudinal Children and Youth (NLSCY). The NLSCY is a panel (with several panels) survey that measures a wide range of characteristics related to Canadian children's development and well-being. This biennial survey started in 1994-95 (wave 1) and ended in 2008-09 (wave 8). The NLSCY contains both child and parental outcomes, and extensive varaibles related to parental labour supply, child care use and other demographic characteristics.

Given the policy phase-in, children and parents were treated differently by the policy over the years. Table 1 summarizes the various treament groups by presenting the eligibility of children according to their age and the NLSCY wave they are sampled from. The grey shaded area highlights the post-reform years while the unshaded area refers to the pre-refom years. Numbers indicate the number of years of eligibility for subsidized child care. To calculate the number of eligibility years, we always use December 31 of the first year of the two-year period as reference.[6] For example, for wave 4 (2000-01), the reference point is the child's age on December 31, 2000. The index 0.5 refers to the fact that the child is eligible for a few months, not a year. In order to avoid overlapping of treated and untreated in the same wave, we exclude wave 3 (1998-1999) for children 0-6 years old, as BGM. Moreover, these children were only eligible to low-fee child care for a few months at the end of 1998 and this period corresponds to a phase-in of the

6. The NLSCY surveys are conducted over a few months. They start in the fall of the first year of the two-year period and end in the spring of the second year. For example, for wave 4 (2000-01), data collection started in September 2000 and ended in April 2001.

program due to the restrictions on the number of subsidized spaces available and age eligibility. It was only in 2000 (wave 4) that all children under 71 months became eligible for subsidized child care. For parents with children aged 7 to 9, we consider wave 3 as a pre-reform period (since children are not treated) and exclude wave 4 for the same reasons.[7] The term n.a (not available) referes to cases where, although children were eligible for low-fee child care, data for this age group in this wave are not available in the NLSCY. Table 1, clearly shows that the number of years young children spend in low-fee child care increased over time. Indeed, parents and children aged 0-4 years in BGM were treated only a few months to 2 years (wave 4 and 5). However, in this study, we analyze the impact of the reform on parents with children aged 5 to 9 eligible to low-fee child care since birth and which were therefore highly exposed to the reform (from 1 to 5 years of treatment). Regarding preschoolers, we add an additional 6 years, which also extends the treatment period from a few months to 5 years for these children and parents (compared to a few months to 2 years for BGM).

Given data availability and eligibility for subsidized child care that depends on the age of the child, we focus our analysis on the parents of children aged 1 to 9 years old. The evaluation is performed for three separate age groups : parents with 1-5 year-olds not in school, 5-6 year-olds in school, and 7-9 year-olds. Since the low-fee child care reform was gradual, the policy depends on the age of the child and the period. Thus, it seems reasonable to perform the regressions according to the age of the children and model the effects to be time-dependent. In contrast to BGM and Kottelenberg et al. (2013) study , we exclude from our samples children 12 months old or less that may be affected by the major parental leave reform introduced in Quebec in 2006[8]. In addition, the majority of parents with children under one benefit from federal parental leave. We also include parents with 5 year-olds not in school in the sample of preschool children as they are likely to to be in subsidized child care before being eligible for kindergarten.[9] Since the majority of children aged 5 attend kindergarten in Canada, we also want to estimate any persistent effects of the low-fee child care reform at the beginning of the first year of school (also including parents of children aged 6). Once past the critical

7. The results are similar if we include wave 3 for children aged 0 to 6 and wave 4 for children aged 7-9.

8. In January 2006, the Government of Quebec established a new Quebec Parental Insurance Plan (Régime Québécois d'Assurance Parentale, RQAP). The RQAP has several advantages in terms of the population covered, the rate of income replacement and flexibility as compared with the then existing federal arrangement.

9. The results are similar if we consider the following age categories : 0-4 years, 1-4 years and 0-5 years not in school. The results are available on request .

stage of the first years in school, we estimate the effects of the policy on parents with children aged 7 to 9. This basically explains our three samples : parents of children 1 to 5, not is school, of children 5 to 6, immediately after child care, and finally of children 7 to 9. Note that the parents with children observed in the latter part of the survey were exposed for a much longer period to the policy than parents with children in 2000 (for example a 4 year old in 2000 was 2 in 1998 at a time when the policy did not cover children aged 2 in 1998).

Building off BGM's study, we also focus on two-parent families to avoid interference with other policies targeting low-income families (largely represented by single-parent families). Various provincial and federal reforms have been implemeted since 1997 and could interact with the low-fee child care reform. Baker et al. (2005) and Milligan and Stabile (2007) show that changes in family/child benefits have a statistically significant impact and relatively large impact on different outcomes for single-parent families, but little on two-parent families. In addition, the Government of Quebec introduced a new work incentive policy in 2005. This work premium aims to support and develop the work effort of low-wage workers, but also to encourage people to exit welfare into work (Quebec's Ministry of Finance of Quebec, 2004). Therefore, since any specific policy shock in Quebec coinciding with the universal child care reform may bias our results, we focus as BGM does on two-parent families. Subsamples according to maternal education and family type are also constructed for studying the heterogeneity of the effects of the reform. All outcomes are reported by the person most knowledgeable about the child (almost always the mother).

To measure the effect of the policy on parents' health, we choose the following outcomes as dependent variables : (1) the mother's health status is excellent (1 : excellent, 0 : not excellent) ; (2) the father's health status is excellent (1 : excellent, 0 : not excellent) and (3) the mother's depression score (score ranging from 0 to 36). A high score indicates the presence of symptoms of depression. All questions on parents' health are asked to households with children aged 1 to 9.

As for parental behavior and parenting per se, several measures are available : (1) the family dysfunction index (score ranging from 0 to 36) ; (2) positive interaction (score ranging from 0 to 20) ; (3) hostile/ineffective parenting (score ranging from 0 to 25) ; (4) consistent parenting (score ranging from 0 to 20) and (5) aversive parenting (score ranging from 0 to 20). A high score for (2) and (4) indicates positive parental behavior for child well-being while the opposite is true for (1), (3) and (5). The questions on parents' behavior are asked when children are 2-9, except for the family dysfunction

score which is for parents with children 1-9. Details and summary statistics for parental outcomes before and after the reform in Quebec and the RofC are presented in Tables A.1 and A.2 respectively.

We use the same control variables as BGM in our regression analysis to make sure that any differences between our results and theirs is not due to controls or methods. The control variables are : the sex of the child, the mother and father's highest level of education (less than a high school diploma, high school diploma, some post-secondary education, with post-secondary diploma (omitted)), the age group of the mother and father at the child's birth (14-24 years-old (omitted), 25-29, 30-34, 35 or more), a dummy for whether or not the mother or father was born in Canada, the size of the area of residence (five groups from rural population to 500000 residents or more (omitted)), the presence of older children (no older child, omitted), one older child, at least two older children, the presence of younger children, no younger child (omitted), one younger child, at least two younger children, the presence of children of the same age and dummies for the age of the child. Summary statistics for parents with children aged 0-9 years in Quebec and the RofC in pre- and post- reform periods are presented in Appendix (Table A.3). There, we observe that few means show dramatic changes in both regions, moving from the pre-policy to the post-policy period. There are however a few important differences between the level of means across regions (for example, the percentage of immigrants in Quebec is much smaller than in the RofC).

5 Empirical strategy

In order to estimate long-run effects of the low-fee child care reform, we use a non-experimental evaluation framework based on multiple pre- and post-treatment periods. We have two groups (Quebec and the RofC) observed before and after the policy, wih only Quebec parents affected by the reform. The treatment group includes Quebec parents with children of a given age before and after the reform and the control group parents in the RofC with children of the same age observed for the same time period. [10] The Double-Differences estimator compares the evolution of the outcomes of treated before and after the policy with the outcomes of the untreated over the same period.

We use eight waves of the NLSCY (except wave 3 for parents with children 0 to 6 years and wave 4 for parents with children 7 to 9 years). Periods of pre-treatment and

10. The results are similar if we use Ontario's parents as the control group.

post-treatment differ according to the age of the child (Table 1). To account for the gradual implementation of the policy, we allow the effects of treatment to differ in each of the post-reform waves. The Double-Difference estimator is :

$$Y_{ij} = \alpha + \theta Q_{ij} + \sum_{j=1}^{8} \gamma_j D_j + \sum_{j=c}^{8} \beta_j W_j Q_{ij} + \Phi X_{ij} + \varepsilon_{ij} \quad (1)$$

where Y_{ij} represents a parent outcome for child i in wave j. The variable Q_{ij} is a dummy variable taking the value 1 if the child i lives in Quebec in wave j and 0 otherwise. A set of D_j wave dummy variables capture aggregate effects. To account for the progressive implementation of the policy according to the age group of children, a set of dummies W_j for each of the post-reform waves are interacted with Q_{ij} is included in the model. Variables W_j are dummy variables take the value of 1 if the wave is greater than or equal to $c = 4$ for families with children 1-6 and $c = 5$ for families with children 7-9 (see Table 1). The term X_{ij} is a vector of socioeconomic control variables and ε_{ij} is an iid error term. Standard errors are estimated using the 1,000 bootstrap weights provided by Statistics Canada. This procedure accounts for the complex survey design of the NLSCY.

