

Universal Childcare, Maternal Labor Supply and Family Well-Being

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Abstract

The growing labor force participation of women with small children in both the U.S. and Canada has led to calls for increased public financing for childcare. The optimality of public financing depends on a host of factors, such as the “crowd-out” of existing childcare arrangements, the impact on female labor supply, and the effects on child well-being. The introduction of highly-subsidized universally-accessible childcare in Quebec in the late 1990s provides an opportunity to address these issues. We carefully analyze the impacts of Quebec’s “\$5 per day childcare” program on childcare utilization, labor supply, and child (and parent) outcomes in two parent families. We find strong evidence of a shift into new childcare use, although approximately one third of the newly reported use appears to come from women who previously worked and had informal arrangements. The labor supply impact is highly significant, and comparable in magnitude to previous credible estimates. Finally, we uncover evidence that children are worse off in a variety of behavioral and health dimensions, ranging from aggression to motor-social skills to illness. Our analysis also suggests that the new childcare program led to more hostile, less consistent parenting, worse parental health, and lower-quality parental relationships.

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There has been a substantial rise in the share of mothers who work in the paid labor force in North America. In the U.S., the share of mothers with children under age 6 who work rose from 34% in 1976 to 56% in 2004. In Canada, the employment rate of mothers with at least one child younger than 6 rose from 31% in 1976 to 67% in 2004. In neither country has this trend been offset by a decline in the proportion of working fathers, necessitating an increased use of paid and unpaid childcare. In 1984, 37% of children in the U.S. under age 6 were being cared for by someone other than a parent; by 2001 the proportion had increased to 56%. In Canada, the comparable percentages rose from 40% in 1994-95 to 51% in 2002-03.¹

The increased demand for childcare accompanying the rise of two-earner couples is attracting the attention of public policy makers. With good reason—the vast majority of children in non-parental care come from two-parent families.² Currently, in both Canada and the United States larger child care subsidies are targeted at low income families; middle and upper income families receive modest tax subsidies for either childcare or pre-school. But interest is growing in more universal subsidies for early child care/education as are offered in many nations in Europe (OECD, various years). In Canada, the province of Quebec introduced universal subsidies for childcare over the 1997-2000 period and a central debate of the 2005-06 federal election was a proposal for a national childcare program. In the U.S., universal pre-school initiatives have been passed by states such as Georgia, New York and Oklahoma, and there is a major battle emerging over a ballot initiative for universal pre-school in California. Unfortunately, many of these debates continue without the benefit of evidence on the consequences of such broad reform.

¹ The numbers in this paragraph are from the authors' calculations using the Current Population Survey (US) and Labour Force Survey (Canada) for mothers' labor supply, and the Survey of Income and Program Participation (US) and National Longitudinal Study of Children and Youth (Canada) for childcare use.

² In our dataset, which is further described later in the paper, 87.7 percent children aged 0-4 who are in some type of non-parental care arrangement are from two-parent families.

Universal access to early child care has several advantages. Publicly-financed systems can provide more equitable access to quality childcare and to higher labor supply among secondary earners. At the same time, public systems require extensive public funding, which comes at a cost of higher taxes and therefore reduced economic efficiency. Moreover, it is possible that publicly-provided childcare “crowds out” the private provision of care, with no net increase in childcare use or labor supply to the market. Finally, and most importantly, there is an ambiguous effect on child outcomes, depending on the implications of time spent in child care versus time spent with the parents.

A full evaluation of publicly-financed childcare, therefore, requires answers to three questions. First, does public financing affect the quality or quantity of care provided, or does it just lead to a substitution from one form of care to another? Second, if childcare use does increase, how large is the associated increase in labor force participation of parents, and what does it suggest about the net cost of the policy (subsidies offered minus new tax revenue collected)? Third, what effect does any change in childcare (and associated increases in labor force participation) have on child and family outcomes? Previous studies of childcare policy offer at best incomplete answers to one or two of these questions. There has been no evaluation of a full-scale public intervention which can address all three questions.

This paper provides such an evaluation using a major policy innovation in the Canadian province of Quebec in the late 1990s. The Quebec Family Policy began in 1997 with the extension of full-time kindergarten to all 5 year olds and the provision of childcare at an out-of-pocket price of \$5 per day to all 4 year olds. This \$5 per day policy was extended to all 3 year olds in 1998, all 2 year olds in 1999, and finally all children aged less than 2 in 2000. This dramatic policy change in one of Canada’s largest provinces provides a promising research

design for evaluating the effect of publicly-financed childcare.

Our analysis is based on the National Longitudinal Survey of Children and Youth (NLSCY). The NLSCY is an ongoing panel data set which follows the progress of a large, nationally representative sample of Canadian children. We measure the impact of the policy change on mothers' labor supply, childcare utilization and child and parent outcomes. Because concurrent program reforms complicate the inference for single mothers, we focus on married (and cohabitating) women and their children.

We find the introduction of universal childcare subsidies in Quebec led to a very large increase in the use of care. The proportion of 0-4 year olds in care rose by 14 percentage points in Quebec relative to the rest of the country, or roughly one-third of the baseline childcare utilization rate. This rise in childcare was associated with a sizeable increase in the labor force participation of married women. Participation rose by 7.7 percentage points in Quebec, or about 14.5% of the baseline. The difference between the rise in participation and the rise in childcare utilization primarily reflects reduced use of informal childcare arrangements, or the "crowd out" of informal childcare by this new subsidized childcare. Partly as a result of this large "crowd out", the taxes generated by the new maternal labor supply fall far short of paying for the costs of the increased childcare subsidies.

We also find consistent and robust evidence of *negative* effects of the policy change on child outcomes, parenting, and parent outcomes. Child outcomes are worse for a variety of parent-reported measures, such as hyperactivity, inattention, aggressiveness, motor/social skills, child health status, and illness. Parental interactions with children are worse along all measured dimensions, and there is some evidence of deterioration in parental health and a reduction in parental relationship quality. To our knowledge effects on parenting and family outcomes have

not been previously investigated. Most of these outcomes are parent-reported, but the consistency of the results suggests that more access to childcare is bad for these children (and, at least along some dimensions, for these parents). There are, however, interpretations of these findings which are more benign. While some of these explanations appear inconsistent with the data, we cannot rule out the possibility that our findings represent a short term adjustment to childcare, and not a long-run negative impact.

Section I: Previous Research on Childcare

We have argued that to understand the effect of universal childcare subsidies, we need to answer three questions. In this section we review the answers provided in previous research; for a more detailed review see Baker, Gruber and Milligan (2005).

The first important question is how the use of childcare depends on its price. If, in response to a subsidy, individuals use the same amount of childcare, or simply shift from unsubsidized to subsidized childcare, then the policy may be “crowding out” private childcare expenditures and have no net effect. The estimates of own- and cross-price elasticities for childcare in the literature vary widely, ranging from quite small (-0.34 in Blau and Hagy 1998) to quite large (-1.0 or larger in Connelly and Kimmel 2003, Powell 2002, and Cleveland et al. 1996). To the extent that childcare subsidies affect utilization of childcare, they may also influence the labor supply decisions of families. There is a growing empirical literature that estimates the response of labor supply (typically female) to childcare costs using U.S. data (this literature is nicely reviewed by Anderson and Levine 2000, and Blau 2003). Blau (2003) reports that the range of estimated responses of labor supply with respect to childcare costs from these studies is wide, although the results from studies using arguably more exogenous variation in

child care costs tend towards the lower end of this range.³

Commentators have pointed out that these literatures may suffer from an important identification problem: the factors that drive childcare costs (number of children or local wages) independently impact maternal labor supply. In response, some recent studies have tried to isolate exogenous variation in child care costs to identify labor supply responses. The estimated elasticities from these studies (e.g., Berger and Black 1992, Gelbach 2002, Cascio 2009 and Herbst 2008) are mostly at the lower end of the range of estimates reported by Blau (2003).

The final question of importance for evaluating childcare subsidies is how childcare utilization affects child development. Parents who respond to subsidies by moving their children from home to subsidized childcare are substituting the care of others for their own care. Whether this substitution results in an increase or decrease in the net resources children receive depends on the quality of parental and non-parental childcare at stake. If the childcare is utilized to permit employment, there may be additional effects on child well-being: more income may have positive effects, but factors such as more parental stress and shorter periods of breastfeeding⁵ may have negative effects. Finally, for those families who already had their children in care, this policy represents a pure income transfer, which could improve child outcomes.

There has been an impressive amount of research on childcare and child development, mostly outside of economics but growing within economics as well. In the child development field, much research in the last decade has been based on a panel study by the National Institute of Child Health and Development Early Childcare Research Network. An emerging body of evidence suggests some negative behavioral consequences of childcare for children. For

³ Measured elasticities range from 0 to -1.26, although with the nonlinearity of budget sets it may be hard to compare elasticities across different contexts. The range in the corresponding Canadian studies is -0.156 to -0.388 (e.g., Cleveland et al. 1996, Powell 1997 and Michalopoulos and Robins 2000, Lefevbre and Merrigan 2005).

⁵ Haider et al. (2003) provide evidence of how employment post birth displaces breastfeeding.

example, NICHD-ECCRN (2003) finds evidence that the amount of time through the first 4.5 years of life that a child spends away from his or her mother is a predictor of assertiveness, disobedience, and aggression. These negative social outcomes are echoed in research by Belsky (e.g., Belsky 2001) and Loeb et al (2005).

Beyond the effect on behavior, a vast body of research studies cognitive and development outcomes. NICHD-ECCRN (2004) associates childcare with improved first grade performance, although continued higher levels of behavioral problems. This finding echoes research on pre-kindergarten programs, which has found strong indications of positive cognitive impact.⁶ For example, the recent findings of Magnuson, Ruhm, and Waldfogel (2007) suggest that pre-kindergarten participation raises cognitive development but sets back behavioral indicators. Previous Canadian studies (Gagne 2002 and Lefebvre and Merrigan 2002) find no relationship between the mode of childcare and development indicators.

Economic research has also focused on the effects of maternal employment on child development. The review offered by Ruhm (2004) argues that a consensus view (e.g. Blau and Grossberg 1992) is that the net effects are small: positive effects of employment in the second and third years offset negative effects in the first year.

Section II: The Policy Change

Our empirical strategy is informed by the details of both the Quebec Family Policy and concurrent changes to the policy environment of families in Quebec and the rest of Canada.

Quebec's Universal Daycare Plan

⁶ The literature on Head Start and other early child intervention programs is reviewed by Karoly et al. (1998) and Blau (2003).

In 1997, the government of Quebec introduced a new set of family policies, including large changes to government subsidies for childcare. The centerpiece was a childcare program to provide regulated childcare spaces to all children aged 0 to 4 in Quebec at a parental contribution of \$5 per day.⁷ Children were eligible whether or not the parents were working. The program was phased in, starting with four year olds in September 1997. Subsequently, three year olds became eligible in September 1998, two year olds in 1999 and children aged zero and one in September 2000.

The provision of new subsidized places was accomplished through a fundamental re-organization of the childcare sector in Quebec. A new Ministry was created, the Ministère de la Famille et de l'Enfance, to oversee the system. Centres de la petite enfance (Centers for young children—known by the acronym CPE) were created out of existing non-profit childcare centers to serve as organization nodes of the new system. In addition to providing childcare services, these centers oversaw networks of in home childcare providers. To be eligible to offer subsidized places, in home providers had to affiliate with a CPE, and be subject to the associated regulations.

