

The Universal Childcare Program in Quebec: An Analysis of the Time Parents Spend with Their Children

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Abstract

Quebec's Universal Childcare Program (UCP) was implemented in 1997 to increase women's labour force participation, increase children's readiness for school, and give equal opportunities for parents to get childcare for their children at an affordable price. The policy did increase mothers' labour force participation rate; however, critics of the policy argue that the policy has (negatively) affected children's cognitive development and diminished the quality of daycare service in the province. This paper uses a difference-in-difference method and time use data from General Social Surveys (GSS) to estimate the effect of the policy on the time parents spent taking care of children (less than 5 years old), playing, reading and reprimanding them. The analysis yields no significant difference in the time fathers and single mothers spent with their children, however, a statistically significant decrease in time mothers of two-parent households spent playing with their children and an increase in reading time is found.

1 Introduction

On the 1st of September 1997, Quebec implemented a Universal Childcare program (UCP) which featured a comparably low fee of \$5 per day only for 4 years old children, coupled with a promise to increase the ages admitted into the program. By September of 2000, the policy indeed expanded to cover children up to 5 years old (0 to 59 months) at a rate of \$7 per day (Lefebvre et al., 2011). By the end of 1997, 18% of children living in Quebec between ages 0 and 5 years attended regulated childcare spaces. The proportion of childcare users increased to 55% by 2012 (Haeck et al., 2012).

This UCP was implemented to achieve two major objectives: (1) to enhance childhood school readiness at a reasonable preschool cost, as well as to (2) increase mothers' participation in the labour force (Blau and Currie, 2006). There is evidence that UCP successfully increased maternal labour force participation rates (see for example Lefebvre and Merrigan, 2008; Lefebvre et al., 2011). The increase in mothers' participation rate in the labour force raises government income via taxes because an increase in household income leads to an increase in tax revenues and a decrease in households transfer (decrease in government financial support to families with limited income). In 2008, the UCP's tax-transfer returns from the federal and provincial administration ranged between \$500 million and \$2.4 billion,¹ while the net cost of the program was \$1,646 million. As a result, the program has proven successful financially as it covers a big part of its expenses (Fortin et al., 2012).

¹ The range of the revenue of both levels of government depends on whether the effect of tax transfers' return is considered direct or global and whether the program's static effect or dynamic effect is considered.

There is also evidence that the UCP implementation increased the number of children attending childcare services. The average yearly growth of subsidized spaces, between 1998 and 2005, was 16,000 (Fortin et al., 2012). Consequently, there is a shortage in the number of subsidized childcare spaces compared to the rising demand. In 2002, approximately 85,000 children in Quebec were placed on the UCP waiting list resulting in an overall low quality service and an uncomfortable environment for children of these households (Campell, 2005; Goelman et al., 2000).

According to Shonkoff and Phillips (2000), reading to/with children, helping children do their homework, talking to children's teachers and engaging in other activities related to their education are key activities in a child's cognitive development. This says that child cognitive skills' development is linked to the amount of time parents and their children spent interacting (Thus, the increase of mothers' labour force participation is a concern as it may cause a decrease in the child cognitive development due to an overall decrease in parent-child interaction). Additionally, Lefebvre et al. (2011) argue that the UCP failed to enhance children school readiness thereby negatively affecting the overall children cognitive development scores despite school readiness being among the UCP's main objectives.

This paper investigates the effect of the policy on the time married mothers and fathers as well as single mothers spent 1) taking care of their children, 2) reprimanding, 3) reading, and 4) playing with their children. The analysis makes use of a sample of respondents with at least one child between 0 and 5 from the 1992, 1998, 2005 and 2010 cycles of the General Social Survey (GSS) Time Use Data. These data were analyzed using a difference-in-difference method; households in Quebec are compared

with households from the rest of Canada before and after the policy implementation. This work may help explain the negative effects of the UCP on children's cognitive development skills found in the literature. Section two contains the literature review. Sections three and four contain the description of the GSS time use data and the econometrics model, respectively. Sections five and six present the results, discussion and conclusion.

2 Literature Review

The reduction in childcare fees through the UCP encourages mothers to leave their caregiver role to be breadwinners. Children can stay in the daycare up to 12 hours per day, 260 business days a year. The UCP requires a child to attend five business days per week unless the child is sick. Failure to meet the full-time attendance requirement may result in a suspension of the government subsidy (Lefebvre et al., 2011). Several papers have dealt with various effects of the UCP from different perspectives. This section will shed the light on the findings extracted from literature regarding issues related to the UCP effects on demand for childcare, mothers' labour force participation, and child development.

2.1 Universal Childcare Policy and the Demand for Childcare

In response to the policy, the demand for childcare services increased significantly in two different ways. Firstly, the proportion of children in non-parental care increased from 44% in 1994/1995 to 51% in 2000/2001. Furthermore, during the same period, the number of children in subsidized childcare increased from 25% to 41% (Campbell, 2006). Secondly, demand on childcare centers also increased in terms of

daily hours children spend at childcare centers. Manville (2013) uses a regression discontinuity design (RD design) model to show that there is a significant increase in the weekly number of hours that children,² within 6 months of the eligibility threshold, spent at the daycare by 9.3 hours.³ Baker et al. (2005) use National Longitudinal Survey of Children and Youth (NLSCY) data and a difference-in-difference model. They find that the UCP increased the number of weekly hours children spend at childcare by 6.4 hours corresponding to an average increase of 47% points from the mean as well as the probability that a child attends daycare by 14.7% in Quebec compared to the rest of Canada (Baker et al., 2005).

Fortin et al. (2012) distinguish between subsidized and non-subsidized spaces. Their investigation indicates that by March 2011, the number of available subsidized childcare spaces were 215,000. They also point out that the number of non-subsidized spaces as a percentage of the total available childcare spaces increased from 2% in 2008 to 8% in 2011. Two factors explain this growth: first, the rise of unmet excess demand for subsidized spaces; second, the increase in the refundable provincial tax credit for daycare expenses in 2009 (parents whose children are eligible for the program and could not find a seat in the subsidized childcare are allowed a refundable tax credit from the government of Quebec for childcare expenses paid).

² Regression Discontinuity Design (RD design) is a quasi-experimental pre and post-test design that measures the policy's causal impacts.

³ Mainville determines the eligibility threshold based on the child's date of birth. Children born on October 1st, 1992 and later were eligible for UCP.