Our empirical strategy relies on two critical assumptions. First, in the absence of the reform, outcomes of Quebec and RofC children would have followed a similar trend. We cannot observe untreated children in Quebec post-reform, but we can observe trends in the outcome variables in the treatment and control group prior to the reform. Figure 2 shows the evolution of a few outcome variables pre- and post-treatment. The shaded area is excluded from the analysis because of the phase-in of the program and the overlapping of treated and untreated. Prior to the reform, the trends are very similar.

Second, the existence of unobserved transitory shocks could be a concern. Indeed, a number of criticisms have been adressed to the Difference-in-Differences method (Bertrand, Duflo and Mullainathan, 2004 ; Donald and Lang, 2007), in particular because of a improper treatment of regional specific random shocks. Ignoring this problem can lead to an underestimation of the standard errors of the estimated parameters. While it is unlikely that there are unobserved transitory shocks affecting only Quebec parents' behavior and health and not the RofC (or vice versa), we choose to adjust the standard errors. Thus, we use a two-step procedure to correct standard errors (Donald and Lang, 2007). In the first step, we regress the outcome variables on the control variables X_{ij} and a set of dummy variables representing each province-wave-age of children interac-

tion,[11] while taking into account survey weights provided by Statistics Canada. For the second step, we regress the estimated coefficients of province-cycle-age interactions on a constant, time dummies, a Quebec dummy, and interaction terms $\sum_{j=c}^{8} \beta_j W_j Q_{ij}$. Each observation is weighted by the inverse of the variance of the estimated interaction term in the first step. We follow Haeck et al. (2015) and use the standard normal distribution for inference, as suggested by Wooldridge (2006) when the number of observations per group is high.

6 Results

We study three age groups separately : 1-5 years not in school, 5-6 years in school and 7-9 years.[12] This allows us to estimate the contemporary effect of the reform on parents with preschool children, but also the spillover effects into the school years.

We first focus on two-parent families. Then, we analyse the effects of the reform by maternal education, and finally for single-parent families. We felt important to analyse this group given their relevance for policy makers, despite the fact that other reforms targeting the latter were implemented during our survey period. In our opinion, the child care policy definetely outweighed by far the other reforms implemented during the period. For each estimate, we present the effects per wave $\beta_4 - \beta_8$ and the average effect over the entire post-reform period β_{4-8} (or β_{5-8}). For the unadjusted estimates, we report the coefficients, standard errors, and the significance level (indexed by $\star$). For reasons of clarity and space, for the adjusted estimates according the method of Donald and Lang (2007), we report only the level of significance of the results (indexed by †). The adjusted coefficients and standard errors are available from the authors upon request.[13]

11. For parents with children 1-5 years not in school, we have 350 dummies (10 provinces, 7 waves, 5 different age groups). For parents with children 5-6 in school, we have 120 dummies (10 provinces, 7 waves, 2 different ages). For parents with children 7-9 years, we have 150 dummies (10 provinces, 6 waves, 3 different ages).

12. To strengthen our findings, placebo tests were performed for all outcomes and age groups. For example, for 1-5 years not in school and 5-6 years in school, we used wave 1 as pre-reform and wave 2 as post-reform. For parents with children aged 7 to 9, several possibilities were tested for the periods pre- and post-reform. For all regressions, the estimated policy effects are not significant. The results are available on request.

13. Estimates from OLS and probit are very similar as well. However, to apply the method of Donald and Lang (2007), we must restrict ourselves to OLS results.

Estimated effects for two-parent families Table 2 presents the estimated effects of the low-fee child care policy on parents' health and behavior for those with children aged 1-5 years not in school. The results for parents with children aged 5-6 years in school and 7-9 years are presented in Table 3. We first discuss the results for parents with children 1-5 not in school and, subsequently, those of 5-6 and 7-9 children in school.

For parents with preschool children, we start with a model where policy effects do not vary by wave, under β_{4-8} (2000-2009). Unadjusted results (indexed by $\star$) show that the reform significantly increased the mother's depression score (significant effect of 0.70, 15 percent of a standard deviation). We also estimate a negative effect on positive interactions (significant effect of 0.62, 23 percent of a standard deviation) between the child and his/her parents as well as a positive effect on hostile and aversive parenting (significant effects of 0.69 and 0.34 respectively). These results are similar to BGM, despite adding three waves of data. When we let the policy effects vary by wave, we find that the effects are significant in almost all waves for these outcomes. These effects are large and remain so once we account for unobserved aggregate transitory shocks (indexed by †). However, the effects are smaller or insignificant in wave 8. An odd result concerns the family disfunction index, where we obtain a large positive significant result in cycle 8, albeit at a low level of confidence.

We also test to see if child care subsidies can cause changes in parental health and behavior when the policy is no longer contemporaneously effective, that is when all the parents' children are in school (Table 3). These are the first reported estimated effects of Quebec's low-fee child care policy for these age groups (5-6 and 7-9). The vast majority of the negative effects on parents, found in the preschool period, vanish once the child enters school. Positive interaction between the child and the parent is an exception. Indeed, the policy continues to have a negative effect on this outcome with or without correction of standard errors (significant effect of 0.64). We see a 4.6 percent decline in this score relative to the mean score of pre-reform period, corresponding to 25 percent of a standard deviation, which makes it very close to its value for the 1-5 year-olds not in school group. Interestingly, we note that for the positive interaction score, the effects are greatest for waves 5 and 6, which correspond to the sample where only children 5 years old in school are present in the sample (see Table 1). However, we observe no significant effects for wave 8.

For children aged 7-9 years old, the reform generally has no significant persistent effects on parents (Table 3). When we account for unobserved aggregate transitory shocks, the negative effects on positive interaction persist, but they are only significant

at a level of 10 percent and vanish when we let the policy effects vary by wave.

Estimated effects by maternal education In this section, we investigate whether the estimated effects differ according to maternal education. We divide our sample in two groups : (1) households with high-school educated mothers (low education) and (2) households with postsecondary educated mothers (high education). Table 4 and 5 present the estimated effects for parents with children aged 1 to 5 years old not in school and for parents with children aged 5 to 9 years old in school by maternal education, respectively.

For the case of low-educated parents with children 1-5 years not in school, the unadjusted results (indexed by $\star$) show that child care policy has a negative effect on several parental outcomes. We report an increase of the mothers' depression score (positive effect of 0.94) and several adverse effects on parents' behavior when effects do not vary by cycle. By analyzing the effects by wave, we observe that the effects of policy on parents' outcomes are significant throughout the post-reform period. These results are robust to the correction of standard deviations by the method of Donald and Lang (coefficients indexed by †). The pattern of the results are similar to those of the full sample. However, the effects are usually larger, which previews the results for mothers with a higher level of education, where the effects are smaller for children in this group. For high-educated families with children 1-5 years not in school, the reform has a positive effect on the mothers' depression score (positive effect of 0.60) when effects do not vary by wave. It also has a positive effect on hostile and aversive parenting and a negative effect on positive interactions between parents and child. Again, the effects are significant throughout the post-reform period when effects vary by wave. All significant effects remain as such after we correct for unobserved transitory shocks. As mentioned earlier, the effect sizes and significance levels of the effects are less important for this sample compared to the low education sample. For example, in the case of the mother's depression score, the effects are of the order of 13 percent of a standard deviation for mothers with a high level of education versus 21 percent of a standard deviation for mothers with a low level of education. Concerning aversive parenting, the effects are 20 percent of a standard deviation for mothers with a low education and 16 percent of standard deviation for those with high education.

In Table 5, for low-educated families, the majority of effects identified for preschoolers vanish at the beginning of the school (children 5-6) except for the positive interaction score (significant effect of 0.97). This is a 7 percent decline in positive in-

teractions relative to the mean or .34 of a standard deviation. The effect size for this outcome is higher than for the 1-5 group (34 percent versus 24 percent of a standard deviation for children not in school). For highly educated mothers with children 5-6 years in school, only the effect of the policy on the level of positive interactions remains significant when the policy effects do not vary by wave. The latter is of the same magnitude as that observed before beginning school (between 21 and 22 percent of a standard deviation in both cases). Again, we note that the reform has a greater effect on mothers with a low level of education compared to mothers with a high level. These results are robust to the correction of standard errors by the method of Donald and Lang.

Finally, for children 7-9 years, the effects of the reform on low-educated mothers are generally not significant. We observe some beneficial effects on maternal health and family dysfunction score, but they are relatively rare and are not robust to the two-step procedure accounting for unobserved transitory shocks (Table 5). Concerning high-educated mothers with children 7-9 years, the effects of the reform on parental outcomes are not significant for almost all outcomes studied. The results are generally robust to the correction of standard errors using the two-step procedure.