The transition to the new system created frictions. Even though the introduction was staggered by age, demand has exceeded supply, leading to some queues.⁸ The response to this excess demand has been to create new subsidized childcare places. In Figure 1 we graph the total number of regulated places in the province as of March 31 in each year, and starting in 1998 the number of these places available at the subsidized rate. The number of spaces more than doubles between 1997, the last year before the new policy comes into effect, and 2005. The expansion

⁷ In 2004, the price was increased from \$5 to \$7 per day. Since this change occurred after the time period covered by our data, we refer to the \$5 amount in this paper.

⁸ Excess demand is hard to gauge, as documented estimates of the queues are unavailable. Waiting lists may include children already in a subsidized spot but wanting to change centers, duplicate counts of children on multiple waiting

was accomplished by quadrupling the number of places in family based childcare, and doubling the number in CPEs. Note, however, that the growth does not begin in earnest until 1999 – the annual increase in 1998 was only about 4 percent.

In addition to increasing the quantity of places, there has been some emphasis on increasing the quality of care. Part of this has come through regulatory changes. Formal qualifications were raised for both CPE and family caregivers.⁹ The government has also implemented new wage policies in the sector to make it a more attractive profession: phased in over a four year period starting in 1999, it resulted in an average wage increase of 38 to 40 percent (Tougas 2002). On the other hand, several operational parameters were relaxed that may have decreased the quality of care.¹⁰ Japel, Tremblay, and Côté (2005) report results from detailed site-visits that indicate quality in the public childcare centres exceeded quality in private options, but still only 61 percent met their criteria for minimum quality. Later in the paper, we offer some direct evidence that suggests the quality of childcare in Quebec along measured dimensions was not falling relative to the rest of Canada over this period.

The new Family Policy also included measures for school age children. The main components are a) voluntary full day kindergarten for five year olds (starting September 1997), b) half day kindergarten and free care for four year olds from disadvantaged areas, and c)

lists, or children during the transition period who are not yet eligible. Media reports suggest the queue may be as high as 35,000 children (CBC News Online 2005).

⁹ Two-thirds of staff must have a college diploma or university degree in early childhood education; previously the standard had been one-third. The government now provides financial support for childcare providers who are enrolled in college level courses in Early Childhood Education. Family childcare providers registered with a CPE faced increased training (24 hours to 45 hours) and annual professional development (6 hours) requirements.

¹⁰ Maximum facility size was raised from 60 to 80 places. Staff/child ratios remained unchanged with the exception of four and five year olds whose ratio was raised from 1:8 to 1:10. Parent involvement in the board of directors was raised from 51% of members to two-thirds of members. The duration of center operating permits was lengthened from two to three years.

subsidized after school childcare for children aged five through 12 (also at the \$5 per day rate). Enrolment in all three of these programs has risen sharply (Quebec 2005).

Effects on the Price of Childcare

Prior to 1997 (and for families without subsidized places post 1997), direct subsidies for childcare were available for low income families. There were also refundable tax credits at a rate that depended on family income; from 75% for those with the lowest incomes down to 26% for those with family incomes greater than \$48,000. These policies provided lower income families with a substantial subsidy before the introduction of the \$5 program.¹¹ Under the new Family Policy, children in a \$5/day place are not eligible for any further direct subsidy. In addition, the \$5 parental contribution is not eligible for the provincial tax credit for childcare expenses, although it remains eligible for a federal deduction. The fact that the pre 1997 childcare policies targeted low income families implies that the effect of the Family Policy on the effective price of childcare varies with family income, with little gain for the lowest income families but larger subsidies at higher incomes.

In Figure 2 we graph the effective subsidy of childcare prices by province over the 1990s. We show the rate for married (two-parent) couples for all provinces, as well as the rate for singles for Quebec. The subsidies are calculated as the sum of the direct expenditure subsidy (the direct reduction in childcare price from either low-income subsidies or the \$5/day policy) and the tax subsidy (the tax deduction/credit for any remaining out of pocket costs). Subsidies in each province vary with family characteristics such as number of children, one or two-parent status, and income, so we compute the subsidies for the same set of families in each province; as a result, any variation across provinces captures only the differences in legislative environment.

¹¹ A full description of these tax subsidies to childcare is provided in the appendix.

At the beginning of the time period, Ontario and Quebec have the highest subsidy rates to childcare expenditures by married couples, and the variation among the remaining provinces is minimal. In 1994 the subsidy rate in Quebec jumps above those in other provinces as the generous refundable tax credit was put in place, and then remains steady until the start of the Family Policy. With introduction of the Policy in 1997 the subsidy in Quebec begins an upward trajectory until it settles at almost three times the rate in other provinces by 2002. The jump is not immediate because the slow phase-in of the new program meant that only four year old children were initially eligible for the \$5 subsidized program, while our simulation sample includes families with children age 0-4. By 2001, children of all ages 0-4 are eligible, and the Quebec line stabilizes at a subsidy rate of around 80 percent. This steep rise is in contrast to a relatively constant subsidy rate for married couples in other provinces over this time period.

For singles in Quebec, the impact of the Family policy is only about one-half as large, since single women typically qualified for substantial subsidies before the \$5 per day program was introduced. This finding and contemporaneous policy changes affecting single families suggest that we focus our analysis on married families.

In addition to the introduction of the universal childcare plan, there were several other changes to the benefits paid to families both in Quebec and the rest of Canada in the late 1990s. In Baker, Gruber and Milligan (2005) we carefully model the impact of these changes. For married women, we find little differential impact across provinces, other than the \$5/day policy in Quebec. Benefits for single women, however, show much more provincial variation, including a sharp increase for lower income single mothers in Quebec starting in 1998 due to the Family Policy's new family allowance that targets low income women.

Beyond family benefits, welfare programs (called Social Assistance in Canada) vary at the provincial level. Through this time period, several provinces implemented reforms and rate changes to their Social Assistance programs. While married women are eligible, only a small proportion of married mothers receive Social Assistance benefits. In contrast, nearly half of single mothers in the late 1990s received some Social Assistance.¹² This provides an additional rationale for focusing on married mothers in the analysis below.

Section III: Data and Empirical Strategy

Data

Our primary data set for this analysis is the National Longitudinal Study of Children and Youth (NLSCY), a nationally representative panel survey that follows cohorts of Canadian children, some from as early as birth. The survey is conducted bi-annually and we use the 1994-95, 1996-97, 1998-99, 2000-01 and 2002-03 waves. The initial target population for the NLSCY survey was 0-11 year olds in 1994. This initial cohort is followed longitudinally across all five waves. Additionally, younger children have been added to each wave providing an increasingly wider cross-section snapshot of the child and youth population. For the first four waves, the dataset provides cross-sectional coverage of children from age 0 up to the oldest of the original cohort. In the 5th wave, the sample includes children age 0-5 in the cross-sectional component and the original longitudinal cohort who are ages 8 to 19. Missing from the 5th wave is coverage of 6 and 7 years olds. Unfortunately, this restricts us from a more complete study of cognitive outcomes and other survey questions asked only of school-aged children.

The content of the NLSCY is deep. The dataset provides information on a rich set of

¹² See Milligan and Stabile (2007) for more detail on Social Assistance and child benefits in Canada in the late 1990s.

childcare choices as well as tracking children’s development, parental and teacher evaluations, test scores, and class rankings. The sample averages around 2,000 children at each age per year, although some provinces and age groups were oversampled in some waves. For this reason, we use the provided weights in all of the results presented here. Our primary sample consists of children age 0 to 4, although for some robustness checks we also make use of children age 6 to 11. We exclude five year olds to isolate the effect of the childcare program from the effect of the expanded full day kindergarten. The main sample restriction is to include only children from dual-parent families, for the reasons outlined earlier.

Empirical Strategy

Armed with these NLSCY data, we estimate difference-in-differences models comparing the outcomes in Quebec and the rest of Canada around the time of this reform. We denote the “pre-reform” period as waves 1 and 2 of the NLSCY, covering the period 1994-1995 to 1996-1997. The “post-reform” period is waves 4 and 5 of the NLSCY, from 2000-2001 and 2002-2003. For outcome variables such as childcare use, labor supply, or parent and child outcomes, the generic estimating equation at the individual level is

[add coefficients]

$$(1) \quad Outcome_{ipt} = Policy_{pt} + PROV_p + YEAR_t + X_{ipt} + \varepsilon_{ipt} .$$

where i indexes individuals, p indexes provinces, and t indexes years. We include year and province dummies, along with a set of control variables X_{ipt} for the parents’ characteristics (education level, age group, and immigrant status), size of urban area, number of siblings, and the age and sex of the child.¹³ The policy variable is a dummy for being eligible for the \$5 per

¹³ The parental education groups we define are high school dropout, high school graduate, some post-high school, university degree. The age groups are in five-year sets, starting with 16-20 and ending with 46-99. The urban area dummies are for five levels: rural, under 30,000, 30,000 to 99,999, 100,000 to 499,999, and 500,000 plus. Siblings

day program—meaning that the child is resident in Quebec in a time period when his or her age is eligible for the subsidized space. Since we control for fixed effects for each province and each year, the effect of the childcare policy in Quebec is identified by the change in Quebec, relative to other provinces, in 2000 or later relative to 1997 or earlier. We run a battery of robustness checks, outlined below, to increase the plausibility of inferences made from this framework.

Our procedure estimates intention-to-treat effects, as we estimate the reduced form effects on all children rather than only those who choose childcare. This carries the advantage of potentially capturing the full impact of the program on all types of care arrangements as well as any effects external to those actually undergoing treatment. Moreover, because of some uncertainty (discussed later) regarding the responses to the childcare questions in the survey, our approach allows some flexibility in deciding by which probability of treatment the intention-to-treat effects should be scaled in order to arrive at the impact of treatment on the treated.

We exclude the 1998-1999 wave of the data from the analysis. In principle, these data could be included, which would not only increase sample size, but also would allow us to exploit the “phase-in” of the policy across different age groups. However, because we only observe one period during the phase-in, a triple difference empirical strategy with controls for province-specific time effects would result in identification coming solely from the age 3 and 4 year olds who became eligible for the CPE program in wave 3. As is clear in Figure 1, the increase in supply of subsidized childcare spaces lags the start of the program in September 1997. The net result is that estimates based only on this wave 3 variation reveal a change in the composition of

are controlled for with dummies for the number of younger siblings (0, 1, 2 or more) and another set for the number of same age or older siblings (0, 1, 2 or more).

childcare, but not in the overall use.¹⁴ While this is consistent with conversion of existing places into regulated places and with the lag in increase in overall supply, it provides a poor basis for evaluation of the effect of the phased-in CPE program.

A disadvantage of our identification strategy is that any Quebec specific shocks coincident with the Family Policy will bias our estimates. We attempt to address this concern in a number of ways. First, we enhance our regression results with compelling graphical evidence of how maternal labor supply, childcare utilization and child outcomes deviate in Quebec and the rest of Canada with the advent of the new policy. The availability of data for two waves before the policy change for most of our variables allows us to demonstrate that we are not just picking up long-running trends in differences between Quebec and the rest of Canada. Second, we run a variety of falsification checks on the results, such as examining effects among 8-11 year olds in Quebec (who were less affected by the policy) and controlling for contemporaneous changes in economic conditions. These specification checks are presented after our central results.

Finally, an important issue with this type of difference-in-differences analysis is the correct computation of the standard errors to address both within province-year correlation across observations, as well as serial correlation within provinces across time. Moreover, recent work by Conley and Taber (2005) suggests that difference-in-differences estimation using a small number of policy changes can produce standard errors that are too small. In light of this, we report in our main tables robust standard errors that are clustered on province-wave cells. In our extended robustness checks we also show the standard errors using province clusters and a simulated p value that places the observed estimate in the context of the distribution of estimates observed using counterfactual treatments in other provinces in our data.