2.2 Universal Childcare Policy and Mothers' Labour Force Participation

Childcare costs represent a decrease in the real wage of working mothers; women looking to buy long hours of childcare will face a serious fall in their net wages equal to the amount paid to get the childcare service which discourages many mothers from looking for employment. A \$5 per day fee reduces the fall in the real wage by the amount paid by the public fund (Baker et al., 2005). Before 1997, mothers' participation in Quebec's labour force was four percentage points lower compared to the other provinces. After the enactment of this policy in 1997, the percentage of employed mothers began to increase. Fortin et al. (2012) estimated that in 2008 alone, the UCP increased the number of working mothers by nearly 70,000 (3.8 percentage points increase).⁴

The impact of UCP on the labour force participation of mothers has been approached by different studies from different perspectives. Mainville (2013) explores the effect of the policy on the labour force by investigating the change in the mothers' labour force status with children aged within two different eligibility thresholds. The author finds that when the eligibility threshold is 6 months, the mothers' participation rate is 13.8 percentage points, but when the eligibility threshold is one year, the mothers' participation rate increases by 14.6 percentage points which represents the

⁴ Fortin et al. estimate the number of employed mothers in 2008 depending on two empirical works (Lefebvre et al., 2011 and Lefebvre et al., 2009).

increase in labour force participation of Quebec's mothers whose children were eligible for a subsidy versus those whose children never attended.⁵

Lefebvre et al. (2011) find that, as a result of the new affordable subsidized service, the participation of mothers in the labour force increases considerably, especially among mothers with children of aged 4 years or below. However, mothers with children aged one year or less do not experience that effect due to an increase in the number of weeks of parental leave from 25 to 50 weeks (Quebec created its own program in 2006 and opted out of the federal program).

However, the study of Mainville (2013) also shows that the increase in labour force participation is accompanied by a decrease in the number of weeks that mothers with children eligible for subsidised childcare services worked per year. Lefebvre et al. (2011) suggest that the income effect can reduce the labour supply of mothers without reducing their labour force participation. In other words, mothers can reduce the number of hours worked without leaving the labour force. In the long run, in contrast, Haeck et al. (2012) use difference-in-difference model and NLSCY data from 1994-1995 (wave1) until 2008-2009 (wave 8) to argue that the policy has a positive impact on both the participation of mothers in the labour force and the number of weeks worked per year. According to the research, the greatest response to the policy comes from highly educated mothers as well as single mothers with post-secondary degrees.

Stalker and Ornstein (2013) look at the effect of the UCP on the employment choices of fathers and mothers (within households with two full-time working parents, a

⁵ Mainville determines the eligibility threshold depending on the children date of birth. Where, the children who born on October 1st, 1992 and later were eligible for the subsidy programme

part-time working parent and a full-time working spouse, a full or part-time working parent and unemployed spouse, or two unemployed parents). The authors use a difference-in-difference model and Canadian Census data of two-parent families for years 1996, 2001 and 2006. They note that the increase in the labour force participation rate of mothers with young children caused a four and six percentage points decrease in the number of married parents, and common-law couples who are following traditional strategies (Note: the use of the term traditional strategy in this paper implies a household model where the father works full-time, and the mother does not work). Also, they argue that the proportion of families where the father worked full-time while the mother worked part time did not experience a significant change after the policy implementation.

2.3 Universal Childcare Policy and the Child Development

High expectations were placed on the UCP as a promising initiative to provide affordable and high quality childcare service for all Quebec children in order to enhance children's school readiness. Researchers like Lefebvre et al. (2011), Mainville (2013) and Haecck et al. (2012) use different cognitive development test scores to investigate the impact on child cognitive development.

According to Lefebvre et al. (2011), the UCP negatively affected the Peabody Picture Vocabulary Test score (hereon called PPVT) among children aged 5 years by almost one fourth of a standard deviation (Standard deviation of children's PPVT score prior to the implementation of the UCP), regardless of their mothers' education level.⁶

⁶ The Peabody Picture Vocabulary Test (PPVT) is a test that is designed to evaluate the receptive or hearing vocabulary for different age groups.

To explore the policy's effectiveness in children's school readiness; the authors selected sub-samples of children based on their mothers' education level (children whose mothers have high school education or less, and children whose mothers have a university degree). They found that the UCP failed to reduce the school readiness gap between children from the two sub-samples. Haeck et al. (2012) argue that, if anything, full-day kindergarten school programs are more effective. Using the difference-in-difference approach and NLSCY data, they show that the full-day kindergarten programs increased the cognitive ability of children at age 5, unlike subsidized daycare.

According to Mainville (2013), the UCP did not affect Physical Aggression and Prosocial behaviour, but it has had negative effects on cognitive skills development. The author argues that the hyperactivity-inattention score decreased by 8.2 to 9.5 points, out of a total 16, among eligible children whose birthdays were within 6 months of eligibility compared to those who were never eligible for the program; an RD model was used in the analysis. Comparing children who were eligible for a subsidy with children whose birthdays were within 6 months of eligibility, Mainville found that there was a decrease in the emotional disorder scores by 5.9 points among those who were eligible for subsidized childcare (Emotional Disorder scores are between 0 and 16). Additionally, a score measuring indirect aggression experiences declined by 4.7 points out of a possible 10 for children who took advantage of the policy relative to those who did not.

2.4 Literature Review Summary and Research Gap

Many papers have studied the effect of the UCP on mothers' labour force participation. All find that the implementation of the UCP did indeed increase the number of working mothers as well as the number of weekly hours worked. Other

papers explored the impact of the UCP on various outcomes in children. An important finding among these papers is a negative effect of this policy on children's cognitive development. One explanation provided is the documented crowding of childcare centers and low quality of childcare services. In this paper a different explanation is explored: did the increased labour force participation of mothers lead to decreased the time spent with their children – an important determinant of children's cognitive skills development

3 Data: General Social Survey Time Use data

In 1986, Statistics Canada started to collect the General Social Survey (GSS) Time Use data (cross-section micro data), in intervals of 5 to 7 years. The survey interviews are administered via telephone and follow a random sampling method. Qualified participants must be at least 15 years of age and willing to provide information about their activities during the last 24 hours (only one adult is interviewed per household).⁷ This data includes the duration of activities, those who participate with respondents in those activities, where these activities took place, and the frequency of the activities during a typical day (Statistics Canada, 2013). Statistics Canada collected information on time use data in the following years: 1986 (N=16,400), 1992 (N=9,815), 1998 (N=10,749), 2005 (N=19,597), and 2010 (N=15,390).

This paper analyses the 1992, 1998, 2005 and 2010 releases of GSS Time Use data. The 1986 GSS Time Use data has been excluded from this paper's analysis because of a missing variable of interest: partner's level of education. In order to

⁷ Specifically, the activities that the respondent has done from 4 am until 4 am.

evaluate the effect of the UCP on the time parents spent taking care of their children, the sample has been restricted to respondents who had at least one child less than five years of age. Based on this restriction, only 1,323 (1992), 1,224 (1998), 1,788 (2005), and 1,452 (2010) respondents were included in the sample, while the excluded respondents did not have children less than five years of age, or no children at all, during the time of the interview (See Table 1 for detailed information about the sample size of fathers in two-parent families, mothers in two-parent families, and single mothers in both Quebec and the Rest of Canada - ROC).