Estimated effects for single parents For single-mothers, it is clearly possible that other transfer policies may affect children. However, the results, we believe, are interesting given the relative importance of the child care policy relative to the other policies affecting single mothers. Table 6 presents the estimated effects for single parents with children aged 1 to 5 not in school. We also consider the effects of the reform for those with children aged 5 to 9 in school (Table 7).

Low-fee child care reform has a positive effect on mothers' depression score (positive effect of 1.60) for children aged 1 to 5 years not in school, when effects do not vary by wave (Table 6). We also see a decrease in positive interaction (negative effect of 0.77) and an increase in hostile and aversive parenting (positive effect of 1.03 and 0.82, respectively). Despite the fact that these mothers were possibly affected by other policies during this time period, it is interesting to observe that the estimated effects are qualitatively very similar to effects on two-parent families. These effects are more important in size than those of two-parent families. For example, the effects on the mothers' depression score and aversive parenting are respectively 26 percent and 39 percent of a standard deviation for lone families and 15 percent and 17 percent of a standard deviation for two-parent families. The effects are significant throughout the post-reform period studied. These results are robust to the correction of standard

deviations by the method of Donald and Lang.

For mothers with children aged 5-6 years in school, the policy has a positive effect on mothers' depression score and hostile parenting (indexed by $\star$) (Table 7). Significant effects are fewer than when the child wasn't in school. When we adjust the standard deviations, only the effect on mothers' depression score remains significant when effects do not vary by wave (indexed by †). Concerning mothers with children 7 to 9 years, the policy still increases hostile parenting and decreases positive interaction score. However, using the two-step procedure, the adverse effects on parental health and behaviors vanish (Table 7).

Discussion The aim of this study was to estimate the long-run effects of the Quebec's child care reform on parental health and parental practices. We build on the BGM study by adding a longer period of observation and follow-up beyond the age of 4 for the children of those parents. We first discuss the effects of the policy on parents with preschool children, then on those with children 5 to 9 in school, and, finally, present results for alternative samples.

We show that low-fee child care reform increased mothers' depression scores for mothers with children aged 1-5 years not in school. The policy also has a negative effect on parents' behavior with preschool children. These effects on parents are significant over the entire post-reform period. However, they are smaller or not significant in the last wave of the NLSCY. This last point suggests that the adaptation period to the policy is over. Unfortunately, wave 8 is the last wave of the NLSCY so that we cannot confirm this possibility.

The main contribution of our paper is that we estimate the effects of the reform on parents when children are in school. We show that the majority of adverse effects on parental outcomes, observed during the preschool period, vanishes at beginning of the school. For parents with children 5-6 years old, only a reduction of positive interactions is found. For those with a child 7-9 years old, the reform generally has no significant persistent effects on parenting and parental health. Thus, our results suggest that the impact of the policy is essentially contemporary, that is to say only lasts for the time when children are in child care and then vanishes with the beginning of the school.

We also report that the effects of the reform are larger for parents with a low education than for those with a higher education. Finally, we find very large negative effects on parenting and parental health for single mothers. Although other policies may be at work, these effects should be disturbing to the policy maker.

In a companion paper, Lebihan, Haeck and Merrigan (2015), show that the policy had negative effects on several measures of child well-being and behavior, but only during the pre-school period. However, these effects for the same outcomes as in pre-school vanish when the child enters school. There is therefore a symetry in the effects, negative effects on both parents and children when the child is in pre-school, but no or very little effect when he is in school. Therefore, the policy does not seem to produce long term negative effects, at least for the outcomes we analyzed in the paper.

The companion paper describes at length the difficulty policy makers had establishing high quality care in subsidized daycare services. There were efforts to increase the quality, but, as of now, the evidence that these efforts were successful is rather weak (Haeck et al., 2015). In fact, the evidence shows that the quality was definitely low on average in the first years of the program. Haeck et al. (2015) also show that the program dramatically increased the hours children spent in day care. Long hours in day care and low quality may have caused the negative effects on children, which in turn had a repercussion on parents. Finally, the positive effect of the policy on the labor supply of mothers with young children may have a direct effect on parents mental or physical health, independently of child outcomes.

There is no evidence of quality problems with schools in the province of Quebec. All teachers are well trained and this may reduce the problems that were created by the policy when the child is young.

7 Conclusion

Our paper shows that the Quebec child care policy had detrimental effects on parents when the child is of pre-school age, but very little once he is in school. Future research should try to establish why this is the case. However, lack of data on quality of care is a major stumbling block for such an endeavour. The negative effects of the policy on pre-school children and their parents should be of concern for policy makers in Quebec or for any policy seeking to provide universal care to children. The results are consistent with a policy approach that puts the quality of care, first, and the creation of subsidized spaces, second and the time spent on children. The early years for children and their parents are critical for families in many ways. Any major policy which seeks to radically increase the participation of mothers with young children through highly subsidized child care must thoroughly consider all family dimensions, in particular physical and

behavioral, before its implementation.

References

Almond, D. and Currie, J. (2011). Human capital development before age five. *Handbook of labor economics*, 4:1315–1486.

Baker, M. (2011). Innis lecture: Universal early childhood interventions: what is the evidence base? *Canadian Journal of Economics/Revue canadienne d'économique*, 44(4):1069–1105.

Baker, M., Gruber, J., and Milligan, K. (2005). Universal childcare, maternal labor supply, and family well-being. Technical Report 11832, National Bureau of Economic Research.

Baker, M., Gruber, J., and Milligan, K. (2008). Universal child care, maternal labor supply, and family well–being. *Journal of Political Economy*, 116(4):709–745.

Bertrand, M., Duflo, E., and Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *The Quarterly Journal of Economics*, 119(1):249–275.

Brodeur, A. and Connolly, M. (2013). Do higher child care subsidies improve parental well-being? evidence from Quebec's family policies. *Journal of Economic Behavior & Organization*, 93:1–16.

Chatterji, P., Markowitz, S., and Brooks-Gunn, J. (2011). Early maternal employment and family wellbeing. Technical Report 17212, National Bureau of Economic Research.

Chatterji, P., Markowitz, S., and Brooks-Gunn, J. (2013). Effects of early maternal employment on maternal health and well-being. *Journal of population economics*, 26(1):285–301.

Cunha, F. and Heckman, J. J. (2010). Investing in our young people. Technical Report 16201, National Bureau of Economic Research.

Donald, S. G. and Lang, K. (2007). Inference with difference-in-differences and other panel data. *The review of Economics and Statistics*, 89(2):221–233.

Giguère, C. and Desrosiers, H. (2010). *Les milieux de garde de la naissance à 8 ans: utilisation et effets sur le développement des enfants*, volume 5. Institut de la statistique du Québec.

Haeck, C., Lefebvre, P., and Merrigan, P. (2013). Canadian evidence on ten years of universal preschool policies: the good and the bad. Technical Report 13–34, CIRPÉE.

Haeck, C., Lefebvre, P., and Merrigan, P. (2014). The power of the purse: new evidence on the distribution of income and expenditures within the family from a Canadian experiment. *Cahier de recherche/Working Paper CIRPEE*, 14(15).

Haeck, C., Lefebvre, P., and Merrigan, P. (2015). Canadian evidence on ten years of universal preschool policies: the good and the bad. *Labour Economics*, 36:137–157.

Herbst, C. and Tekin, E. (2014). Child care subsidies, maternal health and child-parent interactions: evidence from three nationally representative datasets. *Health Economics*, 23(8):894–916.

Kottelenberg, M. J. and Lehrer, S. F. (2013). New evidence on the impacts of access to and attending universal child-care in Canada. *Canadian Public Policy*, 39(2):263–286.

Kröll, A. and Borck, R. (2013). The influence of child care on maternal health and mother-child interaction. (4289).

Lebihan, L., Haeck, C., and Merrigan, P. (2015). Universal child care and long-term effect on child well-being: evidence from Canada. Technical Report 15–02, Research Group on Human Capital.

Lefebvre, P. and Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. *Journal of Labor Economics*, 26(3):519–548.

Lefebvre, P., Merrigan, P., and Verstraete, M. (2009). Dynamic labour supply effects of childcare subsidies: Evidence from a Canadian natural experiment on low-fee universal child care. *Labour Economics*, 16(5):490–502.

Milligan, K. and Stabile, M. (2007). The integration of child tax credits and welfare: Evidence from the Canadian National Child Benefit program. *Journal of Public Economics*, 91(1):305–326.