¹⁴ Estimates from the triple-difference regression including all waves indicate a zero impact on use, and offsetting changes composition: movement toward centre-based care (eight percentage points) and away from own home care

Table 1 shows the means for our control variables and some key dependent variables, divided into Quebec and the rest of Canada, before and after the policy change. There are no noticeable differential trends in Quebec, relative to the rest of the nation, except for impacts on use of child care, subsidy rates to child care, and maternal labor supply.

Section IV: Childcare Use and Labor Supply

Childcare Use

The initial NLSCY question about childcare use is asked of parents of children age 0 to 11.¹⁵ This question acts as a ‘gateway’, as no further childcare questions are asked for those who respond in the negative. Those who answer in the positive are asked a series of questions about the modes of childcare used and for how many hours each is used. We classify the childcare modes into (a) institutional care (mostly daycare centers), (b) care in the home, and (c) care outside the home. For care in the child’s or another’s home, we observe whether it is provided by a relative and whether the caregiver is licensed. Because the care subsidized by the Family Policy can be provided both through CPEs and through licensed family-based providers, our focus is on institutional care and licensed care outside the home.

Table 2 presents the results for our childcare use variables. Each row shows the coefficient of interest from two separate regressions. The first is a difference-in-difference estimate using the ELIG indicator for observations in Quebec in waves 4 and 5, and the second is the result from the model including the province/year subsidy rate. We also report the pre-Family Policy mean of each dependent variable in Quebec and its standard deviation. The first row shows that the odds a child was in childcare rose by 14.6 percentage points in Quebec,

(3 points) and other home care (5 points).

relative to the remainder of Canada, after this policy change. This is a very sizeable increase which amounts to more than a third of the baseline rate of childcare utilization. Using the subsidy calculator described earlier, this finding corresponds to an elasticity of childcare use with respect to its price of 0.58, which is at the lower end of the range of estimated elasticities from previous work.

[this is the only place we reference elasticities – should we just punt this? If we keep it, we should note that 0.58 is NOT at lower end – gelbach & berger/black were much lower. I thought our elasticity was down around 0.2 – where does 0.58 come from?]

This result is illustrated in Figure 3, where we graph the rate of childcare utilization in Quebec and the rest of Canada across the NLSCY waves. Use of childcare falls modestly in Quebec relative to ROC between wave 1 and 2, and then rises in wave 3, although only marginally faster than in the ROC. In wave 4 and wave 5, however, care rises substantially in Quebec while remaining flat in the ROC. This figure clearly illustrates a trend break in the use of childcare in Quebec around the time of this policy. In regressions not shown here, we find that the increase in use is almost entirely in full time (more than 20 hours) care.

The next rows in Table 2 show estimates of changes in the various types of childcare arrangements. There is a very large rise in institutional care that is essentially equal to the overall rise in childcare. There is no change in care in own home or in other's home. This is puzzling given the increase in home-based care that was part of the CPE program. The next three rows resolve the mystery by disaggregating the care in other's home. There was a shift from care provided by relatives and non-licensed non-relatives to care provided by licensed non-relatives.

¹⁵ The wording of the question is “Do you currently use childcare such as daycare, babysitting, care by a relative or other caregiver, or a nursery school while you (and your spouse/partner) are at work or studying?”

Licensed non-relatives would include the family-based care associated with CPEs through the \$5 per day program. Clearly, this policy change had major effects on the use of childcare.

Labor Supply

The remainder of Table 2 reports the effects of this policy on the labor supply of married women.¹⁶ The first two columns consider mothers of 0-4 year old children. There is a rise in the employment of married women in Quebec, relative to the rest of Canada, of 7.7 percentage points, or 14.5% of baseline participation. As Figure 4 shows, this change in labor force participation once again represents a trend break for Quebec relative to the rest of Canada: whereas female participation in Quebec was 5-6 percentage points below that in the rest of Canada before the policy, it is higher after the policy. In regressions not shown here, we find that the increase in work was dominated by women working more than 30 but less than 40 hours per week.

It is notable that the impact of the program on labor supply is only about half as large as the impact of the program on childcare utilization in absolute terms. There are two possible explanations for this finding. First, many women may be using childcare without working. The other possibility is a change in reporting: some women may have been using informal childcare and answered ‘no’ to the childcare usage question, but as they switched to the formal sector they report their care.

The final four rows of Table 2 investigate these two hypotheses by dividing the sample of mothers into four groups: working and using childcare; working and using no childcare (presumably a mismeasurement that is proxying the informal care of these 0-4 year old children);

¹⁶ Since our sample for all of the other analyses in this paper is at the child-level, we use a comparable sample here, whereby each observation is the labor supply of a child’s mother. This means that if a woman has more than one child aged 0-4, she will be included in the data set multiple times. We have also estimated models that only use one observation for each woman, and the results are very similar.

not working and using childcare; and not working and using no childcare. The first two rows show that there is a reduction of 4.8 percentage points in the share of women who report working with no childcare for their small children, and the share who report working with childcare rises by 12.5 percentage points (the sum of these is the 7.7 percentage point increase in work). Thus, roughly one-third of the 14.6 percentage point rise in childcare use reported in the first row of Table 2 appears to be a shift from unreported informal care to more formal care (“crowding out” of informal care) rather than a net increase in childcare use. Finally, the third row shows that there is a small increase in the share of women who use childcare but do not work of 2.3 percentage points.

These findings frame our investigation of child outcomes. The CPE policy is not purely an instrument for increased childcare use and labor supply. Rather, the effect of the policy is a mix of increased labor supply, leading to more childcare use, a shift in the mode of childcare (from informal to formal care), and a small rise in childcare use without increased labor supply.

The estimates for childcare use and labor supply can be used to estimate the net budgetary cost of the program, accounting for offsetting tax revenues from increased maternal labor supply. We provide such an estimate in Baker, Gruber and Milligan (2005), and conclude that 40 percent of the costs of the childcare subsidy are covered by the income and payroll taxes on the extra labor the subsidy encourages. That is, the large shift from informal (unsubsidized) to formal (subsidized) childcare, as well as some increased childcare use by mothers who do not work, resulted in a significant net cost of this program, despite the large rise in labor supply.

Section V: Child Outcomes, Parenting and Parent Outcomes

Child Outcomes

As discussed in Section I, there is considerable controversy over the effects of maternal work and childcare use on child outcomes. The policy change in Quebec, along with the rich data on child outcomes available in the NLSCY, offers an opportunity to more completely address this important question. Given the ages of the pre-school children in our sample, we do not observe many of the school performance or test score measures that are favored by economists in this context. Fortunately, there is enormous expertise in other disciplines measuring behavioral outcomes of young children, and this expertise is incorporated into child behavior measures available in the NLSCY.

We consider several summary scores of the individual behavioural measures in the NLSCY: hyperactivity-inattention; general anxiety; separation anxiety; physical aggressiveness / opposition; motor and social development. In the Appendix, we show how these scores are constructed from the underlying survey questions, and also provide estimates for the individual components using the same specification as we use for the scores. We also include a detailed description of the validation of these measures in other literatures [DO WE WANT TO INCLUDE THIS IN THE APPENDIX? I HAVEN'T DONE IT YET]. [we should post this on the web and drop a fn with web address] We also consider five measures of health: an indicator for excellent health; indicators for the child never having nose/throat or ear infections; an indicator for having an asthma attack in the last 12 months; and an indicator for injury in the last 12 months. Finally, we use the one test score we have available to us for this age range—the Peabody Picture Vocabulary Test.

Table 3 presents the results for child outcomes for the difference-in-differences specification. The first four rows show results for our behavioural indices for children age 2-3. In all cases the estimates indicate that behaviour deteriorated in Quebec, relative to the rest of

Canada, over this period. Both the emotional disorder-anxiety score and the physical aggression-opposition score are significant at conventional levels. The standardized motor and social development score for children age 0-3 shows a significant decline of -1.647, which is more than 10 percent of a standard deviation. The change in PPVT score is not significant, but the small number of age 4 observations contributes to the imprecision of this estimate. The 95 percent confidence interval includes effects as large as 9.7% of a standard deviation, which when scaled for treatment (see below) is quite large.

There are also sizeable negative effects on health indicators. There is a significant negative effect on the odds of being in excellent health of 5.5 percentage points. There is a very large and significant 0.140 reduction in the odds of avoiding nose and throat infections, and a reduction in the chance of an ear infection as well. There are also large and significant reductions in the odds of never having ear infections. In contrast, there is no change in asthma. These results are indicative of an increased risk of exposure to communicable illnesses. The final row investigates injuries, with no evidence of any change following the large switch into non-parental care.

Many of these estimated effects appear small relative to the means and standard deviations. However, the estimates we report are intention-to-treat effects and must be divided by the probability of treatment to arrive at the effect of the treatment on the treated. Measuring the effect of the treatment on the treated is quite difficult, however, since defining what it means to be treated is not clear. Treatment could be defined as exposure to maternal labor supply (in which case 7.7% of children are treated), increased use of childcare (in which case 10% of children are treated), or increased use of childcare *or* a shift in the site of childcare (in which case 14.6% of children are treated). Furthermore, some children may also have experienced an

increase in the intensity of childcare, because the CPE program was available for up to 12 hours of care per day.

While we are unable to resolve this issue, we can plausibly bound the effects by assuming that between 7.7% and 14.6% of children are treated. Doing so makes the effects appear quite large. For example, for motor/social skills, the estimates suggest that eligibility for the subsidized childcare plan leads to a 1.64% decline in skills relative to the mean, for an effect on the treated of between 11.3% and 21.4%, which is between 75% and 133% of a standard deviation. The effects are as large for other behavioural measures. For example, the results for anxiety imply a 12.4% rise relative to the mean score of 0.967 for the intention to treat effect, which is 8.9% of a standard deviation. When scaled for treatment, the effect is between 61% and 116% of a standard deviation. The physical aggression score scales to similar magnitudes. Some of the health effects are also quite large: the rise in the rate of nose/throat infection for all children is 34.7% of the pre-policy mean, suggesting a policy effect on the treated of 237% to 451%. Whether we use the upper or lower bound, our estimates imply large effects of maternal work and childcare use.

In Figure 5, we present graphs of four of our outcome measures for Quebec and the rest of Canada over the waves of the survey. Hyperactivity and aggression actually fall in Quebec relative to the rest of Canada before the policy, but there is a sizeable relative rise in Quebec between waves 2 and 5. Anxiety follows a similar pattern in Quebec and the rest of Canada until wave 3, at which point it grows much more quickly in Quebec. Our indicators for the absence of nose and throat infections are flat in both Quebec and the rest of Canada through the first two waves, and then fall dramatically in Quebec in the post-policy period.

Specification Checks

The results presented thus far show clearly that child care utilization and maternal labor supply rose while child outcomes deteriorated in Quebec after this policy change, both relative to other provinces and relative to previous trends. We also showed in Table 1 and in the figures that there were no obvious trends in control variables in Quebec relative to the rest of Canada during this period. Nevertheless, it is important to further confirm that there were no other confounding differential changes in Quebec during this time period. In this section we explore this issue further. Beyond an exploration of the credibility of our inferences, we also look for heterogeneity in the results for different subsamples that can further our understanding of the main results.

In Table 4 we start by reproducing the results from our child-focused dependent variables using the province-wave clustered robust standard errors. For hyperactivity, anxiety, and aggression we use the score reported for ages 4-11 rather than the age 2-3 score reported in Table 3, so that we will be able to use the same measure in both our treatment (age 0-4) and comparison (age 8-11) groups. Analogous results for our other dependent variables are reported in the Appendix.