Four different outcomes (dependent variables) are considered in this paper: the total duration of time a parent spent: 1) taking care of children, which includes the amount of time that parents spent staying up with a sick child, taking a child for a stroller tour, extracting breast milk, nursing, microwaving child's bottle and watching cartoons with the child during the last 24 hours;⁸ 2) reprimanding children which includes the amount of time spent teaching, helping, and reprimanding the child during the last 24 hours; 3) reading to the child including the time spent reading, talking and engaging in conversations with the child during the last 24 hours; and 4) playing with their children of less than 5 years of age. These variables do not reflect the entire time parents spent with their children. The research excludes other activities such as preparing the meal for the child and putting the child in bed since the goal was to focus on activities that were strongly related to children cognitive skills' development (see table A1 for the description of variables).

⁸ Leibowitz (1977) find that children who watch TV with their parents show larger vocabulary, and Anderson et al. (1999) argue that children who receive nursing from their mothers show stronger development during late childhood and adolescence.

Summary statistics, presenting the average time parents spend taking care, reprimanding, reading and playing with their children per day, are presented in Table 2 (means and standard deviations are weighted).⁹ In 1992, Quebec mothers spent more time doing activities with their children compared to their counterparts from the rest of Canada. For instance, Quebec mothers spent 80 minutes per day taking care of their children, as compared to 66 minutes for mothers from the rest of Canada. In 1998, mothers from Quebec spent less time doing activities with their children compared to mothers from the rest of Canada with one exception; Quebec mothers spent 87 minutes per day taking care of their children while mothers from the rest of Canada spent 74 minutes per day doing similar activities.

In comparison to mothers and fathers from other provinces, Quebec mothers and fathers generally spent less time reprimanding, reading and playing with their children except from 2010 GSS results when Quebec fathers spent 42 minutes playing with their children while fathers from the rest of Canada spent only 32 minutes playing with their children. In 2010, 95.35% of Quebec mothers said that they spent 0 minutes reprimanding their children, as compared to 91.17% of mothers from the rest of Canada. In the same year, 89.78% of Quebec mothers said that they spent 0 minutes reading to their children, as compared to 81.44% of mothers in the rest of Canada. This pattern is similar in the case of fathers.

In Quebec, the descriptive statistics show that there has been an increase in the average time mothers spent taking care of their children, from 81 minutes in 1992 to 96

⁹ Weighting variables are provided in the GSS to be able to express the results as population parameters instead of sample statistics.

minutes in 2010. On average, they spent 5 minutes reprimanding their children in 1992 and 1998, while spending only 3 minutes reprimanding them in 2010 (same trend applies to reading activity). Between 1992 and 2010, average daily time spent playing with their children increased from 46 minutes a day to 48 minutes a day. There has also been a slight decrease in the time that Quebec fathers spent taking care and reprimanding their children between 1992 and 2010. Moreover, the average time spent reading to children increased slightly from 1992 to 2010 (1.67 minutes to 2.03 minutes), and there is an important increase in the average daily time Quebec fathers spend playing with their children, from 27.19 minutes in 1992, before the UCP, to 41.74 minutes in 2010 (after the introduction of the UCP).

Table 3 provides weighted descriptive statistics on mothers' and fathers' educational level, marital status, employment status of the household, and the type of the day of activities. The table shows that 90% of Quebec mothers and 98% of Quebec fathers were either married or living common-law while 86% of mothers and 99% of fathers in the rest of Canada were married.¹⁰ The percentage of Quebec mothers who had some university or college degree is higher than that of mothers in the rest of Canada (47% and 44% respectively). The proportion of Quebec mothers with a Bachelor's or post-graduate degree was higher than that of Canadian counterparts (27% against 25%). This might be because students in Quebec join CEGEPs after grade 11 to prepare for university. CEGEP is considered a post-secondary level of education. Students in the rest of Canada stay in high school until grade 12 and then

¹⁰ The discrepancy in the percentage of married mothers and fathers is likely due to the restriction of having at least one child less than five years old in the household. So, if the father has at least one child less than five living with him in the household, the mother is most probably living with them as she is the natural custodial parent, while when the mother has at least one child less than five living with her in the household it not necessary that the father is also living with them.

they go to university. 26% (29%) of interviewed Quebec (ROC) mothers answered question about their activities during a weekend. Almost the same numbers and patterns apply to fathers from Quebec and the ROC.

4 Model

The model investigates the amount of daily time parents spent taking care, reprimanding, reading, and playing with their children as a result of the UCP. This research deals with observations obtained from GSS Time Use data before and after 1997 (the year during which the policy was first introduced). Observations from other Canadian provinces are used as a control group to control for any secular trends. In order to investigate the impact of the policy on the amount of time spent by parents on various activities with their children, a difference-in-difference (DD) model is used for the presented empirical work, similar to that used by Lefebvre and Merrigan (2008). The research estimates the two DD specifications, which differ in terms of the variables included in the control variables' vector, using the following equation:

$$Y_{itj} = \alpha_j + \theta_j \text{Quebec}_{itj} + \beta_{1j} \text{post 1997}_{itj} + \beta_{2j} \text{post 1997}_{itj} * \text{Quebec}_{itj} + \phi_j X_{itj} + \varepsilon_{itj}$$

Where i is the respondent, t stands for the year, and j stands for the activity of interest (taking care, reprimanding, reading, and playing). Y_{itj} represents one of the four outcomes I consider (time spent for taking care of the child, reprimanding, reading, and playing of their children). θ_j represents the coefficient of Quebec_{itj} . Quebec_{itj} is a dummy variable equal to 1 for respondents living in Quebec; 0 is assigned to respondents living in the rest of Canada. The variable post 1997_{itj} is also a dummy variable where 1 is

assigned to the GSS years 1998, 2005 or 2010; 0 is assigned to the year 1992 (prior to the UCP implementation) and β_{1j} is its coefficient. β_{2j} is the DD estimator and the key coefficient of interest. Its estimate presents the effect the UCP had on the time parents spent doing activities of interest with their children. $\text{post1997}_{itj} * \text{Quebec}_{itj}$ is an interaction variable between Quebec and the years after the implementation the UCP. ϕ_j is a vector of parameters of the control variables. X_{itj} is the vector of control variables that differ in Specification 1 and Specification 2 (the only difference between Specification 1 and 2 is the inclusion of the employment status of the household into the control variables' vector in Specification 2). Detailed information about the variables included in X_{itj} in Specification 1 and 2 is presented in the following table. Finally, ε_{itj} is the error term.