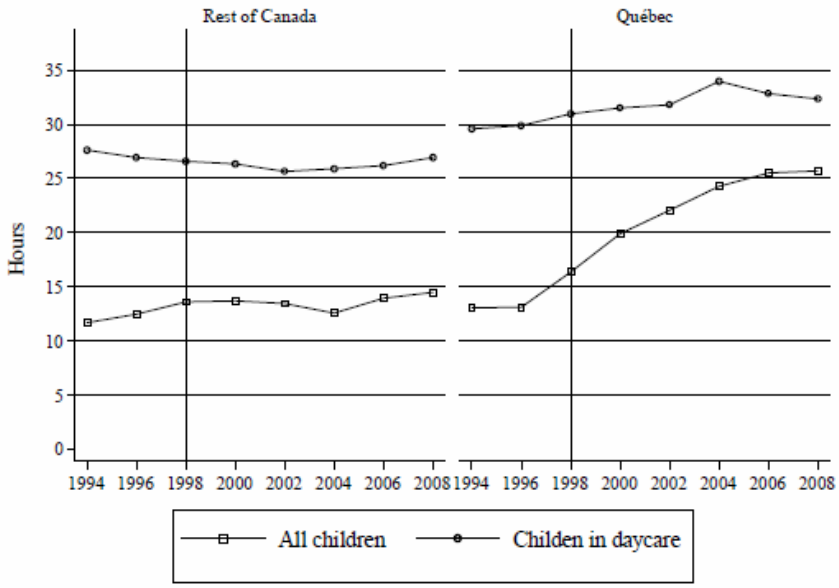
NICHD (1999). Child care and mother-child interaction in the first 3 years of life. *Developmental Psychology*, 35(6):1399–1413.

NICHD (2003). Early child care and mother–child interaction from 36 months through first grade. *Infant Behavior and Development*, 26(3):345–370.

Wooldridge, J. (2006). *Cluster-sample methods in applied econometrics : an extended analysis*. Michigan State Univrsity.

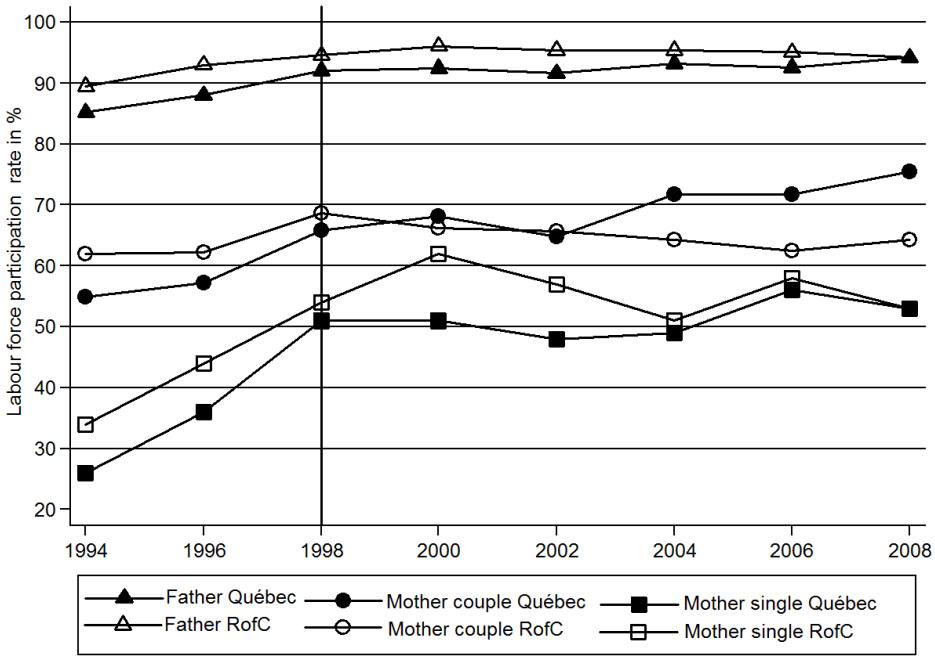
Figure 1 – Trends in child care hours and parental employment in Quebec and the Rest of Canada, 1994-2008

Mean hours per week spent in the primary care arrangement for children aged 1 to 4



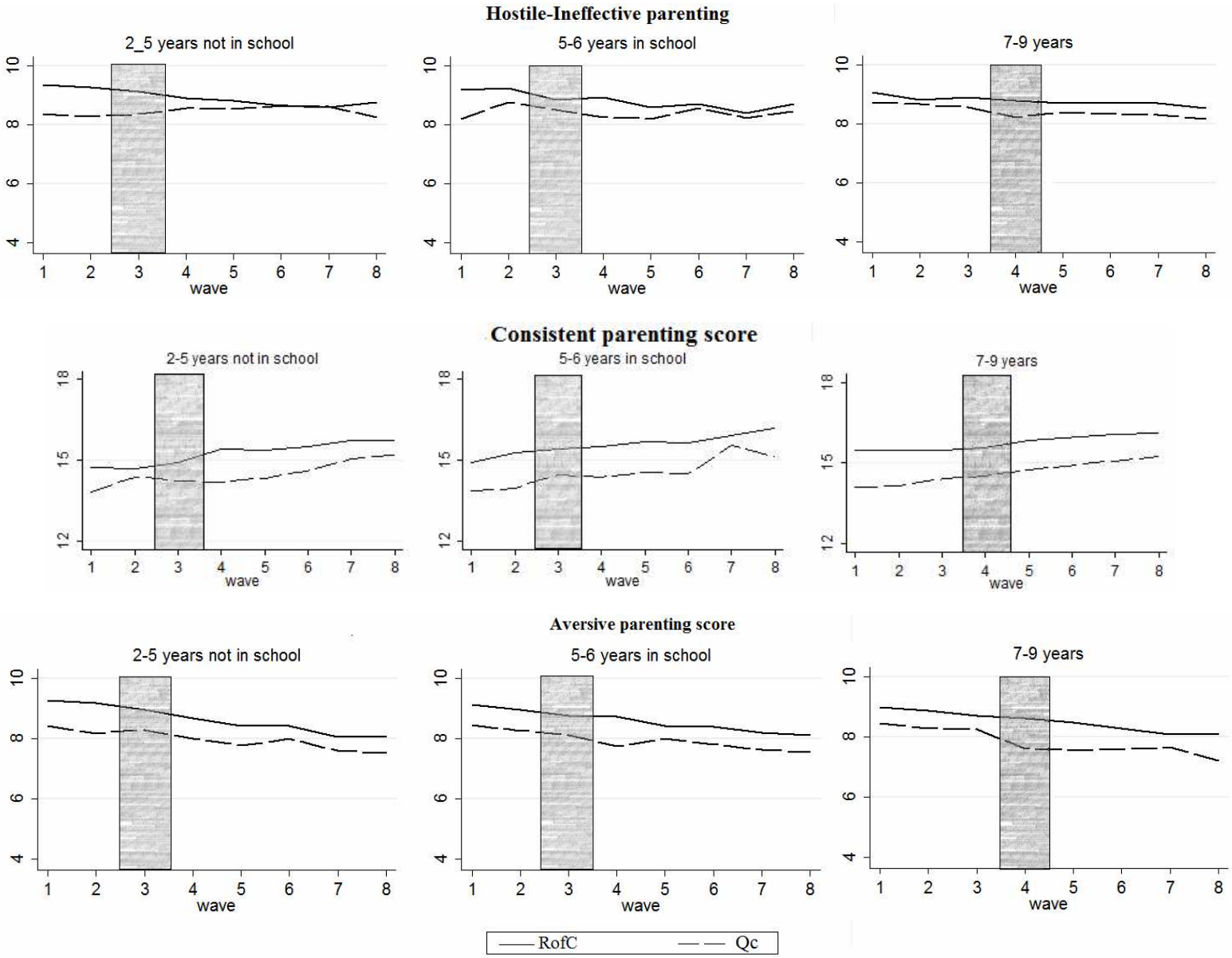
Note: Shows the evolution of the mean number of hours per week spent in the primary mode of care in the Rest of Canada (left panel) and Québec (right panel) non conditionally (hollow square) and conditionally on attending childcare (hollow circle). The sample includes NLSCY cross-sectional children aged 1 to 4. Source: Haeck, Lefebvre and Merrigan (2015).

Labour force participation of mothers (two-parent and single parent families) and fathers by region.



Note: Shows the evolution of parental labour force participation for the NLSCY cross-sectional children aged 1 to 4. Source: Haeck, Lefebvre and Merrigan (2013)

Figure 2 – Mean values of measures for parental outcomes by region and child age



Notes: Shows the trajectories for the mean of three parental outcomes by age of the child for Quebec and the Rest of Canada.

Table 1 – Eligibility for low-fee child care by age of the child and NLSCY wave.