We first confirm our finding by exploring the robustness of our results to alternative measures of statistical inference. The two sets of standard errors indicate that for most of the results, the standard errors are substantially smaller when we cluster on province rather than province-wave. We also report p -values from simulations inspired by Anderson and Meyer (2000) and Conley and Taber (2005), following the method of Gruber and Hungerman (forthcoming).¹⁷

¹⁷ We take the 9 non-treated provinces and randomly assign each province treatment for the wave 4/5 period with a 0.10 probability. We repeat this simulation 10,000 times to generate a distribution of parameter estimates from which we derive our reported p -values.

By this measure, the increase in care in Quebec is far outside anything seen in other provinces, but the increase in mother works lacks significance. Both hyperactivity and anxiety scores fall in around the 0.10 significance level (one just over and one just under). In contrast, the aggression, motor-social, and child in excellent health results come in with simulated p -values of 0.000, indicating strong significance.

Second, we try specifications in which we control for province-specific economic conditions through the use of the province-specific unemployment rate for prime-age males. This is not ideal to the extent that there may be spillovers of this policy to male labor supply, but such spillovers are likely to be small.¹⁸ These results are shown in the next row of Table 4, and they have little influence on any of our results.

Third, where possible, we use older children as a comparison group. Since these children were in the same economic environment, we can use them to check for false positives. More precisely, we use only 8-11 year olds who currently have no younger siblings and were earlier never eligible for subsidized childcare when aged 0-4 or extended full-day kindergarten at age 5, so that there is no potential ‘contamination’ of the comparison group from current or previous exposure to care eligibility.¹⁹ These children are still not an ideal comparison group, however, because as described above the Family Policy included subsidized after school care for children in this age group. This biases the results for the comparison group in the same direction as the treatment group, however, so that comparisons will only understate policy effects. Looking across this row in Table 4, there is one significant positive result, for the anxiety score. There is no increase in care or in maternal employment among families with older children in Quebec, in

¹⁸ We tried to explore this issue using measures of male labor supply in the NLSCY and found insignificant effects.

¹⁹ There are no children age 5-7 in Quebec in waves 4-5 who satisfy these conditions, so we use only those children age 8-11 in the comparison group.

sharp contrast to what was observed for ages 0-4, giving stronger support to the causal impact of the CPE program for the results we have observed.

We next construct a comparison group of 8-11 year olds similar to the above, but we only include those who have a younger sibling. This is a potentially interesting group because these families would face an incentive for increased maternal work, but the 8-11 year old children themselves would not participate in the full-day CPE program even if their younger siblings did. We observe a large increase in (after-school) care for these children and in maternal employment. However, our measures of child wellbeing show no indication of change at all, suggesting that maternal work had little impact on these older children.

Alternative Samples

We continue to explore our results by looking at some different samples and subsamples. We first split the results by child age, into those age 0-2 and 3-4. We find strong impacts on labor supply and child care utilization for both groups, although the effects are larger for children age 0-2. The excellent health indicator is about the same in each subsample, but the motor-social score shows a strong difference, with a much stronger negative impact in the younger age group. Moreover, in the Appendix we show that for the age 2-3 behavioral scores the impact on the younger children is greater. This suggests that the negative effects of increased child care utilization is focused in this age group.

We then consider the impacts on single parents. As noted earlier, this group saw a smaller change in subsidy rates in this time period, as well as being subject to provincially-varying welfare reform programs. We find that this program had a large impact on the odds that children of single mothers were in child care, although a much smaller impact on their work

effort. That is, the program induced a large rise in childcare use among those single mothers not working. This labor supply finding is consistent with the findings of Milligan and Stabile (2007) that the work incentives inherent in welfare reform were much stronger outside of Quebec. For behavioral measures, we find in some cases stronger effects for single mothers, although not for motor/social development. This may suggest that it is utilization, not maternal labor supply, which drives the negative behavioral findings in our two-parent sample, although the inferences made with the singles sample are clouded by the broad welfare reforms in all provinces.

The final sample variation we consider is cutting the data by parental education. The CPE reform provided a much larger increase in subsidies for middle and higher income married couples than for lower-income married couples. While income is endogenous to the labor supply response, we can explore incomes indirectly by examining low versus high education parents. The impacts of the reform on child care utilization and labor supply are indeed much stronger for the higher education group. The results on child outcomes are somewhat mixed, however. It is difficult to interpret these differences because there are both differences in uptake across the two education groups and potential heterogeneous impacts of uptake.

Interpretation

Our results are striking in their consistent indication of a substantial negative impact of universal childcare subsidies on children in two-parent families. Moreover, both the graphical evidence and the lack of consistent findings for 8-11 year olds buttress the claim that this is a causal impact of the policy change. Nevertheless, this is a reduced form finding, and is subject to numerous interpretations. We discuss these interpretations, and data we can bring to bear on them, in this section.

First, it is possible that these findings are simply reporting artifacts. For example, higher exposure to childcare could lead to increased reports of bad outcomes with no real underlying deterioration in child behaviour, if childcare providers identify negative behaviours not noticed (or previously acknowledged) by parents. Alternatively, perhaps parents are more stressed due to increased family labor supply, so they are more likely to report negative child behaviors.

While we can't rule out these alternatives, they seem unlikely given the consistency of our findings both across a broad spectrum of indices, and across the categories that make up each index (as shown in the Appendix). In particular, these alternatives would not suggest such strong findings for health-based measures, or for the more objective evaluations that underlie the motor-social skills index (such as counting to ten, or speaking a sentence of three words or more).

Second, these findings may be transitional, reflecting problems Quebec experienced as its child care system expanded rapidly—lower child care quality, for example. Unfortunately, information on the number of children in care and number of caregivers at a chosen facility is collected starting in the third wave of the NLSCY, so we cannot use it to compare quality before and after the introduction of the \$5 program, although we do find in waves 4 and 5 that child to caregiver ratios are slightly higher in Quebec.²⁰ We can, however, examine the characteristics of childcare providers in Quebec and the rest of Canada. Using the Canadian Labour Force Survey, we evaluated the earnings, age, and education level of childcare workers over time across provinces. We found no evidence that childcare workers were becoming less qualified in Quebec over time—if anything, qualifications were rising relative to the rest of Canada.²¹ Thus, to the

²⁰ The median ratio in Quebec in waves 4 and 5 is 5.0, while in the rest of Canada it is 4.0.

²¹ We selected workers reporting NAICS code 6244 (Child day care services). Comparing changes in average values between 1994-1997 and 2000-2002 (to match our NLSCY data) we find the average age of childcare workers changes almost identically (and is almost identical) in Quebec and the rest of Canada, the proportion of workers who work full time rises more in Quebec (by 5 percentage points) and the proportion of workers with some post-secondary education rises by 26.7 percentage points in Quebec to reach 73.2%, and rises by 21.3 points in the rest of

extent that it is measurable, these results do not appear to indicate a reduction in average quality.

If these results do reflect a real deterioration in the outcomes of small children, there remains the question of whether they represent short-run problems or longer-run consequences. A simple mechanism for short run problems is the initial costs of socialization. If all children have difficulties when they are first in a social environment interacting with other children, then perhaps all the Quebec policy did was bring forward this “day of reckoning”; moving up these problems of kindergarten to an earlier age. In that case, the welfare implications of our findings are ambiguous. Indeed, it might be beneficial that this policy exposed children to these costs earlier on, so that they were better prepared for the educational and health consequences of attending school (e.g., they have their infections at ages 2 or 3 rather than ages 5 or 6).

The best way to distinguish these views would be to examine the impact of this policy on the long-term outcomes of this exposed cohort. Unfortunately, the data to carry out this evaluation are not yet available. Nevertheless, a partial test of this particular socialization explanation is to compare children with and without siblings. Presumably, the socialization “shock” was larger for those without siblings, so this story would imply a larger effect on this group. We have estimated our models separately for those with and without siblings, finding no consistent evidence of a stronger effect on one group or another. While not ruling out the socialization story, this finding is not consistent with it.

Parenting and Parent Outcomes

The NLSCY not only gathers data on child outcomes, but also on the quality of parental interactions with children and on the well-being of parents themselves. Both of these might

Canada to reach 66%. For earnings we can compare averages between 1996-1997 and 2000-2002. Earnings rise in Quebec by 12 percent (nominally) and fall in the rest of Canada by 6 percent.

plausibly be affected by increased use of childcare and labor supply induced by the \$5 per day program. As best we can tell, the effect of non-parental care on these sorts of outcomes has not been investigated in the literature.

We use three measures of the quality of parental interactions provided by the NLSCY: “hostile and ineffective parenting”; “parental consistency”; and “aversive parenting.”²² These indices are aggregated from parental responses to individual questions listed in the Appendix; once again, while subjective, they represent the views of experts on the best indicators of the quality of parent-child relationships.

The second panel of Table 3 presents difference-in-differences estimates of the effects of the policy change on these indicators of parental interaction quality. For each of these scales, there is strong evidence of less effective parenting after the new policy was put in place. There is a significant rise in the hostile/ineffective parenting index of about 8.7% of its baseline value, a significant decline in the consistent parenting index of about 3.6% of its baseline value, and a significant rise in aversive parenting of about 2.4% of baseline. We plot the time trends for the three parenting measures in Figure 6. While aversive parenting shows little closing of the Quebec-rest of Canada gap, the other measures show remarkable changes consistent with the parent-child relationship getting worse in Quebec in waves 4 and 5.

The final rows of Table 3 consider the effects on measures of parental well-being. The self-assessed health status of the mother and father is available in the NLSCY, along with a depression score for one of the parents. (We present the depression results only for mothers, since the mother was the primary respondent in the vast majority of families.) In addition, the

²² There is also a measure of “positive interactions” available in the data which shows strong negative effects, but this is mechanically related to time exposure to children and so is not very indicative of a deteriorating relationship conditional on increased childcare.

survey contains a question about the satisfaction of the survey respondent with their spousal relationship, on a scale of 1-11.

The estimated coefficients indicate deterioration in paternal health around the time of this policy, with a reduction of 2.9 percentage points in the odds that the father reports himself in excellent health. For mothers, the estimated effect on self-reported health is smaller at -0.011, and not statistically significant. For mothers, however, we have striking evidence of an increase in depression: the mother's depression score is estimated to increase by 0.422, or 9.2% of a standard deviation. There is also a very striking negative effect on reported relationship satisfaction of 11.6% of a standard deviation.

Part VI: Conclusion

In this paper we provide, to our knowledge, the first comprehensive analysis of a universal subsidized childcare program, following its impact from childcare use through employment and finally to children's and parent's outcomes. We uncover strong evidence of a shift into new childcare use, although approximately one third of the newly reported use appears to come from women who previously worked and had informal arrangements. The labor supply impact is strongly significant. Finally, we report striking evidence that children's outcomes have worsened since the program was introduced. We also find suggestive evidence that families we study became more strained with the introduction of the program. This is manifested in increased aggressiveness and anxiety for the children, more hostile, less consistent parenting for the adults, and worse adult mental health and relationship satisfaction.

As discussed earlier, these results are subject to a number of interpretations that highlight the importance of future work in this area. Most importantly, it is not clear whether the negative

child outcomes are short-run problems or long-run effects. In addition, we raise the puzzle of why families would take advantage of a policy which leads to worse child outcomes, worse parenting, and worse parental outcomes.²³ It is possible that the other unmeasured benefits of higher family incomes offset these costs. Alternatively, it is possible that families will learn that they are not better off in this new regime, and that ultimately use of subsidized childcare may fall. Once again, following the long-run evolution of these policy effects will be central to a full welfare analysis of the program.