List of the Control Variables for Specifications 1 and 2

Variable	Specification 1	Specification 2
X_{itj}	<p>The control variable vector includes:</p> <ol style="list-style-type: none"> 1) Highest level of education of the respondent ($edur_{itj}$). 2) Highest level of education the spouse/partner's ($edup_{its}$). 3) Type of the day in which the activity occurs weekend or weekday ($typeday_{itj}$). 4) Year variable is the GSS year where 	<p>The control variable vector includes:</p> <ol style="list-style-type: none"> 1) Highest level of education of the respondent ($edur_{itj}$). 2) Highest level of education the spouse/partner's ($edup_{its}$). 3) Type of the day in which the activity occurs weekend or weekday ($typeday_{itj}$). 4) Year variable is the GSS year where it takes the value 1 for 1992, 2 for 1998, 3

	<p>it takes the value 1 for 1992, 2 for 1998, 3 for 2005, and 4 for 2010 ($year_{itj}$).</p>	<p>for 2005, and 4 for 2010 ($year_{itj}$).</p> <p>5) Employment status of the household (1 if both are working, 2 if only one parent is working, 3 no one in the household is employed, 4 single mother is working).</p>
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Since educated parents are assumed to invest more time engaging in activities specific to child cognitive skills development (assuming that they are aware of its importance). The research includes both $edur_{itj}$, and $edup_{itj}$ in the control variables vector X_{itj} to account for the impact of the respondent's education and the respondent's partner/spouse education on the change of the time parents spent doing the activities of interest with their children.¹¹ Also, to control for the possibility that parents spent more time with their children during the weekends as compared to the weekdays – an indicator for the reference day being a weekend day $typeday_{itj}$ ' is included.¹²

According to Lefebvre et al. (2011), Lefebvre and Merrigan (2008), and Mainville (2013); the UCP has increased the mothers' labour force participation in Quebec. To the extent that mothers who work more will spend less time with their children, Specification 1 is expected to demonstrate that the policy has reduced the time parents spend with

¹¹ The research uses one proxy for socio- economic status (parents' education). An alternative model might consider income as well.

¹² Specifications including the age of the respondent as a control variable were also considered but did not affect the main results presented herein. The DD estimators remained essentially the same. However, the age of the respondent variable has also a significant effect on time spent doing activities with their children. Mothers, two-parent families, aged 20 to 29 spent 4 more minutes reprimanding their children (0.01 level of significance). Fathers, two-parent families, aged 20-29 spent 27 more minutes playing with their children compared to parents aged less than 20 (0.01 level of significance).

their children. However, if the change in the time investment in children is solely due to the change in the employment status of parents, the results should show no effect of the policy in Specification 2 (whether employment status is controlled for). Note, however, that Specification 2 is not a well identified regression model since the employment status of the household and the time spent with children are jointly determined which means that there is a correlation between the employment status of the household and the error term (ε_{itj}).¹³ The goal of Specification 2 is to help understand the mechanism by which change in time spent with children happened, not to obtain unbiased estimates of the effect of the policy.

The reference individual of this model is a respondent who is from the same gender living in the rest of Canada and was interviewed in 1992.¹⁴ The analysis is run separately for three groups of households: fathers married or living in common-law; mothers married or living in common-law; and single mothers. Single fathers are ignored due to the insignificant number of observations (62 observations, only) of which the vast majority don't lead custodial roles.

5 Results

The results are presented in Tables 4 to 6 for fathers (two-parent families), mothers (two-parent families) and single mothers respectively.

¹³ In the GSS time use data there are no other appropriate variables that can be used as instrumental variable. Since, the GSS time use data offers no possibility to avoid this probable problem and the introduction of instrumental variables will not eradicate totally the endogeneity issue, so the research decides to use the employment status of the household in the control variables' vector

¹⁴ The reference individual/group is an individual/group for which all the dummy variables, included in the model, are equal to zero; in other words, the reference individual/group is defined by the excluded categories of each dummy variable's group.

The OLS estimation method has been used to estimate the weighted regression. It's important to note that all goodness of fit (R^2) values are very low which is not uncommon when using cross-sectional micro data (Green, 2011). Under this situation, reporting the overall significance, F test, is worthwhile. Most of the overall significance tests (F test) are significant, which means that the variables included into the model performed well when capturing the UCP effect on parents' time invested engaging in the activities (of interest) with their children. However, the model performed poorly with single mothers which might be related to the absence of other variables related to single mothers from the data such as single mothers living with their parents, or split custody time (where in some cases the child spent half the week with the mother and the other half with the father). That there are very few significant t tests for individual estimated coefficients but mostly significant overall test (F test). There is a concern of multicollinearity. Test for multicollinearity between independent variables is done using the pairwise correlation test. No multicollinearity is detected except from the interaction variable Post and Quebec (see Table 7 for pairwise matrix).¹⁵

There are some limitations to this model. Because of the federal Employment Insurance Parental Benefits Program (PBP) increased the number of paid parental leave weeks in 2001.¹⁶ Many parents of children under 1 year may be at home, not using childcare. Ideally we would want to exclude this group and look only at the families where parents are not under parental leave as the study cannot identify the age

¹⁵ The Variance Inflation Factor (VIF) also has been calculated along with the pairwise test. All results were lower than 4, except from Post and Quebec interaction variable where the VIF is 4.33, which is understandable since this variable is the interaction variable between Quebec variable and Post variable.

¹⁶ In 2001, the federal Parental Benefits Program (PBP) was changed. There was an increase in the number paid weeks for fathers from 10 to 35. The number of paid weeks of maternity leave benefits for mother increased from 25 to 50 weeks (Friendly et al., 2002).

of the youngest children. The inclusion an indicator for three-generation households may be important in explaining parents time with children since sharing responsibilities between adults in the household (parents/grandparents) may affect the time parents spend doing the activities of interest with their children.¹⁷

Fathers

As depicted in Table 4, the difference-in-difference estimators (β_2) show that, after the implementation of the policy, there is almost no significant difference between the amount of time fathers from Quebec and fathers from the rest of Canada spent with children on any of the outcomes considered in Specifications 1 and 2.

Education level

The time fathers spent with their children does vary with education level. Results, from Specification 1 and 2, show that Quebec's fathers who have a post-secondary diploma spent almost an additional 12 minutes taking care of their children when compared with those who were less educated (1% level of significance). In Quebec, fathers with Bachelor's degree or post-graduate degree spent 8 more minutes taking care of their children than fathers with a lower level of education (10% level of significance).

¹⁷ The inclusion of three-generation families is not possible since this variable is missing in the GSS years prior to the UCP implementation (1992). For 1998, 2005, and 2010, in the three-generation families variable, fathers spent 2 and 3 fewer minutes reprimanding and reading to their children (0.01 level of significance), mothers spent 4 minutes less reading to their children, and single mothers spent 71 more minutes taking care of their children compared to two-generation families (the amount of time single mothers spend taking care of their children maybe high because of the small sample of single mothers).

Weekends

Under Specification 1 fathers spent more time with their children during weekends as compared to weekdays; they spent an additional 11 minutes taking care of their children and approximately 16 more minutes playing with their children on weekends versus weekdays (1% level of significance). This finding remains fairly constant even after controlling for the employment status of the household as a control variable (Specification 2).