		Wave							
	Age	Wave 1 (1994-95)	Wave 2 (1996-97)	Wave 3 (1998-99)	Wave 4 (2000-01)	Wave 5 (2002-03)	Wave 6 (2004-05)	Wave 7 (2006-07)	Wave 8 (2008-09)
		Wave 1-5: Baker, Gruber and Milligan (2008)					Additional Data		
0-4 years: Baker, Gruber and Milligan (2008)	0	×	×	×	0.5	0.5	0.5	0.5	0.5
	1	×	×	×	0.5	1	1	1	1
	2	×	×	×	0.5	2	2	2	2
	3	×	×	0.5	1	2	3	3	3
	4	×	×	0.5	1	2	4	4	4
Additional Data	5	×	×	1	2	3	4	5	5
	6	×	×	×	1	2 (n.a)	3 (n.a)	5	5
	7	×	×	×	1	2 (n.a)	3 (n.a)	4	5
	8	×	×	×	×	1	2 (n.a)	3	5 (n.a)
	9	×	×	×	×	1	2 (n.a)	3	4 (n.a)

Notes : This table shows the eligible children in Quebec to the low-fee daycare reform (grey shaded area) and non-eligible children in Quebec (indicated by a symbol ×) according to child's age and wave. Numbers indicate the number of years of eligibility. For example, a 5-year child in wave 5 (and therefore born in 1997) was eligible for three years of low-fee child care. The index 0.5 refers to the fact that the child is eligible for a few months, not a year. We exclude wave 3 for children 0-6 years old and wave 4 for children 7-9 years old. The term n.a (not available) means that the child is eligible for low-fee child care spaces but data for this age group in this wave are not available in the NLSCY. Baker, Gruber and Milligan (2008) captured the short-term effects of the reform up to 2003. We extend the observation period to 2009.

Table 2 – Estimated effects of the policy on the health and behavior of parents with children aged 1 to 5 not in school (two-parent families)

	Children aged 1 to 5 not school							
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N
Parent Health								
Mother in excellent health	0.02 (0.03)	-0.01 (0.03)	-0.01 (0.03)	0.00 (0.03)	0.01 (0.04)	0.01 (0.03)	0.41 (0.49)	40,868 [350]
Father in excellent health	-0.01 (0.03)	-0.02 (0.03)	-0.02 (0.03)	0.04 (0.03)	0.03 (0.03)	0.01 (0.02)	0.45 (0.50)	40,642 [350]
Mother's depression score	0.61* (0.33)†††	0.57** (0.27)††	0.86** (0.36)††	1.25*** (0.37)††	0.24 (0.31)	0.70*** (0.24)†††	4.05 (4.59)	39,892 [350]
Parent Behavior								
Family Dysfunction Index	0.43 (0.30)	-0.40 (0.30)	0.13 (0.33)	0.01 (0.33)	0.64* (0.35)†	0.18 (0.24)†	7.18 (5.07)	40,339 [350]
Positive Interaction (from 2 years)	-0.79*** (0.18)††	-0.62*** (0.17)††	-0.92*** (0.19)††	-0.43** (0.18)†	-0.34* (0.19)†	-0.62*** (0.14)†††	15.89 (2.74)	30,127 [280]
Hostile parenting (from 2 years)	0.64*** (0.24)	0.69** (0.27)	0.86*** (0.31)	0.89*** (0.29)††	0.40 (0.28)	0.69*** (0.21)†	8.33 (3.87)	29,657 [280]
Consistent parenting (from 2 years)	-0.57*** (0.22)	-0.48** (0.22)†	-0.18 (0.25)	-0.06 (0.23)	0.05 (0.22)	-0.25 (0.17)†	14.11 (3.27)	29,275 [280]
Aversive parenting (from 2 years)	0.19 (0.14)	0.26* (0.14)	0.51*** (0.15)	0.42*** (0.16)	0.36** (0.16)	0.34*** (0.11)	8.29 (1.96)	29,985 [280]

Notes: This table shows the estimated coefficients and standard errors (in parentheses) for the unadjusted estimates (indexed by *). For the adjusted estimates, we report only the level of significance of the results obtained with the two-step procedure in Donald and Lang (2007) (indexed by †). The table also shows the effects by wave (β_4 to β_8) and the average effect for the post-treatment period (β_{4-8}). Means and standard deviations (in parentheses) for each outcome before the policy change in Quebec are included. The last column shows the number of observations for the unadjusted and adjusted estimated (brackets). Estimates are for two-parent families with children aged 1-5 not in school. Each regression includes all the control variables from Table A.3. Bootstrap weights from Statistic Canada are used for inference.

*** , ††† : significant at 1% ; ** , †† : significant at 5% ; * , † : significant at 10% ;

Table 3 – Estimated effects of the policy on the health and behavior of parents with children aged 5 to 9 years in school (two-parent families)

	Children aged 5 to 6 in school								Children aged 7 to 9					
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N	β_5 (2002-03)	β_7 (2006-07)	β_8 (2008-09)	β_{5-8} (2002-09)	Mean (S.d)	N
Parent Health														
Mother in	0.06	0.01	0.08	0.02	-0.01	0.03	0.39	15,489	-0.01	0.03	0.05	0.02	0.37	14,688
excellent health	(0.04)	(0.05)	(0.06)	(0.05)	(0.05)	(0.04)	(0.49)	[119]	(0.05)	(0.04)	(0.06)	(0.03)	(0.48)	[150]
Father in	-0.04	-0.05	-0.13**	-0.04	-0.06	-0.06	0.47	15,412	-0.08	-0.04	-0.08	-0.06*	0.41	14,623
excellent health	(0.04)	(0.05)	(0.06)	(0.05)	(0.05)	(0.04)	(0.50)	[119]	(0.05)	(0.04)	(0.06)	(0.03)	(0.49)	[150]
Mother's depression	0.06	0.29	0.17	0.26	0.09	0.15	3.70	15,236	-0.74*	0.10	-0.39	-0.28	4.15	14,499
score	(0.40)	(0.41)	(0.49)	(0.49)	(0.49)	(0.33)	(4.40)	[119]	(0.45)	(0.36)	(0.61)	(0.33)	(5.13)	[150]
Parent Behavior														
Family Dysfunction	-0.51	-0.18	-0.49	0.30	0.62	-0.03	7.27	15,327	-0.66	-0.09	-0.24	-0.32	7.64	14,531
Index	(0.47)	(0.49)	(0.65)	(0.54)	(0.59)	(0.39)	(5.12)	[119]	(0.52)	(0.37)	(0.60)	(0.34)	(5.25)	[150]
Positive Interaction	-0.62**	-0.90***	-0.88**	-0.77***	-0.31	-0.64***	13.90	15,537	-0.37	-0.21	-0.49	-0.31	12.22	14,723
(2 years or more)	(0.27)	(0.25)††	(0.33)	(0.25)†	(0.27)	(0.20)††	(2.59)	[119]	(0.27)	(0.22)	(0.33)	(0.20)†	(2.75)	[150]
Hostile parenting	0.05	0.31	0.41	0.39	0.53	0.31	8.54	15,364	0.02	-0.13	-0.10	-0.07	8.66	14,482
(2 years or more)	(0.40)	(0.42)	(0.55)	(0.47)	(0.46)	(0.38)	(3.74)	[119]	(0.36)	(0.30)	(0.52)	(0.27)	(3.73)	[150]
Consistent parenting	0.06	0.27	-0.03	0.78***	0.26	0.29	13.91	15,219	0.14	0.26	0.38	0.23	14.21	14,350
(2 years or more)	(0.28)	(0.27)	(0.37)	(0.29)††	(0.33)	(0.22)	(3.07)	[119]	(0.30)	(0.23)	(0.34)	(0.21)	(3.22)	[150]
Aversive parenting	-0.43**	0.12	0.04	0.03	0.01	-0.11	8.35	15,493	-0.40**	0.01	-0.24	-0.18	8.33	14,694
(2 years or more)	(0.18)	(0.18)	(0.26)	(0.21)	(0.19)	(0.15)	(1.83)	[119]	(0.18)	(0.14)	(0.24)	(0.13)	(1.70)	[150]

Notes: This table shows the estimated coefficients and standard errors (in parentheses) for the unadjusted estimates (indexed by *). For the adjusted estimates, we report only the level of significance of the results obtained with the two-step procedure in Donald and Lang (2007) (indexed by †). The table also shows the effects by wave (β_4 to β_8) and the average effect for the post-treatment period (β_{4-8} and β_{5-8}). Means and standard deviations (in parentheses) for each outcome before the policy change in Quebec are included. The last column shows the number of observations for the unadjusted and adjusted estimated (brackets). Estimates are for two-parents families with children aged 5-6 in school and 7-9. Each regression includes all the control variables from Table A.3. Bootstrap weights from Statistic Canada are used for inference.
*** , ††† : significant at 1% ; ** , †† : significant at 5% ; * , † : significant at 10% ;

Table 4 – Estimated effects of the policy on the health and behavior of parents with children aged 1 to 5 not in school by maternal education