Despite these qualifications, our results are particularly germane for ongoing policy debates in the U.S. and Canada. Our estimates do not speak to the efficacy of highly targeted child care subsidies for groups such as single mothers, but these are typically not the focus of current debate. Instead, it is universal expansion of early child care/education that draws the most heated argument. Most directly, our evidence advises caution in Canada for other provinces considering adopting the Quebec childcare model. It is possible that our findings are short-run rather than long-run effects, but more evidence is needed before the program is adopted elsewhere.

In the U.S., the debate is over universal pre-school for four and possibly three year olds. The motivation for these expansions is the enormously positive cognitive returns for a limited set of experimental pre-school interventions (see Anderson, 2007 for a review of these experiments and a re-interpretation of the results) and to the public provision of pre-school for low-income populations under the Head Start program (Currie and Thomas, 1995). The effects may be quite different, however, for the balance of the population. Furthermore, our results bring the social, behavioral and health consequences of early non parental care to a debate that has been

²³ Blau (1991) explores the difference between choices made by parents and those recommended by child development experts, finding that parents do not appear willing to pay for apparently productive quality

preoccupied with cognitive results. Whether these negative findings for Canada would extend to pre-school is an open question, but they suggest at a minimum that it is necessary to use higher quality interventions if the goal is to improve child outcomes.

improvements.

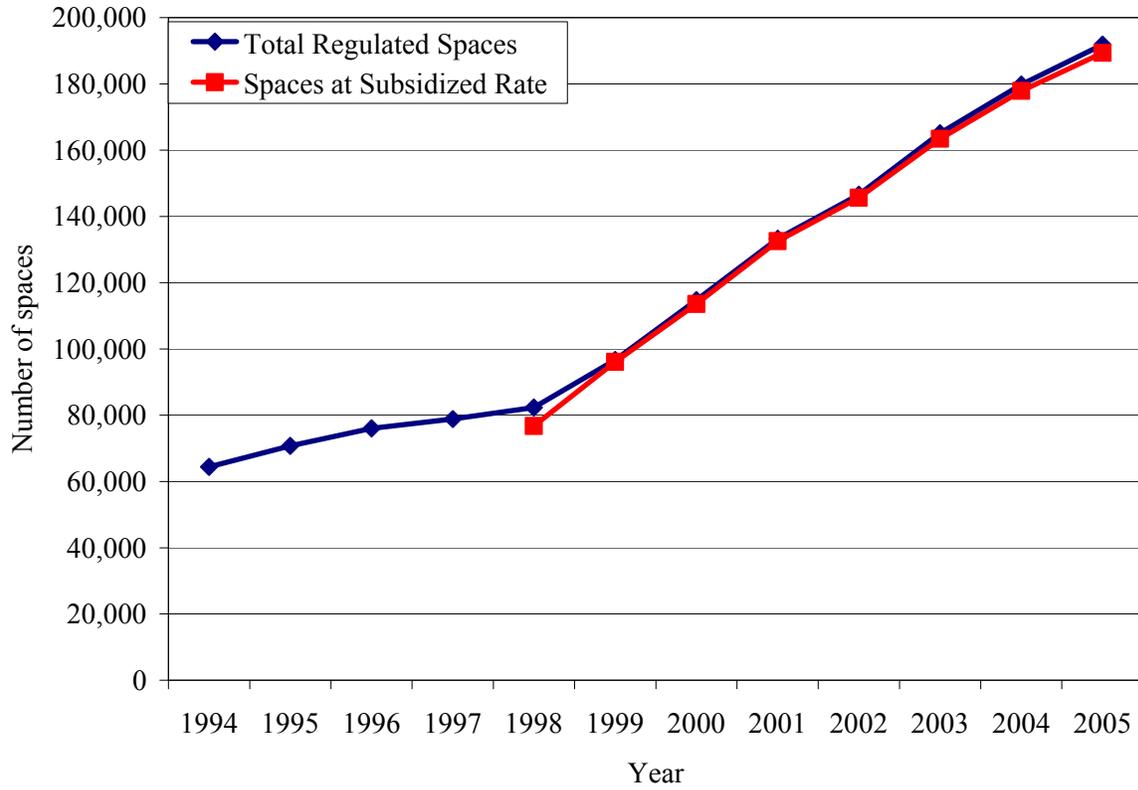
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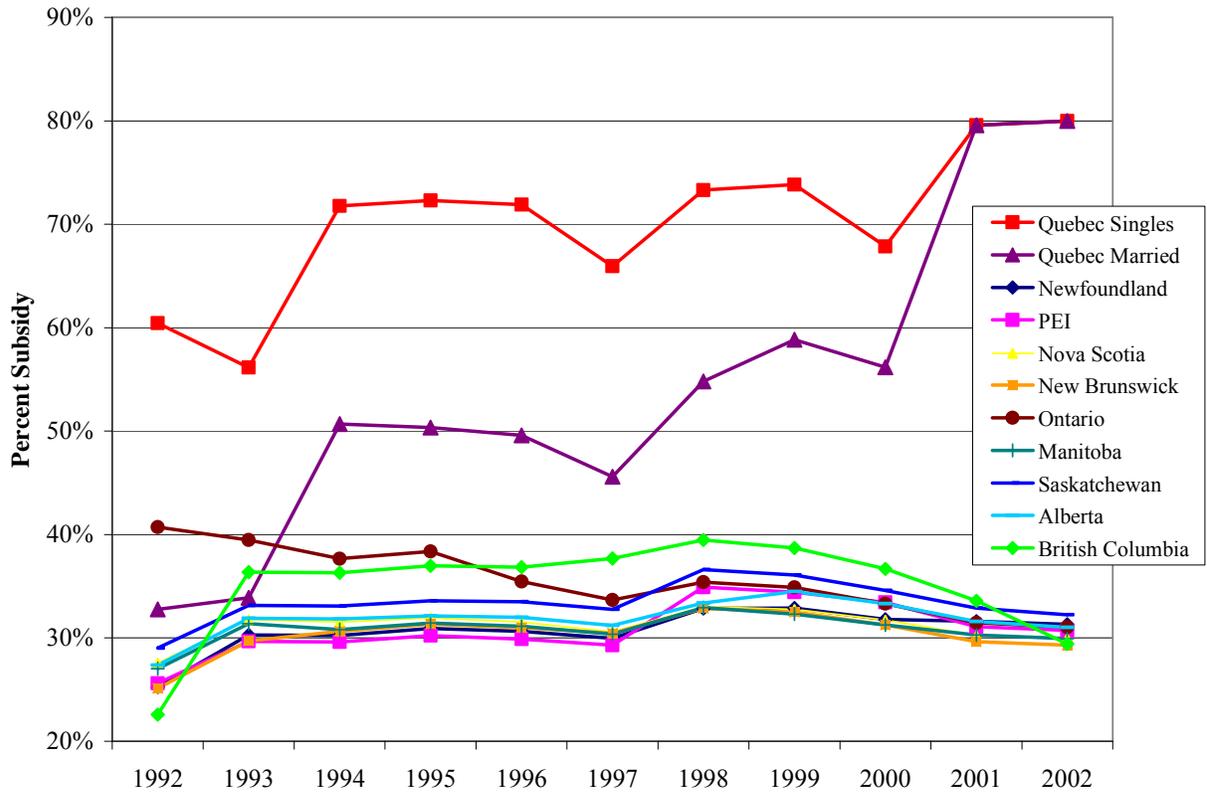
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Figure 1: Regulated and Subsidized Spaces in Quebec



Notes: The number of spaces is for March 31 in the indicated year. This figure is adapted from Table 2 in Lefebvre and Merrigan (2005) and Quebec government statistics (for 2005).

Figure 2: Percent Subsidy by Province



Notes: each data point represents a province-year mean of the percent subsidy variable over the families in the simulation sample. For all provinces, the subsidy rate for married couples is shown, as well as the subsidy rate for Quebec singles.