Employment

Under Specification 2, in households where both parents were unemployed, fathers spent an additional 5 minutes reprimanding their children relative to fathers in households where at least one parent was employed (5% level of significance).

MOTHERS

The results for mothers in two-parent families are presented in Table 5. In Quebec, under Specification 1, after the implementation of the UCP, mothers spent 5 more minutes reading to their children (5% level of significance). Mothers spent 16 minutes less playing with their children (10% level of significance). Under Specification 2, mothers spent 18 less minutes playing with their children and an additional 5 more minutes reading to their children compared to their counterparts in other provinces (5% level of significance).

Education level

Results for Specification 1 show that mothers in two-parent families, with post-secondary diploma spent approximately 18 minutes more playing with their children compared to mothers with education level below post-secondary (1% level of significance). Mothers in two-parent families who have a Bachelor's or post-graduate spend almost 14 minutes more playing with their children compared to mothers with a level of education below than that (10% level of significance). Furthermore, mother whose spouse/partner has a post-secondary diploma spent 3 more minutes reprimanding their children compared to a mother with a spouse/partner of a lower education level (1% level of significance). Moreover, results for Specification 2 imply that in households where the mother's highest level of education was high school, mothers played almost 18 more minutes compared to respondents whose highest level of education was lower (5% level of significance). Mothers with a bachelor's or post-graduate degree spent approximately 28 more minutes taking care of their children, and an additional 17 minutes playing with their children as compared to mothers with lower education levels (5% level of significance). When the education level of a respondent was post-secondary, mothers spent an additional 21 minutes playing with their children as compared to households where the respondent's highest level of education was below post-secondary (1% level of significance).

Weekends

Results for Specification 1 imply that during weekends, mothers took 4 fewer minutes reprimanding their children (1% level of significance), and 6 fewer minutes playing with their children (10% level of significance). Under Specification 2, mothers also spent 4 fewer minutes reprimanding, and 2 fewer minutes reading to their children (1% level of significance). It is surprising that under both Specification 1 and 2, there is no significant effect on the time mothers in two-parent households spent reprimanding and reading to their children during the weekend. This might be due to parents' tendency to spend more fun time with their children during the weekend rather than reprimanding and/or reading to them.

Employment

Specification 2 results show that in households where only one of the two parents was employed full or part-time, mothers spent 45, 2, and 17 more minutes taking care of their children, reading and playing with their children, respectively, compared to households where both parents were full or part-time employed (1% level of significance). Moreover, mothers in households where both parents were unemployed spent 67 more minutes taking care of their children compared to households where only one of the parents is employed (1% level of significance).

Single Mothers

Results for single mothers are shown in Table 6. After the implementation of the UCP, differences in β_2 are not significant in all the activities under Specification 1 and 2. Thus, there is no difference between single Quebec mothers and single mothers from

other Canadian provinces regarding the amount of time spent on the considered activities.

Education level

Single mothers with high school level of education spent 4 and 5 fewer minutes reading to their children compared to those with different levels of education under Specification 1 and 2, respectively (5% level of significance). Under Specification 1, single mothers with post-secondary diploma spent 15 fewer minutes playing with their children compared to single mothers with high school or less level of education (10% level of significance).

Weekends

Under Specification 1 and 2 single mothers spent 4 minutes less reprimanding their children during weekends versus weekdays (1% level of significance). Under Specification 2, single mothers spent 15 more minutes playing with their children during weekends compared to weekdays (10% level of significance). Also, there is no significant effect on the time single mothers spent taking care and reading to their children during the weekend. This might be explained by the fact that the children are with their father during the weekend.

Employment

Under Specification 2, comparing unemployed and employed single mothers, unemployed single mothers spent 38 more minutes taking care of their children (1%

level of significance), and almost 15 minutes more playing with their children (10% level of significance).

Discussion

Fathers (two-parent families)

The UCP did not have any significant effect on the amount of time fathers spent taking care of children, reprimanding, reading, and playing with their children, as demonstrated in both Specifications 1 and 2. This is probably attributable to the fact that the UCP did not have a significant effect on fathers' employment choices in the labour market (Haeck et al., 2012). This is consistent with fathers' traditional paternal role as a breadwinner rather than a caregiver within households.

Mothers (two-parent families)

As compared to the average time mothers in Quebec spent playing with their children in 1992 is 46 minutes, a decrease of 16 minutes in the playing time between mothers and children is a considerable amount of time. Thus, Quebec mothers within two-parent families spent less time playing with their children compared to other Canadian mothers (Specification 1). Quebec mothers also spent approximately 5 minutes more, per day, reading to their children after the implementation of the UCP (Specification 1). These results mean that the UCP positively affected the time mothers spent reading to their children by approximately 5 minutes and negatively affected the time they spent playing with their children by 16 minutes; so, there is a decrease of almost 11 minutes in the interaction between mothers and children per day.

Even after the introduction of employment status into the control variables' vector taking care, and reprimanding children activities are still non-significant, which means that The UCP did not have any effect on these activities. Under Specification 2, there is no change in the time mothers spent reading, and playing with their children from that of Specification 1. In other words, the introduction of the employment status of the household into the vector of control variables did not remove the effect of the UCP. One possible explanation to these ironic results is that the shortage of childcare spaces (85,000 of Quebec children are in the waiting list) and the UCP's conditional agreements requiring 5-days per week attendance (otherwise risking revocation of the subsidy) (Campell, 2006; Lefebvre et al., 2011), may have pressured parents to send their children to childcare programs regardless of their employment statuses.

Single Mothers

The results show that in the period after 1997 there is no difference between the average time spent by Quebec single mothers versus those of the rest of Canada when taking care of their children, reading, reprimanding and playing with their children (with and without employment as a control variable). The reason that the policy does not seem to make a difference may be because single mothers were receiving subsidies even before the implementation of the UCP in 1997 (Baker et al., 2005).

6 Conclusion

The implementation of the UCP in 1997 was intended to increase mothers' labour force participation rate in order to promote labour force gender equality, as well as providing equal childcare accessibility among Quebec children-bearing households

irrespective of household income levels. Although the policy did increase maternal labour force participation, this success seems to have been at the expense of overall school readiness among children (Lefebvre et al., 2011). This is probably further exacerbated by the poor quality of daycare services across daycares in Quebec (Japel et al., 2005).

The decrease in shared play-time between mothers and children might serve as an explanation for the decrease in the cognitive skills of children and the decline in their PPVT test score as demonstrated in the Lefebvre et al. (2011). The results of this paper demonstrate that the policy had no direct effect on the time that fathers spent with their children. The UCP's impact on single mothers was also deemed insignificant, perhaps, as noted before, since Quebec single mothers already received subsidies prior to the implementation of the policy (Baker et al., 2005). However, the UCP definitely did have an impact on the time mothers spent reading and playing with their children because the introduction of the employment as a control variable did not remove the effect of the UCP, which implies that the increase in mothers' employment is not the only reason of the decline in the parent-child interaction's time. This may mean that, possibly, the UCP pressured parents to send their children to these childcare centers given the conditional subsidy agreements (children must spend 5 full weekdays in the daycare or risk losing the subsidy) even when the mother was not employed or in her day off. Subsequently, the UCP might have now redefined the parent-child interaction culture in Quebec (parents send their children to the daycare even if they are not working). This unanticipated effect warrants reviewing the policy by taking into account maternal time and its effect on families and children.