Maternal Education: High school or less								
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N
Parent Health								
Mother in	-0.04	-0.08	-0.09	0.04	0.01	-0.04	0.37	11,161
excellent health	(0.06)	(0.06)	(0.05)	(0.06)	(0.07)	(0.04)	(0.48)	[341]
Father in	-0.08	-0.03	-0.11*	-0.05	-0.10	-0.07	0.43	11,095
excellent health	(0.06)††	(0.06)	(0.06)	(0.07)	(0.06)	(0.05)	(0.50)	[341]
Mother's depression	0.95	1.02*	1.01	0.70	0.92	0.94**	4.39	10,847
score	(0.75)	(0.58)	(0.70)	(0.61)	(0.60)	(0.44)	(4.50)	[341]
Parent Behavior								
Family Dysfunction	0.08	-0.78	-0.45	0.33	0.77	-0.08	8.21	10,979
index	(0.62)	(0.66)	(0.63)	(0.68)	(0.71)	(0.47)	(5.30)	[341]
Positive Interaction	-0.89***	-0.82***	-0.84**	-0.17	-0.25	-0.68***	15.72	8,302
(2 years or more)	(0.29)†	(0.31)†	-0,35	(0.36)	(0.40)	(0.24)†	(2.88)	[271]
Hostile parenting	0.74	0.40	1.40**	0.78	0.52	0.79*	8.15	8,159
(2 years or more)	(0.49)	(0.52)	(0.61)	(0.67)	(0.60)	(0.44)	(4.15)	[270]
Consistent parenting	-0.66	-0.72*	-0.74	-0.49	-1.09**	-0.74**	13.55	8,079
(2 years or more)	(0.41)	(0.41)†	(0.46)	(0.50)	(0.51)†	(0.31)	(3.27)	[270]
Aversive parenting	0.01	0.28	0.55**	0.65*	0.70**	0.38*	8.50	8,265
(2 years or more)	(0.26)	(0.26)	(0.26)†	(0.38)†	(0.35)	(0.20)	(1.92)	[271]
Maternal Education: Some post-secondary or more								
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N
Parent Health								
Mother in	0.04	0.02	0.02	0.01	0.02	0.02	0.42	29,707
excellent health	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.49)	[350]
Father in	0.02	-0.02	0.01	0.06*	0.06*	0.03	0.46	29,547
excellent health	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.50)	[350]
Mother's depression	0.45	0.40	0.78*	1.32***	0.06	0.60**	3.92	29,045
score	(0.28)†	(0.32)	(0.40)	(0.41)	(0.32)	(0.25)††	(4.62)	[350]
Parent Behavior								
Family Dysfunction	0.55	-0.24	0.36	0.04	0.68*	0.30	6.77	29,360
index	(0.34)	(0.37)	(0.40)	(0.41)	(0.40)	(0.29)	(4.91)	[350]
Positive Interaction	-0.75***	-0.54***	-0.99***	-0.46**	-0.36*	-0.60***	15.96	21,825
(2 years or more)	(0.21)†	(0.19)††	(0.22)††	(0.21)	(0.21)	(0.16)††	(2.68)	[280]
Hostile parenting	0.58**	0.82***	0.56*	0.90***	0.35	0.63**	8.40	21,498
(2 years or more)	(0.28)	(0.30)	(0.34)	(0.32)†	(0.33)	(0.25)	(3.76)	[280]
Consistent parenting	-0.52**	-0.38	0.09	0.08	0.35	-0.06	14.33	21,196
(2 years or more)	(0.25)	(0.26)	(0.27)	(0.25)	(0.26)	(0.20)	(3.24)	[280]
Aversive parenting	0.26*	0.26	0.46**	0.36**	0.27	0.32**	8.22	21,72
(2 years or more)	(0.15)	(0.17)	(0.18)	(0.18)	(0.19)	(0.13)	(1.97)	[280]

Notes: This table shows the estimated coefficients and standard errors (in parentheses) for the unadjusted estimates (indexed by *). For the adjusted estimates, we report only the level of significance of the results obtained with the two-step procedure in Donald and Lang (2007) (indexed by †). The table also shows the effects by wave (β_4 to β_8) and the average effect for the post-treatment period (β_{4-8}). Means and standard deviations (in parentheses) for each outcome before the policy change in Quebec are included. The last column shows the number of observations for the unadjusted and adjusted estimated (brackets). Estimates are for two-parent families with children aged 1-5 not in school by maternal education. Each regression includes all the control variables from Table A.3. Bootstrap weights from Statistic Canada are used for inference.
*** ††† : significant at 1% ; ** †† : significant at 5% ; * † : significant at 10% ;

Table 5 – Estimated effects of the policy on the health and behavior of parents with children 5-6 years old in school and 7-9 years old by maternal education

	Children aged 5 to 6 school								Children aged 7 to 9					
Maternal Education: High school or less														
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N	β_5 (2002-03)	β_7 (2006-07)	β_8 (2008-09)	β_{5-8} (2000-09)	Mean (S.d)	N
Parent Health														
Mother in	0.07	0.04	0.17	0.12	-0.05	0.07	0.32	4,240	0.04	0.04	0.23*	0.05	0.30	4,481
excellent health	(0.07)	(0.07)	(0.11)	(0.10)	(0.10)	(0.06)	(0.47)	[117]	(0.07)	(0.06)	(0.13)††	(0.05)	(0.46)	[150]
Father in	-0.01	-0.06	-0.18**	0.14	-0.04	-0.02	0.41	4,220	-0.04	0.03	0.10	0.01	0.39	4,461
excellent health	(0.07)	(0.08)	(0.08)††	(0.11)	(0.10)	(0.06)	(0.49)	[117]	(0.07)	(0.06)	(0.14)	(0.05)	(0.49)	[150]
Mother's depression	0.81	0.45	-1.29*	-0.17	0.00	0.16	4.12	4,166	-1.02	0.36	-2.29*	-0.49	4.63	4,423
score	(0.88)	(0.81)	(0.77)†	(1.08)	(0.89)	(0.62)	(4.51)	[117]	(0.86)	(0.68)	(1.35)	(0.62)	(5.71)	[150]
Parent Behavior														
Family Dysfunction	-0.82	-1.37*	-1.40	-0.49	1.05	-0.60	8.27	4,200	-2.41***	-0.60	-0.13	-1.37**	9.14	4,430
index	(0.77)	(0.78)	(1.00)	(1.13)	(1.10)	(0.62)	(5.30)	[117]	(0.91)†	(0.73)	(1.09)	(0.64)	(5.55)	[150]
Positive Interaction	-0.91**	-1.15***	-1.40**	-1.10**	-0.44	-0.97***	13.91	4,251	-0.67*	-0.37	0.31	-0.45	12.02	4,494
(2 years or more)	(0.42)††	(0.42)†	(0.55)	(0.49)††	(0.46)	(0.31)††	(2.84)	[117]	(0.37)	(0.36)	(0.55)	(0.30)	(2.88)	[150]
Hostile parenting	0.17	0.45	-0.18	0.87	1.12	0.45	7.99	4,192	-0.17	-0.22	-1.10	-0.27	8.67	4,424
(2 years or more)	(0.54)	(0.61)	(0.74)	(0.79)	(0.89)	(0.51)	(3.34)	[117]	(0.52)	(0.51)	(0.99)	(0.41)	(3.61)	[150]
Consistent parenting	-0.04	-0.15	0.58	0.29	0.37	0.16	13.28	4,172	-0.20	0.44	0.67	0.16	13.81	4,403
(2 years or more)	(0.49)	(0.50)	(0.66)	(0.72)	(0.68)	(0.41)	(3.08)	[117]	(0.46)	(0.42)	(0.79)	(0.36)	(3.18)	[150]
Aversive parenting	-0.92***	-0.12	0.12	0.03	-0.13	-0.36	8.63	4,236	-0.36	0.05	-0.35	-0.17	8.45	4,488
(2 years or more)	(0.35)††	(0.30)	(0.39)	(0.46)	(0.36)	(0.24)	(1.82)	[117]	(0.29)	(0.23)	(0.52)	(0.21)	(1.64)	[150]
Maternal Education: Some postsecondary or more														
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N	β_5 (2002-03)	β_7 (2006-07)	β_8 (2008-09)	β_{5-8} (2000-09)	Mean (S.d)	N
Parent Health														
Mother in	0.06	0.00	0.03	-0.02	-0.02	0.01	0.42	11,249	-0.02	0.03	0.02	0.01	0.42	10,207
excellent health	(0.06)	(0.06)	(0.08)	(0.06)	(0.07)	(0.05)	(0.49)	[119]	(0.06)	(0.05)	(0.07)	(0.04)	(0.49)	[150]
Father in	-0.05	-0.04	-0.10	-0.10	-0.06	-0.07	0.50	11,192	-0.07	-0.04	-0.11	-0.06	0.42	10,162
excellent health	(0.05)	(0.05)	(0.08)	(0.06)	(0.06)	(0.05)	(0.50)	[119]	(0.06)	(0.04)	(0.07)	(0.04)	(0.49)	[150]
Mother's depression	-0.29	0.24	0.84	0.41	0.20	0.17	3.50	11,107	-0.72	0.05	0.11	-0.19	3.84	10,076
score	(0.41)	(0.45)	(0.58)	(0.44)	(0.54)	(0.35)	(4.34)	[119]	(0.54)	(0.41)	(0.69)	(0.38)	(4.71)	[150]
Parent Behavior														
Family Dysfunction	-0.25	0.42	-0.02	0.69	0.76	0.33	6.77	11,127	0.35	0.33	0.04	0.29	6.69	10,101
index	(0.55)	(0.61)	(0.82)	(0.54)	(0.73)	(0.46)	(4.98)	[119]	(0.60)	(0.43)	(0.71)	(0.40)	(4.82)	[150]
Positive Interaction	-0.50*	-0.80***	-0.61	-0.65**	-0.26	-0.52**	13.89	11,286	-0.24	-0.13	-0.64*	-0.25	12.34	10,229
(2 years or more)	(0.29)	(0.30)†	(0.41)	(0.30)	(0.34)	(0.25)†	(2.47)	[119]	(0.37)	(0.26)	(0.38)††	(0.25)††	(2.65)	[150]
Hostile parenting	-0.03	0.26	0.67	0.19	0.31	0.21	8.85	11,172	0.04	-0.03	0.28	0.04	8.66	10,058
(2 years or more)	(0.55)	(0.53)	(0.70)	(0.57)	(0.59)	(0.51)	(3.92)	[119]	(0.48)	(0.36)	(0.58)	(0.34)	(3.80)	[150]
Consistent parenting	0.10	0.45	-0.26	0.96***	0.24	0.35	14.22	11,047	0.37	0.28	0.36	0.32	14.45	9,947
(2 years or more)	(0.36)	(0.34)	(0.49)	(0.36)††	(0.37)	(0.29)	(3.02)	[119]	(0.40)	(0.29)	(0.39)	(0.27)	(3.22)	[150]
Aversive parenting	-0.21	0.24	0.04	0.01	0.06	-0.01	8.22	11,257	-0.35*	0.01	-0.19	-0.15	8.26	10,206
(2 years or more)	(0.22)	(0.23)	(0.34)	(0.26)	(0.24)	(0.20)	(1.82)	[119]	(0.21)	(0.17)	(0.27)	(0.16)	(1.73)	[150]