Figure 3: In any Care, Ages 0-4

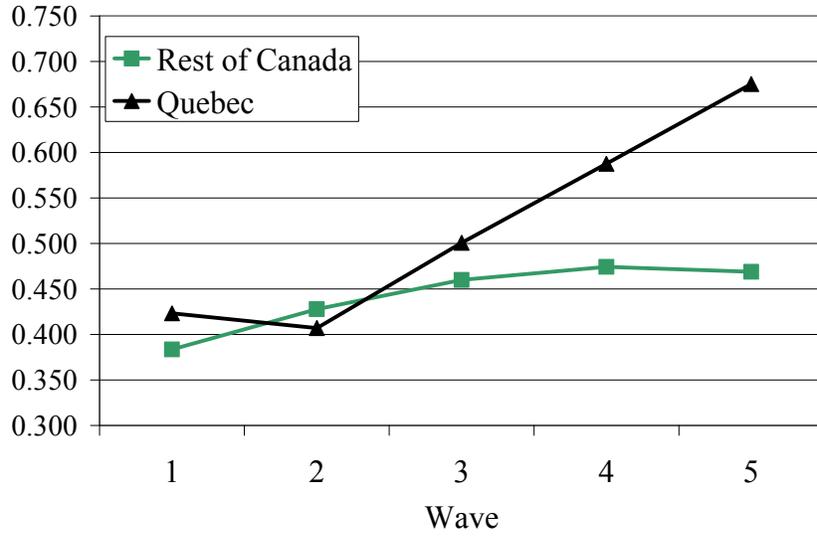


Figure 4: Mother Works, Ages 0-4

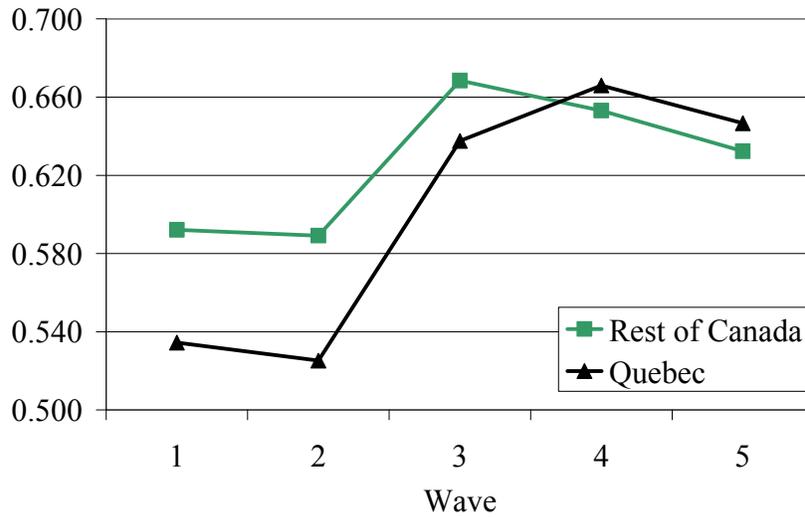


Figure 5: Children's Outcomes

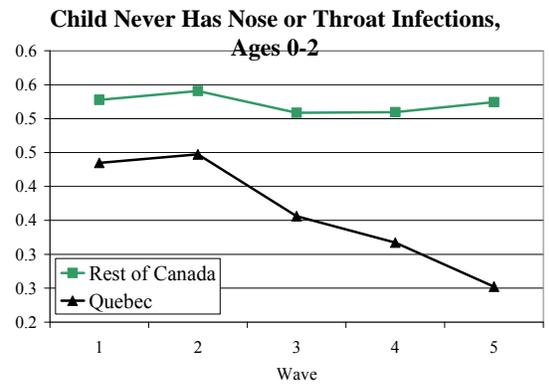
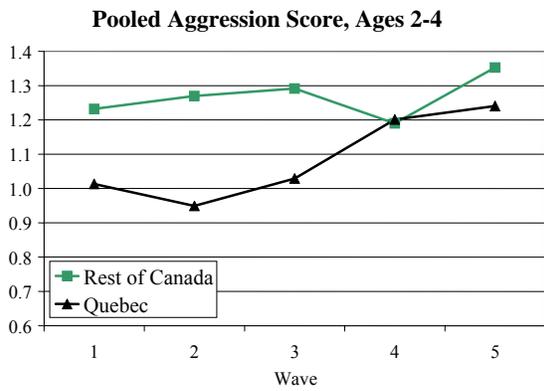
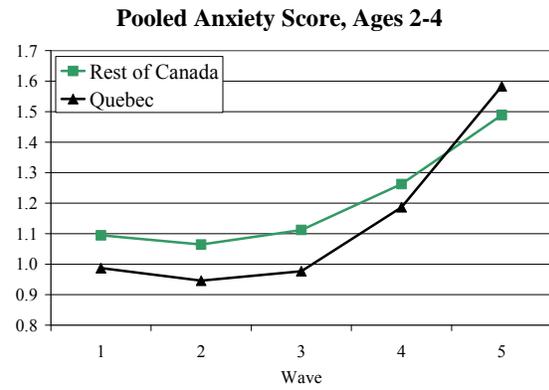
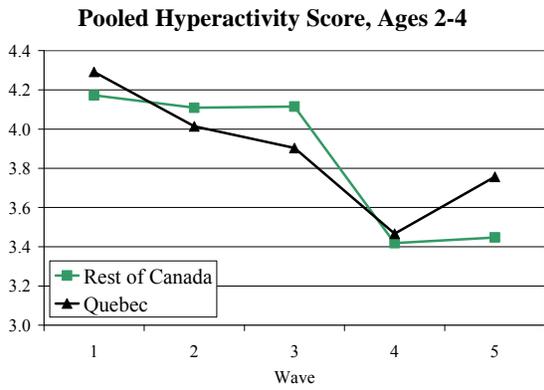


Figure 6: Parents' Outcomes

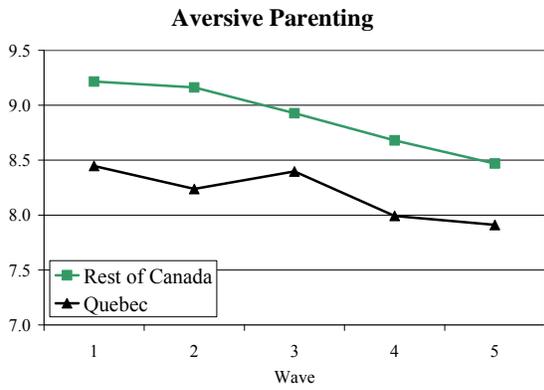
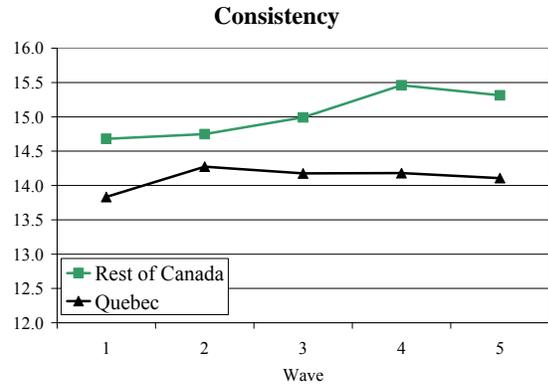
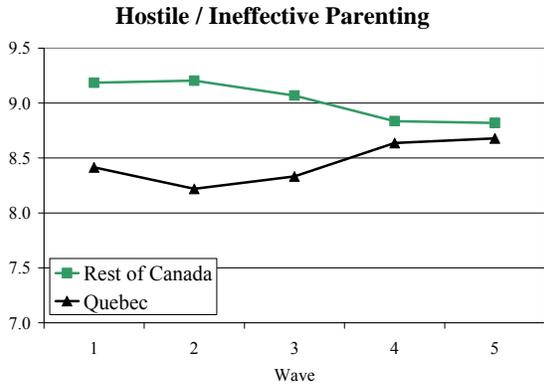


Table 1: Descriptive Statistics

	Quebec		Rest of Canada	
	Waves 1-2	Waves 4-5	Waves 1-2	Waves 4-5
Demographics / Control variables				
Big urban	0.579 (0.494)	0.574 (0.495)	0.428 (0.495)	0.458 (0.498)
Older sibs	0.715 (0.739)	0.713 (0.718)	0.796 (0.761)	0.759 (0.731)
Younger sibs	0.268 (0.488)	0.236 (0.454)	0.255 (0.476)	0.253 (0.476)
Mother age	30.9 (4.9)	31.2 (5.3)	31.7 (5.1)	32.4 (5.4)
mother immigrant	0.089 (0.285)	0.114 (0.318)	0.214 (0.410)	0.240 (0.427)
Mother high school dropout	0.133 (0.340)	0.115 (0.320)	0.106 (0.308)	0.090 (0.286)
Mother Uni degree	0.203 (0.402)	0.280 (0.449)	0.206 (0.404)	0.280 (0.449)
Father age	33.5 (5.4)	34.0 (5.8)	34.1 (5.7)	34.9 (6.0)
Father immigrant	0.097 (0.296)	0.121 (0.326)	0.208 (0.406)	0.236 (0.425)
Father high school dropout	0.168 (0.374)	0.157 (0.364)	0.138 (0.345)	0.110 (0.312)
Father Uni degree	0.194 (0.395)	0.239 (0.426)	0.214 (0.410)	0.262 (0.440)
Boy	0.509 (0.500)	0.518 (0.500)	0.509 (0.500)	0.513 (0.500)
Kid age	2.03 1.42	2.05 1.41	1.99 1.42	2.03 1.42
In care	0.415 (0.493)	0.629 (0.483)	0.405 (0.491)	0.472 (0.499)
Mother works	0.530 (0.499)	0.657 (0.475)	0.591 (0.492)	0.643 (0.479)
Subsidy rate	0.502 (0.000)	0.795 (0.000)	0.349 (0.025)	0.322 (0.019)

Notes: Displayed are the means for each variable, with the standard deviation beneath in parentheses. The data come from the National Longitudinal Study of Children and Youth. The sample is split into Quebec and the rest of Canada, for Wave 1 (1994-95), Wave 2 (1996-97), Wave 3 (2000-01), and Wave 4 (2002-03). The sample contains 34,042 observations.

Table 2: Labor supply and child care results

Dependent Variables	Num ber of Observations	Mean and Std Dev.	ELIG dummy		Percent Subsidy	
In any care	33864	0.415 (0.493)	0.146 (0.033)	***	0.458 (0.089)	***
Institutional care	33864	0.110 (0.313)	0.152 (0.030)	***	0.474 (0.077)	***
Care in own home	33864	0.072 (0.258)	-0.009 (0.008)		-0.023 (0.026)	
Care in other's home	33864	0.230 (0.421)	0.002 (0.017)		0.003 (0.051)	
<i>Breakdown of care in other's home:</i>						
Licenced nonrelative	33864	0.044 (0.206)	0.048 (0.004)	***	0.142 (0.012)	***
Non-licenced nonrelative	33864	0.135 (0.342)	-0.025 (0.011)	**	-0.072 (0.032)	**
Care in relative's home	33864	0.051 (0.219)	-0.021 (0.007)	***	-0.067 (0.021)	***
Mother works	33788	0.530 (0.499)	0.077 (0.006)	***	0.242 (0.016)	***
Mother works / child in care	33634	0.356 (0.479)	0.125 (0.016)	***	0.384 (0.045)	***
Mother works / child not in care	33634	0.173 (0.379)	-0.048 (0.015)	***	-0.142 (0.047)	***
Mother doesn't work / child in care	33634	0.059 (0.236)	0.023 (0.018)		0.077 (0.053)	
Mother doesn't work / child not in care	33634	0.412 (0.492)	-0.100 (0.020)	***	-0.320 (0.049)	***

Notes: Each row represents a different dependent variable. For each dependent variable we show the number of observations, the pre-program mean for Quebec (with standard deviation in parentheses), the coefficients from separate regressions on the eligibility dummy, and the percent subsidy variable. Also included in the regressions is a set of control variables including dummies for the child's age, sex, number of older siblings, number of younger siblings; the mother's age, education, and immigrant status; the father's age, education, and immigrant status, and the size of the urban area in which the family lives. Significance at the one, five, and ten percent levels is indicated by three, two, and one stars respectively.

Table 3: Results on child behavior, family, and health

Dependent Variables	Number of Observations	Mean and Std Dev.	ELIG dummy		Dependent Variables	Number of Observations	Mean and Std Dev.	ELIG dummy	
Hyper activity - inattention ages 2-3	14494	4.102 (3.134)	0.103 (0.146)		Hostile, ineffective parenting Ages 2-4	20017	8.320 (3.842)	0.728 (0.091)	***
Emotional Disorder - Anxiety Score, ages 2-3	14555	0.967 (1.343)	0.120 (0.055)	**	Consistency Ages 2-4	19809	14.048 (3.266)	-0.504 (0.117)	***
Separation anxiety score Ages 2-3	14580	2.668 (2.029)	0.099 (0.085)		Aversive parenting Ages 2-4	20116	8.346 (2.014)	0.198 (0.067)	***
Physical aggression/opposition age 2-3	14435	4.375 (3.041)	0.380 (0.084)	***	Family functioning Ages 0-4	33248	7.188 (4.979)	0.257 (0.173)	
Standardized motor and social development score, ages 0-3	26176	99.32 15.03	-1.65 0.46	***	Mother health status is excellent. Ages 0-4	33708	0.406 (0.491)	-0.011 (0.011)	
PPVT Score, scaled age 4	5210	99.76 15.15	0.36 0.75		Father health status is excellent. Ages 0-4	33586	0.449 (0.497)	-0.029 (0.012)	**
In general, child is in excellent health. Ages 0-4	33891	0.641 (0.480)	-0.055 (0.016)	***	Mother depression score Ages 0-4	29595	4.199 (4.563)	0.422 (0.119)	***
Child never has nose or throat infections. Ages 0-2.	28175	0.404 (0.491)	-0.140 (0.025)	***	Satisfaction with relationship Ages 0-4	26473	9.505 (1.679)	-0.194 (0.025)	***
Child has never had an ear infection. Ages 0-2.	28161	0.438 (0.496)	-0.057 (0.019)	***					
Had asthma attack in past 12 months. Ages 0-4	33867	0.955 (0.208)	-0.003 (0.004)						
Child has been injured in past 12 months. Ages 0-4	33878	0.071 (0.258)	0.006 (0.008)						

Notes: For each dependent variable we show the number of observations, the pre-program mean for Quebec (with standard deviation in parentheses), the coefficients from separate regressions on the eligibility dummy. Also included in the regressions is a set of control variables including dummies for the child's age, sex, number of older siblings, number of younger siblings; the mother's age, education, and immigrant status; the father's age, education, and immigrant status, and the size of the urban area in which the family lives. Significance at the one, five, and ten percent levels is indicated by three, two, and one stars respectively.