This research is limited due to the lack of some potentially important variables from the data. The inclusion of the age of the child into the model would enable the research to exclude children less than a year old since parents are likely enjoying parental leave. Existing three-generation households is another variable that can affect the time spent between parents and children given that there would be a sharing of responsibilities among the adults (parents/grandparents) when engaging the children in activities. Also, the number of children in a given household can impact the amount of time parents are able to allocate to their children of less than five years given that their attention would be divided among all of their children. Furthermore, the research uses only one GSS year prior to the implementation of the policy limiting the extent of the comparison.

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Appendix

Table A1: description of the variables

Variable name	Value	Explanation
Taking care	Minutes	Preparing milk bottle, watching cartoons with the child and taking a child for a stroller tour
Reprimanding	Minutes	Teaching , Helping and Reprimanding
Reading	Minutes	Reading and making conversations with the child
Playing	Minutes	Playing with the child
Labour		Labour force participation of respondent and spouse/partner
	1	Respondent and spouse are employed part or full time
	2	One of the respondent or spouse is employed part or full time
	3	Respondent and spouse are not employed or single parent not employed
	4	Single parent is employed part or full time
Edu_res		Respondent's highest level of education
	1	Less than high school
	2	High school
	3	Post-secondary diploma
	4	Bachelor or post graduate degree
Edu_pr		Spouse/partner highest level of education
	1	Less than high school
	2	High school
	3	Post-secondary diploma
	4	Bachelor or post-graduate degree
Married		Marriage status of respondent
	1	Respondent is married
	0	Respondent single, divorced , separated or Widowed
Male		Sex of the respondent
	1	The respondent is male
	0	The respondent is female
Taypday		The type of day the activity happened
	1	Weekday
	2	Weekend
Quebec		Area of Residence of the respondent
	1	Respondent is living in Quebec
	0	Respondent is living somewhere else in Canada
Year		The year of the interview
	1	The interview is in 1992
	2	The interview is in 1998
	3	The interview is in 2005
	4	The interview is in 2010

Table 1: Selected Sample Size per Marital Status, Region, and Year

Marital Status	Region	Year			
		1992	1998	2005	2010
Father in two-parent families	Quebec	106	106	118	98
	ROC	446	414	624	519
Mothers in two-parent family	Quebec	115	111	181	117
	ROC	495	428	666	579
Single mothers	Quebec	22	30	35	12
	ROC	139	135	164	127
Sample per region and year	Quebec	243	247	334	227
	ROC	1080	977	1454	1225
Total Sample	GSS Canada	1323	1224	1788	1452

Note: Fathers in two-parent families are fathers who are either married or in common law and have at least one child less than five years old. Mothers in two-parent families are mothers who have at least one child less than five years old and are married or living in common law.

Table 2: Summary Statistics of Average Time that Mothers and Fathers Spend with their Children

	Quebec				Rest of Canada			
	1992	1998	2005	2010	1992	1998	2005	2010
Mother								
Duration of taking care of children under 5 years in minutes per day	80.63 (96.67) [27.01]	86.71 (97.35) [18.44]	67.99 (123.97) [43.52]	96.14 (188.26) [46.51]	66.32 (94.59) [34.23]	74.01 (102.93) [31.26]	56.92 (117.59) [59.52]	67.62 (115.16) [42.78]
Duration reprimanding children per day	5.39 (15.58) [87.59]	4.62 (14.18) [86.52]	4.14 (18.29) [92.13]	2.77 (16.56) [95.35]	4.57 (20.24) [91.17]	9.23 (30.07) [82.06]	6.62 (26.68) [89.40]	4.37 (17.67) [91.50]
Duration of reading to children per day	3.25 (10.25) [89.78]	5.61 (16.59) [82.98]	2.30 (12.68) [93.06]	3.12 (16.03) [81.44]	10.51 (28.76) [75.55]	6.69 (19.35) [82.95]	5.59 (18.89) [84.58]	5.47 (16.72) [81.44]
Duration of playing with children per day	45.96 (72.20) [56.20]	32.69 (54.47) [56.74]	47.03 (69.13) [55.09]	47.86 (68.74) [57.08]	39.60 (71.36) [62.30]	49.12 (74.29) [52.75]	52.03 (78.67) [54.34]	52.26 (88.28) [57.08]
Father								
Duration of taking care of children under 4 years in minutes per day	22.87 (40.66) [58.18]	29.65 (47.74) [46.36]	11.84 (25.9) [76.42]	21.23 (45.95) [64.00]	20.55 (46.84) [68.29]	24.41 (59.48) [70.99]	15.157 (51.35) [80.63]	26.42 (82.29) [70.22]
Duration of reprimanding children per day	1.02 (8.62) [97.27]	3.37 (13.99) [93.64]	1.33 (8.08) [96.75]	0.29 (12.15) [98.00]	1.7 (12.43) [96.01]	3.05 (15.16) [93.16]	2.62 (13.11) [94.84]	1.66 (12.15) [97.19]
Duration of reading to children per day	1.67 (8.09) [94.55]	1.98 (10.39) [92.73]	1.77 (7.637) [94.31]	2.03 (7.62) [92.00]	2.72 (11.19) [90.47]	3.42 (16.59) [91.51]	3.27 (14.49) [91.72]	2.76 (9.76) [89.33]
Duration of playing with children per day	27.19 (50.25) [63.64]	27.42 (43.64) [55.45]	32.5 (66.99) [67.48]	41.81 (79.49) [57.00]	25.74 (51.54) [69.40]	36.19 (60.38) [62.03]	33.17 (69.62) [65.47]	31.88 (69.62) [67.23]

Note: all respondents in this table have at least one child less than 5 years old. Data are weighted. Data from General Social Survey Time Use data for 1992, 1998, 2005 and 2010. Standard deviations are in parentheses. In square brackets are the percentages of mothers or fathers who spend zero minutes with their children per year for every activity in Quebec and Rest of Canada.