Notes: This table shows the estimated coefficients and standard errors (in parentheses) for the unadjusted estimates (indexed by *). For the adjusted estimates, we report only the level of significance of the results obtained with the two-step procedure in Donald and Lang (2007) (indexed by †). The table also shows the effects by wave (β_4 to β_8) and the average effect for the post-treatment period (β_{4-8} and β_{5-8}). Means and standard deviations (in parentheses) for each outcome before policy in Quebec are included. The last column shows the number of observations for the unadjusted and adjusted estimated (brackets). Estimates are for two-parent families with children aged 5-6 in school and 7-9 by maternal education. Each regression includes all the control variables from Table A.3. Bootstrap weights from Statistic Canada are usedfor inference.
*** . ††† : significant at 1% ; ** . †† : significant at 5% ; ;* . † : significant at 10% ;

Table 6 – Estimated effects of the policy on the health and behavior of parents with children aged 1 to 5 not in school (single parents)

	Children aged 1 to 5 not school							
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N
Parent Health								
Mother in	0.02	0.02	-0.07	0.00	0.02	-0.00	0.31	6,779
excellent health	(0.06)	(0.07)	(0.07)	(0.08)	(0.08)	(0.05)	(0.46)	[331]
Mother's depression	1.18	1.08	2.27**	1.86	1.69*	1.60**	7.29	6,701
score	(0.91)	(1.30)	(0.99)†	(1.26)	(0.98)†	(0.76)†	(6.27)	[331]
Parent Behavior								
Family Dysfunction	0.28	0.64	0.58	0.97	1.30	0.73	9.22	6,424
Index	(0.77)	(0.86)	(0.81)	(0.86)	(0.98)	(0.64)†	(5.49)	[331]
Positive Interaction	-0.81**	-1.30***	-0.91	-0.23	-0.61	-0.77**	15.76	1,607
(from 2 years)	(0.38)	(0.45)††	(0.58)	(0.45)	(0.57)	(0.34)††	(2.82)	[261]
Hostile parenting	0.89	0.27	1.34	1.04	1.59**	1.03**	9.14	1,611
(from 2 years)	(0.58)	(0.70)	(0.85)	(0.80)	(0.72)	(0.49)	(3.96)	[261]
Consistent parenting	-0.67	0.00	-1.26*	0.33	-0.43	-0.45	13.17	5175
(from 2 years)	(0.52)	(0.52)	(0.71)	(0.57)	(0.74)	(0.45)	(3.41)	[261]
Aversive parenting	0.71**	0.44	0.84**	0.82**	1.29***	0.82***	8.52	5077
(from 2 years)	(0.33)	(0.38)	(0.41)	(0.41)	(0.42)	(0.27)	(2.12)	[261]

Notes: This table shows the estimated coefficients and standard errors (in parentheses) for the unadjusted estimates (indexed by *). For the adjusted estimates, we report only the level of significance of the results obtained with the two-step procedure in Donald and Lang (2007) (indexed by †). The table also shows the effects by wave (β_4 to β_8) and the average effect for the post-treatment period (β_{4-8}). Means and standard deviations (in parentheses) for each outcome before the policy change in Quebec are included. The last column shows the number of observations for the unadjusted and adjusted estimated (brackets). Estimates are for one-parent families with children aged 1-5 not in school. Each regression includes all the control variables from Table A.3. Bootstrap weights from Statistic Canada are used for inference.
*** . ††† : significant at 1% ; ** . †† : significant at 5% ; ;* . † : significant at 10% ;

Table 7 – Estimated effects of the policy on the health and behavior of parents with children aged 5-6 in school and 7-9 (single parents)

	Children aged 5 to 6 school								Children aged 7 to 9					
Variable	β_4 (2000-01)	β_5 (2002-03)	β_6 (2004-05)	β_7 (2006-07)	β_8 (2008-09)	β_{4-8} (2000-09)	Mean (S.d)	N	β_5 (2002-03)	β_7 (2006-07)	β_8 (2008-09)	β_{5-8} (2000-09)	Mean (S.d)	N
Parent Health														
Mother in	0.17*	0.16*	0.02	0.05	0.19*	0.13	0.25	2,991	0.02	0.02	-0.14	-0.01	0.33	2,975
excellent health	(0.10)	(0.10)	(0.14)	(0.12)	(0.11)	(0.08)	(0.44)	[116]	(0.09)†	(0.07)	(0.09)	(0.07)	(0.47)	[150]
Mother's depression	3.11**	1.60	4.42	2.94	1.74	2.76**	6.59	2,970	-0.78	-0.05	3.31*	0.19	6.55	2,958
score	(1.45)†	(1.47)	(2.97)†	(1.81)††	(1.93)	(1.13)†††	(5.49)	[116]	(1.35)	(0.98)	(1.93)	(0.98)	(6.67)	[150]
Parent Behavior														
Family Dysfunction	0.41	-0.02	-1.12	0.49	0.25	0.17	9.71	2,866	0.48	-1.42*	-0.26	-0.59	9.28	2,902
Index	(1.11)	(1.04)	(1.57)	(1.50)	(1.47)	(0.93)	(4.37)	[116]	(0.94)	(0.83)	(1.54)	(0.76)	(5.20)	[150]
Positive Interaction	0.25	-0.98	0.69	-0.52	-0.47	-0.19	13.60	3,012	-0.70	-0.34	-1.96***	-0.71**	12.34	2,972
(from 2 years)	(0.57)	(0.60)	(1.01)	(0.75)	(0.47)	(0.48)	(2.49)	[116]	(0.51)	(0.40)	(0.56)††	(0.36)	(2.89)	[150]
Hostile parenting	0.78	-0.13	1.67	1.09	1.76**	1.02*	8.82	2,971	1.57**	0.41	2.06*	1.06**	8.79	2,905
(from 2 years)	(0.77)	(0.67)	(1.07)	(1.07)	(0.78)	(0.58)	(2.93)	[116]	(0.76)	(0.56)	(1.23)	(0.52)	(3.33)	[150]
Consistent parenting	-0.14	-0.71	0.68	-0.87	-0.25	-0.33	14.26	2,940	0.26	0.05	-0.65	0.03	14.13	2,877
(from 2 years)	(0.77)	(0.72)	(1.23)	(0.92)	(0.80)	(0.67)	(3.79)	[116]	(0.74)	(0.47)	(0.75)	(0.44)	(3.25)	[150]
Aversive parenting	0.23	-0.39	-0.56	0.49	-0.15	0.06	8.90	3,005	0.21	-0.08	1.26**	0.22	8.11	2,969
(from 2 years)	(0.54)	(0.47)	(0.65)	(0.54)	(0.52)	(0.41)	(1.85)	[116]	(0.42)	(0.33)	(0.59)	(0.30)	(1.85)	[150]

Notes: This table shows the estimated coefficients and standard errors (in parentheses) for the unadjusted estimates (indexed by *). For the adjusted estimates, we report only the level of significance of the results obtained with the two-step procedure in Donald and Lang (2007) (indexed by †). The table also shows the effects by wave (β_4 to β_8) and the average effect for the post-treatment period (β). Means and standard deviations (in parentheses) for each outcome before the policy change in Quebec are included. The last column shows the number of observations for the unadjusted and adjusted estimated (brackets). Estimates are for parents with children aged 5-6 in school and 7-9 and single families. Each regression includes all the control variables from Table 4. Bootstrap weights from Statistic Canada are used for inference.
*** . ††† : significant at 1% ; ** . †† : significant at 5% ; ;* . † : significant at 10% ;