Table 4: Extended results for children variables

	<u>In</u>	<u>Mother</u>	<u>Age 4-11</u>	<u>Age 4-11</u>	<u>Age 4-11</u>	<u>Motor</u>	<u>PPVT</u>	<u>Child in</u>
	<u>any care</u>	<u>Works</u>	<u>Hyperactivity</u>	<u>Anxiety</u>	<u>Aggression</u>	<u>Social</u>	<u>Score</u>	<u>exc. Health</u>
Base specification	0.146	0.077	0.484	0.489	0.471	-1.647	0.363	-0.055
prov-wave cluster	(0.033) ***	(0.006) ***	(0.194) **	(0.134) ***	(0.127) ***	(0.461) ***	(0.753)	(0.016) ***
prov cluster	(0.008) ***	(0.008) ***	(0.078) ***	(0.051) ***	(0.081) ***	(0.192) ***	(0.910)	(0.006) ***
Simulated p values	0.000 ***	0.231	0.106	0.092 *	0.000 ***	0.000 ***	0.704	0.000 ***
With unemployment control	0.122	0.074	0.252	0.310 ***	0.417 **	-1.422	0.742	-0.067
	(0.026) ***	(0.008) ***	(0.241)	(0.118)	(0.174)	(0.534) ***	(1.051)	(0.016) ***
Age 8-11, no younger sibling comparison group.	-0.005	0.017	0.089	0.843	0.058	--	--	-0.044
	(0.022)	(0.027)	(0.285)	(0.145) ***	(0.086)			(0.034)
Ages 8-11, with younger sibling	0.119	0.140	-0.189	0.003	0.005	--	--	-0.006
	(0.020) ***	(0.022) ***	(0.239)	(0.245)	(0.135)			(0.024)
Ages 0-2 only	0.167	0.090	--	--	--	-2.536	--	-0.049
	(0.040) ***	(0.013) ***				(0.679) ***		(0.016) ***
Ages 3-4 only	0.117	0.055	0.484	0.489	0.471	0.740	0.363	-0.066
	(0.027) ***	(0.019) ***	(0.194) ***	(0.134) ***	(0.127) ***	(0.850)	(0.753)	(0.018) ***
Just single parents	0.153	0.040	0.274	1.071	0.343	2.167	-0.694	-0.035
	(0.056) ***	(0.037)	(0.620)	(0.313) ***	(0.435)	(1.495)	(1.213)	(0.039)
High School or less	0.083	0.030	0.519	0.726 ***	0.792 ***	-2.405	-1.379 *	-0.102
	(0.046) *	(0.019)	(0.355)	(0.170)	(0.177)	(0.447) ***	(0.827)	(0.019) ***
Some post high school	0.170	0.095	0.479	0.380 **	0.326 **	-1.431	1.103	-0.034
	(0.028) ***	(0.008) ***	(0.364)	(0.150)	(0.148)	(0.599) ***	(1.217)	(0.017) **

Notes: Each row shows the results for the same set of dependent variables. The sample, the specification, or the estimation method differ by row as indicated. All regressions include a set of control variables for the child's age, sex, number of older siblings, number of younger siblings; the mother's age, education, and immigrant status; the father's age, education, and immigrant status, and the size of the urban area in which the family lives. Significance at the one, five, and ten percent levels is indicated by three, two, and one stars respectively.

Appendix A: Family tax credits in Quebec and Canada

Program Name	Particulars
Quebec Family Allowance	Changed in 1997, moved from universal allowances to income-tested and targeted allowances. Family Allowance paid \$975 for children in two-parent families and \$2,275 for children in lone-parent families. Reduced for family income higher than \$21,825 for two-parent families and \$15,332 for lone-parent families.
Canada Child Tax Benefit	National refundable credit, worth \$1,020 annually until 1999 (slightly more since 2000). Reduced for family incomes greater than a threshold (\$25,921 until 1999).
National Child Benefit Supplement	National refundable credit, introduced in 1998, initially \$605 annually for one child. Reduced for family incomes higher than threshold (\$15,921 initially). Some provinces subtracted benefit from Social Assistance payments.
National Child Benefit Provincial Programs	Some provinces introduced small earned income supplements or family supplements as part of the National Child Benefit program. Structure varied by province, but all income-tested. Timing varied by province.
Social Assistance	Social Assistance payments determined by provincial governments. Rates varied by province and time. In some provinces, was partially integrated with National Child Benefit program.

Appendix B: Calculation of the subsidy variable

We form our effective subsidy variable through simulations with a tax and benefit calculator. In this appendix we describe the calculator, the simulated individuals used for the calculations, and the formation of the final variable we use for our analysis.

Fiscal assistance with childcare expenses

The calculator incorporates all aspects of fiscal involvement with childcare expenses by families. Specifically, we consider:

- Federal Childcare Expense Deduction.
- Provincial subsidies for low income families.
- Quebec childcare credits.

We do not provide the complete detail necessary to recreate our result in this appendix because of space constraints. However, the full program parameters are available from the authors upon request. Below, we describe each component briefly and give a sense of the sources of variation.

The federal Childcare Expense Deduction allows qualifying childcare expenses to be

deducted from the taxable income of the lower-earning spouse. This deduction affects the tax base for both provincial (non-Quebec) and federal income tax liabilities. The maximum deduction for children under age 8 was \$4,000 in 1992, \$5,000 from 1993 to 1997, and \$7,000 from 1998 to 2004.

The provincial subsidies are income-tested, and vary across province and through time. For brevity, we do not include the full parameters for the calculations in this appendix, but they are available from the authors upon request. The typical program gives a subsidy of a certain amount per child. The subsidy is then reduced for each dollar of family income over some threshold until the subsidy reaches zero. For example, a typical case is Alberta in 2000. A family with two parents and one toddler would receive an annual subsidy of \$4,560. The subsidy is reduced by 50 cents for each dollar of family income over \$22,920.

In Quebec, childcare expenses were treated as a deduction similar to the federal deduction up to 1993. In 1994, the deduction was replaced with a refundable tax credit. The credit refunded from 26% to 75% of qualifying expenses, with the rate depending on family income. The minimum 26% rate applied to incomes of \$48,000 and higher. The refundable credit system changed again in 2000, although the credit was only payable to families not enrolled in the CPE \$5 per day program.

Simulations to generate percent subsidy

The various different ways of subsidizing childcare expenses interact in complicated ways. In order to capture this variation, we calculate for each province and year the average percentage of a family's childcare expenses that is paid by some level of government; that does not come out of the family's pocket. Because we want the presumably exogenous legislative variation across provinces and years to generate the variation in our subsidy measure, our strategy is to hold everything else constant across provinces and years. This strategy discards some of the variation in childcare subsidies, but allows us to focus on variation that we consider exogenous.

The base for our simulations is a set of families drawn from public-use versions of the annual Survey of Consumer Finances (1992 to 1995) and its successor the Survey of Labour and Income Dynamics (1996 to 2002). We select all families with at least one child under age 4 in which both parents are working, converting their incomes to constant year 2000 dollars. In order to keep the data set reasonably sized, we take a 10% sample of these families and proceed to reproduce each of the observations for every province-year combination. Through this procedure, the only difference between observations in different province-year combinations is the fiscal environment they face.

We assign each family a set level of childcare expenses and then proceed to calculate the percent of these expenses subsidized by governments through direct subsidies and tax subsidies. The annual amount of childcare expenses is assumed to be the same across all province-year combinations, at \$5,724 in year 1998 dollars. This number is drawn from Friendly, Beach, and Turiano (2002) Table 18, which reports the median 1998 cost of childcare for ages 0 to 17 months in Quebec to be \$477 per month, or \$5724 per year. While childcare expenses do vary across the country and through time, we want the simulations to embody purely legislative variation and so we discard the variation in subsidy levels induced by differing childcare prices. The direct subsidy assignment accounts for the provincial low-income subsidies and the Quebec Family Plan \$5 per day program. From these subsidy calculations, we arrive at a measure of out-

of-pocket costs. The out-of-pocket costs are then used in an income tax calculation. The calculation is repeated for a family with and without childcare expenses to obtain the tax subsidy derived from the federal deduction and Quebec refundable childcare credit. When the direct subsidy is combined with the tax subsidy, we can calculate the percentage of childcare costs not paid by the family.

$$\text{Percent Subsidy} = \frac{(\text{Direct subsidy} + \text{Tax subsidy})}{\text{Total Expense}}$$

The final step in the calculation is to take the average of the percent subsidy variable over all the families in our simulation sample for each province-year combination. We do this separately for married and single families as well. The resulting set of variables embodies only the legislative differences across provinces and years; differences that we contend can be treated as exogenous to individual decisions.

Appendix C: Components of the Aggregated Scores

In the main body of the paper, we present results based on several aggregated indices for child and parental outcomes. In this appendix we describe the construction of these indices and present results for the individual components. More detail can be found in the user's guide for the NLSCY; this discussion draws from that source.

Construction

The indices are constructed for the NLSCY from qualitative responses to individual questions. For example, the Positive Interaction score is constructed from the responses to five individual questions. One of the individual questions is, "How often do you and [child's name] talk with each other, focusing attention on each other for five minutes or more, just for fun?" The responses range from 'never' to 'many times each day.' These qualitative responses are transformed to scores by assigning numerical values to each type of response. In this case, 'never' receives a 0 and 'many times each day' receives a 4, with intermediate responses receiving the values 1, 2, and 3. The numerical values for the five questions are summed to arrive at the Positive Interaction score. Depending on the wording of the individual question, in some cases the scoring is reversed to ensure that increases in the individual component will correspond to increases in the index score. The user's guide for the NLSCY describes in detail the validation of the scales that are provided in the dataset.

In addition to the scores that are provided in the data set, we construct several scores of our own. This allows us to pool together children across age groups in order to facilitate comparisons across the age groups. The scores we create are pooled scores for aggressiveness, hyperactivity, and anxiety. We formed the scores as described above by summing numerical values across different questions in the survey, appropriately reversed in some cases to ensure the scores were cohesive. The survey questions we used in forming our scores are reported in the tables below. The scales we constructed have not been subject to the rigorous validation the NLSCY-provided scales were, so results should be interpreted with caution.

Individual Results

Because the nature of the aggregation is somewhat arbitrary, and as a check that our results are not unduly driven by particular responses, we present the results for the individual questions that underlie the indices that we use. For these results, we coded binary dependent variables for each of the survey responses of interest. In order to make the results easier to interpret, we coded the ‘good’ response as 1 and the ‘bad’ response as ‘0’, to the extent possible. This means that negative signs in the results indicate that exposure to the CPE program worsened outcomes, while positive signs indicate that outcomes improved. This convention we adopt has no impact on the aggregated index scores we report in the main text of the paper; it merely attempts to make the appendix tables easier to interpret.

In each of the three tables that follow, we report regression results from a difference-in-differences specification identical to those in the rest of the paper, using a binary eligibility indicator as the policy variable. Standard errors are reported below each estimate. We also report the results from our counterfactual sample, using age 6 to 11 children, but only for questions asked of children age 6-11. The tables also indicate for which index each survey question was a component.

The results generally show that the individual variables underlying the scores we use move in the same direction as the score itself in response to the CPE policy. For the child outcomes in Appendix Table I, 12 components are significantly negative at the 5 percent level, 10 are insignificant, and 1 are significantly positive. In contrast, for the results available in the counterfactual age 6-11 group, only 4 are significant and negative, while 9 are insignificant and 2 are positive and significant. For the parent variables in Appendix Table II, 10 are statistically significant and negative, while 6 are insignificant. The counterfactual age 6-11 estimates in Appendix Table II count 3 negative and significant results, 10 insignificant, and 3 positive and significant. Finally, for the motor-social development indicators in Appendix Table III, 5 of the variables are statistically significant and negative, 9 are insignificant, and just one is positive and significant.