Table 3: Summary Statistics for Fathers and Mothers in Quebec and Rest of Canada for all Years in Percentage

Variables	Quebec		Rest of Canada	
	Mother (623)	Father (443)	Mother (2,733)	Father (2,049)
Education of the respondent				
Elementary school	11.89	12.13	9.91	11.51
High school	14.00	9.67	15.14	13.68
Post-secondary degree	47.33	43.50	43.64	42.82
Bachelor or post Graduate degree	24.91	31.63	26.55	29.15
Education of the partner				
Elementary school	12.02	9.20	9.05	08.49
High school	18.22	20.34	20.35	25.46
Post-secondary diploma	33.17	34.49	27.55	27.96
Bachelor or post Graduate degree	21.74	28.98	23.85	23.85
Marital status				
Married or Common-law	89.82	97.69	86.34	98.51
Not married	10.18	2.31	13.66	1.49
Labour Force Participation of the household				
Respondent and spouse are employed	47.20	47.36	40.99	47.31
Respondent or spouse is employed	34.49	39.25	34.64	41.26
No one is employed	09.67	06.43	10.82	04.78
Single parent is employed	04.73	01.73	06.31	01.23
The type of day the activity happened				
Weekday	73.56	68.43	70.64	70.09
Weekend	26.43	31.56	29.35	29.90

Note: all respondents have at least one child less than 5 years old. Data from General Social Survey Time Use data for 1992, 1998, 2005 and 2010. The number of mothers or fathers in Quebec and the Rest of Canada for all years are displayed between parentheses. Data are weighted.

Table 4: Regression Results: Fathers from Two-Parent Families

	Specification (1)				Specification (2)			
	Taking Care	Reprimanding	Reading	Playing	Taking Care	Reprimanding	Reading	Playing
Quebec (θ)	Minutes 0.603 (0.13)	Minutes -1.023 (0.98)	Minutes -1.253 (1.19)	Minutes -0.100 (0.02)	Minutes 1.352 (0.29)	Minutes -1.047 (0.97)	Minutes -1.128 (1.08)	Minutes 0.219 (0.04)
Post period (β_1)	1.501 (0.26)	2.879* (1.89)	0.969 (0.77)	5.666 (0.90)	1.693 (0.29)	2.861* (1.83)	1.159 (0.92)	3.682 (0.59)
Quebec and post period (β_2)	-0.966 (0.17)	0.191 (0.15)	-0.153 (0.12)	0.967 (0.13)	-2.066 (0.36)	0.099 (0.07)	-0.256 (0.21)	1.337 (0.18)
One of the parents is employed					0.241 (0.08)	-0.090 (0.13)	-0.069 (0.12)	2.787 (0.85)
Both are unemployed					8.655 (1.34)	5.038** (2.12)*	-0.469 (0.38)	-8.622 (1.63)
Father's level of education - high school	1.746 (0.47)	-1.002 (1.02)	-0.175 (0.18)	-5.034 (0.80)	2.043 (0.54)	-0.818 (0.83)	-0.134 (0.14)	-6.502 (1.02)
Father's level of education - post-secondary	11.858*** (3.23)**	0.129 (0.16)	0.258 (0.31)	0.170 (0.03)	11.976*** (3.18)**	0.136 (0.16)	0.305 (0.35)	-1.572 (0.26)
Father's level of education – Bachelor/ post graduate	8.018* (1.91)	1.557 (1.25)	1.183 (1.17)	0.849 (0.13)	7.566* (1.77)	1.613 (1.27)	1.058 (1.03)	-0.832 (0.13)
Partner's level of education - high school	3.892 (0.90)	0.566 (0.54)	-1.659 (1.39)	0.586 (0.08)	4.023 (0.92)	0.872 (0.79)	-1.762 (1.47)	2.656 (0.41)
Partner's level of education - post-secondary	9.331* (1.93)	0.300 (0.31)	-0.737 (0.57)	5.226 (0.73)	9.324 (1.92)	0.638 (0.60)	-0.920 (0.70)	8.006 (1.22)
Partner's level of education – Bachelor/ post graduate	2.695 (0.54)	0.032 (0.03)	-0.456 (0.33)	7.276 (0.95)	2.963 (0.58)	0.440 (0.38)	-0.525 (0.38)	9.493 (1.33)
Weekend	11.311*** (3.17)**	-0.643 (1.04)	0.820 (1.16)	15.730*** (4.03)**	11.683*** (3.21)**	-0.611 (0.98)	0.889 (1.24)	15.330*** (3.91)**
Year	-0.884 (0.37)	-1.153** (2.00)*	-0.428 (0.96)	-0.128 (0.05)	-0.427 (0.17)	-1.121* (1.87)	-0.438 (0.99)	0.734 (0.28)
Constant(α)	7.164 (1.48)	2.644** (2.33)*	3.632*** (2.71)**	19.752** (2.53)*	5.145 (1.02)	2.029 (1.48)	3.671*** (2.73)**	17.396** (2.29)*
Observations	2321	2321	2321	2321	2277	2277	2277	2277
R-squared	0.02	0.01	0.01	0.02	0.02	0.02	0.01	0.02
F test	2.12	1.32	1.57	3.36**	3.06**	1.36	3.44**	3.19**

Note: the dependent variables are time that fathers spent taking care of children, reprimanding, reading and playing with their children. All father respondents (within a two parent household) have at least one child less than 5 years old. t-statistics value is displayed within parentheses. Also, Statistical significance is denoted using asterisks: *** is $p < 0.01$, ** is $p < 0.05$ and * is $p < 0.10$. Robust standard errors are used in the regressions. Specification (1) includes all the control variables (education of the father, education of the partner, type of the day of the activities and the year variable). Specification (2) includes employment status of parents from the vector of control variables.