Table A.1 – Parent outcomes index component (Appendix)

Parent outcome Index	Questions	Types of questions
Family Dysfunction Index	Planning family activities is difficult because we misunderstand each other.	Strongly agree (1) to
	In times of crisis we can turn to each other for support	Strongly disagree (4)
	We cannot talk to each other about sadness we feel.	
	Individuals, in the family, are accepted for what they are.	
	We avoid discussing our fears or concerns.	
	We express feelings to each other.	
	There are lots of bad feelings in our family.	
	We feel accepted for what we are.	
	Making decisions is a problem for our family.	
	We are able to make decisions about how to solve problems.	
	We don't get along well together.	
	We confide in each other.	
Positive interaction	How often do you praise this child, by saying something like 'Good for you!'	Never (1) to
	or 'What a nice thing you did!' or 'That's good going!'?	many times each day (5)
	How often do you and this child talk or play with each other, focusing	
	attention on each other for five minutes or more, just for fun?	
	How often do you and this child laugh together?	
	How often do you do something special with this child that he enjoys?	
	How often do you play sports, hobbies or games with this child?	
Hostile/ineffective parenting	How often do you get annoyed with this child for saying or doing something he is not supposed to?	Never (1) to
	Of all the times that you talk to this child about his behaviour, what proportion is praise?	many times each day (5)
	Of all the times that you talk to this child about his behaviour, what proportion is disapproval?	
	How often do you get angry when you punish this child?	
	How often do you think that the kind of punishment you give this child depends on your mood?	
	How often do you feel you are having problems managing this child in general?	
	How often do you have to discipline this child repeatedly for the same thing?	
Consistency parenting	When you give this child a command, what proportion of the time do you make sure that he does it?	Never (1) to
	If you tell this child he will get punished if he doesn't stop doing something,	all the time (5)
	and he keeps doing it, how often will you punish him?	
	How often does this child get away with things that you feel should have been punished?	
	How often is this child able to get out of a punishment when he really sets his mind to it?	
	How often when you discipline this child, does he ignore the punishment?	
Aversive parenting	How often do you raise your voice, scold or yell at him, when the child breaks the rules?	Never (1) to
	How often do you calmly discuss the problem, when the child breaks the rules?	always (5)
	How often do you use physical punishment, when the child breaks the rules?	
	How often do you describe alternative ways of behaving that are acceptable,	
	when the child breaks the rules?	

Table A.2 – Dependant variable summary statistics by child age (two-parent families)

		Children aged 1 to 5 not school					Children aged 5 to 6 school					Children aged 7 to 9				
		Quebec		Rest of Canada			Quebec		Rest of Canada			Quebec		Rest of Canada		
		Pre	Post	Pre	Post		Pre	Post	Pre	Post		Pre	Post	Pre	Post	
Variable	Range	Mean (S.d)	Mean (S.d)	Mean (S.d)	Mean (S.d)	Obs.	Mean (S.d)	Mean (S.d)	Mean (S.d)	Mean (S.d)	Obs.	Mean (S.d)	Mean (S.d)	Mean (S.d)	Mean (S.d)	Obs.
Parent Health																
Mother in excellent health	0-1	0.41 (0.49)	0.40 (0.49)	0.39 (0.49)	0.38 (0.48)	43,935	0.39 (0.49)	0.39 (0.49)	0.38 (0.48)	0.35 (0.48)	17,433	0.37 (0.48)	0.38 (0.48)	0.37 (0.48)	0.34 (0.47)	16,718
Father in excellent health	0-1	0.45 (0.50)	0.43 (0.49)	0.40 (0.49)	0.39 (0.49)	43,327	0.47 (0.50)	0.39 (0.49)	0.36 (0.48)	0.36 (0.48)	17,130	0.41 (0.49)	0.34 (0.48)	0.34 (0.47)	0.34 (0.47)	16,458
Mother's depression score	0-36	4.05 (4.59)	4.01 (4.81)	4.52 (4.97)	3.74 (4.44)	42,826	3.70 (4.40)	3.48 (4.66)	4.13 (4.69)	3.50 (4.46)	17,142	4.15 (5.13)	3.35 (4.45)	4.10 (5.07)	3.50 (4.55)	16,444
Parent Behavior																
Family Dysfunction Index	0-36	7.18 (5.07)	7.73 (5.11)	7.83 (5.14)	8.15 (5.04)	43,298	7.27 (5.12)	7.40 (5.08)	7.86 (5.10)	7.82 (5.08)	17,241	7.64 (5.25)	7.04 (4.96)	8.10 (4.94)	7.69 (5.04)	16,518
Positive Interaction (from 2 years)	0-20	15.89 (2.74)	15.72 (2.45)	15.89 (2.63)	16.35 (2.35)	32,841	13.90 (2.59)	13.94 (2.41)	13.73 (2.57)	14.47 (2.51)	17,609	12.22 (2.75)	12.63 (2.49)	12.33 (2.57)	13.03 (2.59)	16,825
Hostile/Ineffective parenting (from 2 years)	0-25	8.33 (3.87)	8.53 (3.31)	9.32 (3.72)	8.76 (3.39)	32,298	8.54 (3.74)	8.33 (3.26)	9.24 (3.72)	8.68 (3.36)	17,387	8.66 (3.73)	8.32 (3.28)	8.93 (3.80)	8.68 (3.60)	16,518
Consistent parenting (from 2 years)	0-20	14.11 (3.27)	14.67 (3.01)	14.71 (3.37)	15.55 (3.07)	31,883	13.91 (3.07)	14.87 (2.94)	15.14 (3.31)	15.80 (2.98)	17,221	14.21 (3.22)	14.98 (2.99)	15.47 (3.14)	15.98 (2.99)	16,302
Aversive parenting (from 2 years)	0-20	8.29 (1.96)	7.78 (1.94)	9.24 (2.23)	8.33 (2.10)	32,663	8.35 (1.83)	7.71 (1.81)	9.03 (2.06)	8.38 (2.01)	17,542	8.33 (1.70)	7.56 (1.70)	8.84 (1.91)	8.23 (1.94)	16,771

Notes: This table shows the range, number of observations, the mean and standard deviation (in parentheses) for each variable of interest for Quebec and the Rest of Canada before and after the reform. Each column represents an age category of child: 1-5 years no school, 5-6 years school and 7-9 years. Periods pre and post reform is based on Table 1. Descriptive statistics are for two-parent families and are weighted.

Table A.3 – Summary statistics for two-parent families with children aged 1-9

Variable	Child aged 1-9			
	Quebec		Rest of Canada	
	Pre-Policy	Post-Policy	Pre-Policy	Post-Policy
Child is a boy	0.51	0.51	0.51	0.51
Mother				
Less than high school	0.17	0.11	0.10	0.08
High school diploma	0.17	0.15	0.20	0.19
Some post-secondary	0.24	0.16	0.28	0.14
Post-secondary degree	0.42	0.57	0.42	0.59
Age 14-24 at birth	0.20	0.20	0.17	0.16
Age 25-29 at birth	0.42	0.38	0.37	0.32
Age 30-34 at birth	0.29	0.30	0.32	0.35
Age 35 or more at birth	0.09	0.12	0.14	0.18
Immigrant	0.08	0.10	0.19	0.21
Father				
Less than high school	0.19	0.15	0.14	0.10
High school diploma	0.17	0.19	0.19	0.21
Some post-secondary	0.21	0.16	0.23	0.13
Post-secondary degree	0.43	0.51	0.44	0.56
Age 14-24 at birth	0.08	0.09	0.07	0.07
Age 25-29 at birth	0.32	0.29	0.27	0.24
Age 30-34 at birth	0.39	0.36	0.38	0.37
Age 35 or more at birth	0.21	0.26	0.27	0.32
Immigrant	0.09	0.13	0.18	0.20
Family				
Rural Region	0.19	0.15	0.16	0.12
Region $<$ 30K	0.12	0.12	0.15	0.16
Region 30-99,999K	0.09	0.09	0.07	0.09
Region 100-499K.	0.08	0.06	0.22	0.19
Region $>$ 499K	0.52	0.58	0.39	0.44
None older sibling	0.47	0.47	0.41	0.43
One older sibling	0.36	0.38	0.37	0.39
At least two older siblings	0.17	0.16	0.22	0.19
None younger sibling	0.58	0.66	0.57	0.65
One younger sibling	0.34	0.29	0.34	0.30
At least two younger siblings	0.08	0.05	0.09	0.06
Same age siblings	0.03	0.02	0.02	0.03
N	4,387	8,577	19,367	47,128

Notes: This table shows the weighted summary statistics for children, mothers and fathers and families. The statistics are divided by Quebec and the Rest of Canada for the pre-reform and post-reform according to Table 1. This table includes all children 1-9 years from two-parent families. All statistics are percentages.