Appendix Table I: Child outcome index component results

	Age 0-4	Age 6-11	Indexes						
	DD	DD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Never has problems sitting still, being restless or hyperactive	-0.080 (0.017)	0.032 (0.014)			•	•			
Never defiant	-0.114 (0.021)		•						
Never unhappy, sad, or depressed	-0.008 (0.019)	0.040 (0.017)					•	•	
Never gets into fights	-0.057 (0.021)	-0.021 (0.025)	•	•					
Never is distractible; has problems sticking to an activity	0.065 (0.015)	0.094 (0.014)			•	•			
Never as unhappy as others	0.007 (0.010)	-0.015 (0.020)					•	•	
Never cannot concentrate; cannot pay attention for long	-0.064 (0.014)	0.029 (0.018)			•	•			
Never Is too fearful or nervous	-0.120 (0.017)	-0.172 (0.020)					•	•	
Punishment doesn't change behavior: never true	-0.043 (0.017)		•						
Never is impulsive, acts without thinking	-0.067 (0.023)	-0.042 (0.015)			•	•			
Never has temper tantrums or hot temper	-0.018 (0.015)		•						
Never is worried	-0.080 (0.014)	-0.046 (0.016)					•	•	
Never has difficulty awaiting turn in games	-0.063 (0.017)	-0.012 (0.023)	•						
When another child accidentally hurts him/her, never reacts in anger	-0.038 (0.012)	0.080 (0.047)	•	•					
Never has angry moods	0.009 (0.021)		•						
Never cries a lot	0.002 (0.022)	-0.011 (0.017)							•
Never clings to adults or is too dependent	-0.030 (0.026)								•
Constantly seeks help: never true	0.001 (0.025)								•
Never is nervous, highstrung, tense	0.008 (0.015)	-0.069 (0.020)					•	•	
Never kicks, bites, hits other children	-0.071 (0.011)	-0.046 (0.027)	•	•					
Doesn't want to sleep alone: never true	0.037 (0.022)								•
Never has trouble enjoying himself	0.015 (0.011)	0.002 (0.016)					•	•	
Never gets too upset when separated from parents	-0.064 (0.025)								•

Notes: Reported are coefficients on ELIG for separate regressions. Columns numbered (1) through (7) indicate whether the response is included in a particular index. The indexes are (1) Physical Aggression and Opposition, age 2-3 (2) Pooled aggression, age 2-11 (3) Hyperactivity and inattention score, age 2-3 (4) Pooled hyperactivity, age 2-11 (5) Emotional disorder / anxiety, age 2-3 (6) Pooled Anxiety, (7) Separation Anxiety.

Appendix Table II: Parent outcome index component results

	Age 0-4	Age 6-11	Indexes		
	DD	DD	(1)	(2)	(3)
Gets annoyed with child once a week or less	-0.046 (0.018)	0.034 (0.018)	•		
Praise proportion when talking about behavior is greater than half	-0.013 (0.016)	-0.013 (0.019)	•		
Disapproval proportion when talking about behavior is less than half	-0.044 (0.022)	-0.005 (0.031)	•		
Makes sure child follows order or command all the time	-0.080 (0.025)	0.001 (0.013)		•	
When child doesn't stop doing something, child is punished all the time	-0.041 (0.016)	0.023 (0.028)		•	
Never gets away with something when should have been punished	-0.006 (0.007)	-0.002 (0.008)		•	
Never get angry when punishing child	-0.046 (0.021)	-0.083 (0.019)	•		
Never does the punishment depend on my mood	-0.116 (0.021)	-0.048 (0.018)	•		
Never have problems managing child in general	-0.077 (0.023)	-0.063 (0.020)	•		
Child never gets out of punishment when child sets his/her mind to it	-0.088 (0.014)	-0.023 (0.023)		•	
Never ignores punishment	-0.026 (0.021)	-0.002 (0.024)		•	
Never must the punishment be repeated	-0.053 (0.016)	-0.026 (0.015)	•		
Rarely or never raise voice, yell, or scold when rules are broken	-0.072 (0.013)	0.070 (0.022)			•
Always or often calmly discuss problem when rules are broken	-0.071 (0.016)	0.115 (0.022)			•
Never uses physical punishment when rules are broken	-0.103 (0.028)	0.073 (0.023)			•
Always describe alternative behaviors when rules are broken	0.012 (0.019)	0.107 (0.022)			•

Notes: Reported are coefficients on ELIG for separate regressions. Columns numbered (1) through (3) indicate whether the response is included in a particular index. The indexes, and the age ranges for which the indexes are reported, are: (1) Hostile / ineffective parenting, age 2-11 (2) Consistency, age 2-11 (3) Aversive parenting, age 2-11.

Appendix Table III: Motor Social Development

	ELIG DD
tells when soiled pants - no crying	-0.028 (0.021)
spoken a sentence of 3 words or more	-0.018 (0.008)
has walked up stairs without holding rail	-0.017 (0.006)
wash hands without help	-0.037 (0.008)
has counted 3 objects correctly.	-0.021 (0.013)
has gone to the toilet alone	-0.022 (0.016)
walked upstairs without help, one foot one step	-0.053 (0.012)
know own age and sex	-0.029 (0.018)
has said name of at least 4 colors	-0.036 (0.020)
can pedal tricycle at least 10 feet	-0.092 (0.017)
somersault without help	-0.016 (0.019)
can dress himself without help	-0.068 (0.024)
can say first and last name without help	-0.016 (0.011)
can count out loud to 10	0.033 (0.012)
can draw picture of person with 2 body parts	0.010 (0.013)

Note: Reported are coefficients on ELIG in separate regressions.

Appendix Table IV: Further results for child variables

	Ages 2-3 Hyperactivity	Ages 2-3 Anxiety	Ages 2-3 Aggression	Separation Anxiety	Child injured	Asthma attack	Never had Nose/Throat	Never had ear infection
Base specification	0.103	0.120	0.380	0.099	0.006	-0.003	-0.140	-0.057
prov-wave cluster	(0.146)	(0.055) **	(0.084) ***	(0.085)	(0.008)	(0.004)	(0.025) ***	(0.019) ***
prov cluster	(0.034) ***	(0.026) ***	(0.084) ***	(0.052) *	(0.008)	(0.002)	(0.010) ***	(0.007) ***
Simulated p values	0.219	0.003 ***	0.008 ***	0.176	0.272	0.279	0.000 ***	0.086 *
With unemployment control	0.015	0.074	0.235	-0.036	0.002	-0.003	-0.136	-0.029
	(0.116)	(0.055)	(0.064) ***	(0.078)	(0.009)	(0.005)	(0.026) ***	(0.015) **
Age 8-11, no younger sibling comparison group.	--	--	--	--	-0.035	-0.028	--	--
					(0.019)	(0.015)		
Ages 8-11, with younger sibling	--	--	--	--	-0.015	-0.014	--	--
					(0.011)	(0.016)		
Ages 0-2 only	0.372	0.161	0.734	0.175	-0.004	-0.004	-0.134	-0.051
	(0.133) ***	(0.085) *	(0.141) ***	(0.087) **	(0.002) *	(0.006)	(0.023) ***	(0.028) *
Ages 3-4 only	-0.090	0.087	0.096	0.034	0.021	-0.003	-0.160	-0.075
	(0.174)	(0.041) **	(0.069)	(0.095)	(0.017)	(0.005)	(0.043) ***	(0.020) ***
Just single parents	0.310	0.173	0.338	-0.107	0.047	-0.014	-0.169	-0.108
	(0.154) **	(0.065) ***	(0.159) **	(0.219)	(0.025) *	(0.011)	(0.041) ***	(0.047) **
High School or less	-0.062	-0.059	0.345	0.140	-0.020	0.010	-0.085	0.024
	(0.026) **	(0.083)	(0.155) **	(0.158)	(0.008) **	(0.010)	(0.023) ***	(0.015)
Some post high school	0.314	0.187	0.399	0.066	0.015	-0.009	-0.158	-0.087
	(0.176) *	(0.092) **	(0.143) ***	(0.110)	(0.009) *	(0.003) ***	(0.028) ***	(0.023) ***

Notes: Each row shows the results for the same set of dependent variables. The sample, the specification, or the estimation method differ by row as indicated. All regressions include a set of control variables for the child's age, sex, number of older siblings, number of younger siblings; the mother's age, education, and immigrant status; the father's age, education, and immigrant status, and the size of the urban area in which the family lives. Significance at the one, five, and ten percent levels is indicated by three, two, and one stars respectively.

Appendix Table V: Extended results for parent and family variables

	Hostile parenting	Consistent parenting	Aversive parenting	Family Functioning	Mother exc. health	Father exc. Health	Mother depression	Satisfaction relationship
1. Base specification	0.728	-0.504	0.198	0.257	-0.011	-0.029	0.422	-0.194
prov-wave cluster	(0.091) ***	(0.117) ***	(0.067) ***	(0.173)	(0.011)	(0.012) **	(0.119) ***	(0.025) ***
prov cluster	(0.108) ***	(0.083) ***	(0.030) ***	(0.187)	(0.006) *	(0.006) ***	(0.064) ***	(0.025) ***
Simulated p values	0.000 ***	0.000 ***	0.002 ***	0.363	0.175	0.099 *	0.290	0.212
With unemployment control	0.671	-0.375	0.113	0.149	0.007	-0.008	0.408	-0.170
	(0.114) ***	(0.121) ***	(0.073)	(0.249)	(0.010)	(0.013)	(0.147) ***	(0.028) ***
Age 8-11, no younger sibling comparison group.	0.738	0.208	-0.194	0.592	-0.057	-0.068	-0.012	-0.052
	(0.232) ***	(0.155)	(0.059) ***	(0.339) *	(0.034)	(0.034) **	(0.382)	(0.069)
Ages 8-11, with younger sibling	-0.103	0.073	-0.188	-0.607	-0.028	-0.001	-0.142	0.125
	(0.130)	(0.242)	(0.100) *	(0.260) ***	(0.035)	(0.021)	(0.305)	(0.095)
Ages 0-2 only	0.787	-0.474	0.344	0.403	-0.025	-0.025	0.359	-0.287
	(0.141) ***	(0.168) ***	(0.080) ***	(0.159) **	(0.020)	(0.018)	(0.167) **	(0.039) ***
Ages 3-4 only	0.710	-0.520	0.129	0.068	0.006	-0.038	0.498	-0.059
	(0.138) ***	(0.108) ***	(0.071) *	(0.316)	(0.008)	(0.009) ***	(0.170) ***	(0.037)
Just single parents	0.649	-0.782	0.503	0.088	0.052	--	0.760	--
	(0.308) **	(0.208) ***	(0.143) ***	(0.355)	(0.020) **		(0.675)	
High School or less	0.918	-0.411	0.029	0.346	-0.019	-0.052	0.711	-0.067
	(0.201) ***	(0.326)	(0.123)	(0.324)	(0.023)	(0.016) ***	(0.252) ***	(0.070)
Some post high school	0.649	-0.511	0.278	0.216	-0.005	-0.016	0.293	-0.227
	(0.159) ***	(0.075) ***	(0.087) ***	(0.133) *	(0.014)	(0.019)	(0.110) ***	(0.030) ***

Notes: Each row shows the results for the same set of dependent variables. The sample, the specification, or the estimation method differ by row as indicated. All regressions include a set of control variables for the child's age, sex, number of older siblings, number of younger siblings; the mother's age, education, and immigrant status; the father's age, education, and immigrant status, and the size of the urban area in which the family lives. Significance at the one, five, and ten percent levels is indicated by three, two, and one stars respectively.