Table 5: Regression Results: Mothers from Two-Parent Families

	Specification (1)				Specification (2)			
	Taking care	Reprimanding	Reading	Playing	Taking care	Reprimanding	Reading	Playing
Quebec (θ)	Minutes 20.031* (1.84)	Minutes -0.877 (0.48)	Minutes -7.890*** (4.33)	Minutes 8.032 (1.00)	Minutes 22.662** (2.08)	Minutes -0.877 (0.47)	Minutes -7.954*** (4.30)	Minutes 9.768 (1.24)
Post period (β_1)	0.917 (0.08)	6.488*** (2.80)	-3.652* (1.86)	5.616 (0.80)	1.556 (0.14)	7.001*** (2.87)	-3.850** (1.97)	6.436 (0.89)
Quebec and post period (β_2)	0.033 (0.00)	-2.259 (1.04)	5.209** (2.57)	-15.791* (1.73)	-0.764 (0.05)	-2.230 (1.01)	5.287** (2.53)	-18.053** (1.99)
One of the parents is employed					45.173*** (6.63)	1.970* (1.73)	2.460*** (2.85)	16.540*** (4.33)
Both are unemployed					66.915*** (3.98)	3.581 (1.39)	2.559 (0.74)	0.869 (0.12)
Mother's level of education - high school	13.914 (1.19)	1.763 (0.76)	-0.985 (0.37)	16.266** (2.24)	18.748 (1.58)	2.206 (0.89)	-0.946 (0.38)	17.889** (2.43)
Mother's level of education - post-secondary	8.662 (0.65)	-1.499 (0.73)	-0.652 (0.26)	18.319*** (3.00)	19.835 (1.46)	-0.689 (0.31)	-0.247 (0.11)	21.451*** (3.43)
Mother's level of education - Bachelor /post graduate	13.002 (1.01)	-1.150 (0.48)	1.361 (0.52)	13.521* (1.96)	27.722** (2.09)	-0.382 (0.15)	1.653 (0.70)	17.492** (2.47)
Partner's level of education - high school	-17.234 (0.94)	0.805 (0.58)	0.760 (0.45)	-2.101 (0.30)	-12.493 (0.68)	0.874 (0.59)	0.912 (0.50)	-0.614 (0.08)
Partner's level of education - post-secondary	-14.147 (0.71)	3.174** (2.03)	0.393 (0.28)	-6.050 (0.93)	-12.371 (0.61)	3.185 (1.95)	0.452 (0.30)	-6.097 (0.90)
Partner's level of education - Bachelor /post graduate	-10.475 (0.52)	2.681 (1.46)	2.154 (1.31)	-3.666 (0.50)	-9.902 (0.49)	2.427 (1.28)	1.972 (1.16)	-2.932 (0.39)
Weekend	-8.464 (1.39)	-3.997*** (4.35)	-1.869** (2.19)	-6.220* (1.67)	-9.382 (1.56)	-4.071*** (4.34)	-2.030** (2.33)	-4.895 (1.29)
Year	-0.586 (0.11)	-2.518*** (3.16)	-0.778 (1.34)	2.961 (1.12)	0.347 (0.07)	-2.675*** (3.21)	-0.662 (1.12)	3.201 (1.18)
Constant(α)	70.976*** (6.09)	7.930*** (3.63)	11.665*** (4.14)	27.959*** (3.61)	33.473** (2.83)	6.447*** (2.64)	10.173*** (4.04)	16.173** (1.97)
Observations	2533	2533	2533	2533	2469	2469	2469	2469
R-squared	0.01	0.02	0.02	0.01	0.05	0.02	0.03	0.02
F test	1.51	3.44**	5.86**	1.88**	6.71**	2.69**	7.10**	3.68**

Note: the dependent variables are time that mothers spent taking care of children less 5 years old, reprimanding and teaching, reading and playing with their children. All mother respondents (within two parent households) have at least one child less than 5 years old. t-statistics values are displayed within parentheses. Also, statistical significance is denoted using asterisks: *** is $p < 0.01$, ** is $p < 0.05$ and * is $p < 0.10$. Robust standard errors are used in the regressions. Specification (1) includes all the control variables (education of the father, education of the partner, type of the day of the activities and the year variable). Specification (2) includes employment status of parents from the vector of control variables.

Table 6: Regression Results: Single Mothers

	Specification (1)				Specification (2)			
	Taking care	Reprimanding	Reading	Playing	Taking care	Reprimanding	Reading	Playing
	Minutes	Minutes	Minutes	Minutes	Minutes	Minutes	Minutes	Minutes
Quebec (θ)	-32.144*	5.088	-6.619*	4.277	-25.517	5.252	-7.075**	6.822
	(1.79)	(1.57)	(1.86)	(0.27)	(1.54)	(1.63)	(2.02)	(0.44)
Post period (β_1)	-10.595	6.400	-2.015	-3.817	-17.828	6.329	-1.723	-4.565
	(0.47)	(1.59)	(0.47)	(0.30)	(0.78)	(1.62)	(0.40)	(0.34)
Quebec and post period (β_2)	31.198	-5.959	6.248	-17.458	13.698	-5.819	7.100	-20.022
	(1.24)	(1.49)	(1.25)	(0.99)	(0.61)	(1.43)	(1.37)	(1.14)
Single mother is unemployed					38.220***	1.018	-2.606	14.504*
					(2.71)	(0.58)	(1.22)	(1.69)
Mother's level of education high school	10.133	0.749	-4.305**	-16.326	13.049	1.389	-4.985**	-11.357
	(0.41)	(0.36)	(2.14)	(1.60)	(0.49)	(0.61)	(2.25)	(1.00)
Mother's level of education - post-secondary	-7.992	1.138	2.272	-15.273*	2.908	1.446	1.572	-11.648
	(0.54)	(0.58)	(0.91)	(1.71)	(0.18)	(0.65)	(0.59)	(1.22)
Mother's level of education - Bachelor /post graduate	2.177	3.419	-0.593	-15.592	15.576	3.821	-1.527	-10.759
	(0.08)	(0.73)	(0.22)	(0.93)	(0.56)	(0.84)	(0.55)	(0.60)
Weekend	-7.955	-4.341***	-1.307	13.876	-2.224	-4.318***	-1.552	14.962*
	(0.64)	(3.44)**	(0.75)	(1.58)	(0.18)	(3.45)	(0.86)	(1.69)
Year	3.004	-1.401	-1.290	7.430	8.077	-1.341	-1.530	8.420
	(0.32)	(0.81)	(0.88)	(1.20)	(0.86)	(0.83)	(1.08)	(1.30)
Constant(α)	81.058***	3.113*	12.053***	33.713***	45.316**	2.181	14.397***	21.045
	(4.61)**	(1.67)	(3.81)	(2.85)	(2.33)	(1.43)	(4.27)	(1.42)
Observations	643	643	643	643	634	634	634	634
R-squared	0.01	0.03	0.02	0.02	0.03	0.04	0.02	0.03
F test	0.73	1.65	2.24**	1.44	1.81	1.58	2.33**	1.78

Note: dependent variables are time that single mothers spent taking care of children less 5 years old, reprimanding and teaching, reading and playing with their children. All single-mother respondents have at least one child less than 5 years old. t-statistics values are displayed within parentheses. Also, statistical significance is denoted using asterisks: *** is $p < 0.01$, ** is $p < 0.05$ and * is $p < 0.10$. Robust standard errors are used in the regressions. Specification (1) includes all the control variables (education of the father, education of the partner, type of the day of the activities and the year variable). Specification (2) includes employment status of parents from the vector of control variables.

Table 7: Pairwise Matrix for the Explanatory Variables of the Model

	Quebec	Post	Post and Quebec	Employment Status of the Household	Respondent's Highest Level of Education	Partner's Highest Level of Education	Type of the Day	Year
Quebec	1.0000							
post	-0.0044	1.0000						
Post and Quebec	0.8547	0.2192	1.0000					
Employment Status of the Household	-0.0238	-0.0373	-0.0220	1.0000				
Respondent's Highest Level of Education	0.0009	0.1730	0.0454	-0.2029	1.0000			
Partner's Highest Level of Education	0.0027	0.2137	0.0544	-0.1417	0.5035	1.0000		
Type of the Day	-0.0010	0.0044	0.0003	0.0100	-0.0078	0.0046	1.0000	
Year	-0.0293	0.7850	0.1433	-0.0735	0.2258	0.2450	-0.0037	1.0000