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Patterns of Education Level on Childcare: The Case of France & US

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- ABSTRACT -

Using Multinational Time Use Study data from France and US, the effect of parental educational level on time spent with children is analyzed. Regressions in which the dependent variables are the minutes used in total childcare, household work, leisure, basic childcare, educational childcare and recreational childcare are estimated. The pattern of total childcare is compared to household work and leisure in order to see if they follow the same path. The results indicate that total childcare should be distinguished from household production, due to different degree of substitutability. Furthermore, there seems to be a welfare state difference in how parents allocate time to childcare activities, especially educational childcare. But this study must be considered to be exploratory when welfare state differences are concerned.

Keywords: Parental education, time with children, childcare, degree of substitutability, welfare state regimes

- Preface -

This document presents results drawn from the Multinational Time Use Study (MTUS), but the interpretation of this data and other views expressed in this text are those of the author. This text does not necessarily represent the views of the MTUS team or any agency which has contributed data to the MTUS archive. The author bears full responsibility for all errors and omissions in the interpretation of the MTUS data.

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- INTRODUCTION -

The individuals' education level is of great importance for their preferences and behavior. High educated individuals tend to work longer and have lower unemployment rates than low educated individuals (Fernández, 2007). They also have a tendency to postpone family formation and childbearing (Kreyenfeld, 2010). High educated women also have a stronger bargaining power within the family and are more likely to use kindergartens for their children compared to low educated women (Kitterod, 2002). How the parents' educational level affects the time spent on childcare activities is the focus of this study, which is similar in structure to that of Guryan et al (2008).

From an economic point of view spending time with children can be seen as an investment where parents allocate both time and material resources to raising their children. The investment of time in children's upbringing is a crucial factor for the development of human capital. Parents' investment in their children's human capital can also be a factor when intergenerational transmission is concerned. (Black & Devereux, 2010)

Using Multinational Time Use Study (MTUS) data, the relationship between the education level of parents and their time allocation to childcare activities is examined for France and the US. With few exceptions (Guryan et al, 2008) the empirical knowledge of country differences when it comes to this effect is limited. Past research has examined within-country education effects and just touched upon cross-country effects. One of the contributions of this study is to analyze cross-country variation concerning the role of parental education level. However this study must be considered to be exploratory when welfare state differences are concerned.

The findings are; higher educated parents allocate more time to childcare activities than less educated parents. Factors that also influence the allocation of time when childcare is concerned are: gender, civic status and the age of the youngest child. This result was also evident when the subcategories of childcare were examined (basic childcare and recreational childcare).

The results show that working women in the US with 16 years schooling spent on average 48 minutes more per day on childcare activities than those with less than 12 years schooling. This increasing education gradient has also been found across subgroups, such as working mothers and fathers, and for other countries. This positive education gradient in childcare is surprising considering that the opportunity cost of time is higher for higher educated parents. Furthermore, the results seem to indicate that higher educated parents in a liberal welfare regime tend to have a slightly steeper education gradient than their counterparts in a conservative welfare regime.

Furthermore, childcare is also analyzed and compared to household production and leisure in order to establish whether they follow the same pattern. Childcare is usually analyzed as if it is another household production (Burda et al, 2006), thereby implicitly assuming that it has a similar degree of substitutability as any household production. This implies that many aspects of childcare can be bought on the market, e.g. as au pairs. However, according to *process benefits* spending time with children is amongst the most enjoyable activities reported by the parents (Hallberg & Klevmarken, 2003). The findings of this thesis are that the education gradient for household work and leisure is negative, compared to the positive gradient for childcare. Therefore this result indicates that childcare should be analytically distinguished from household work and leisure.

1.1 Aim & Objective

The aim of this study is to analyze the following three aspects of childcare:

- i. The effects of parental level of education on total time spent with children.
- ii. Whether the patterns of the effect of education level on household work and leisure follow the same pattern as the effect on childcare.
- iii. Whether the effect of parental education level on time spent with children is the same across different types of welfare states.

1.2 Limitations

This study has only analyzed conservative and liberal welfare state regimes (using Esping-Andersen's typology) due to the lack of data availability concerning the social democratic welfare state type. In order to make this study clear and manageable non-working individuals¹ have been excluded and therefore the analysis is based on working individuals. Furthermore, time spent on transportation in connection with childcare activities has not been included in the study due to data availability.

One disadvantage with using data from MTUS is the fact that not all countries have recorded the respondents' secondary allocation of time.² Therefore the results of the study are only based on the parents' primary activities. This can have an effect on the results, for a more detailed discussion see section 4.1.

1.3 Disposition

This study is disposed as following: next section presents a short summary of the previous research. Section 3 describes the theoretical framework that will be used to interpret the results. Section 4 presents the data, the variables and the model specification that will be estimated in this study. The estimation results for the model specification are presented in section 5. The results are discussed in section 6 and the study ends by summarizing the findings of this study along with some final comments.

¹ Non-working individuals refer to individuals that are not engaged in the labour market.

² Or, as it is sometimes referred to: simultaneous activities.

- PREVIOUS RESEARCH -

There are relatively few studies done using time data by economists and there are some who claim that the use of time data by economists is just in its infancy (Hamermesh & Pfann, 2004). But there are other disciplines, such as sociology, that have used these data-sets much more extensively.

The existing empirical literature on parents' time use has shown that gender (Dribe & Stanfors, 2009), the age of the youngest child (Price, 2008) and family structures (Sayer et al, 2004; Kalenkoski et al, 2005) are amongst the most important factors influencing time spent with children.

The literature also shows that there are gender differences when it comes to spending time on different childcare activities. Mothers spend more time on inflexible activities, such as feeding and dressing, while fathers spend more time on flexible activities, such as playing and reading; these differences are also found when conditioned on work status. (Craig, 2006a)

Table 1

Name of Author(s)	Purpose	Country	Time period
Kitterod (2002)	How mothers' level of education affects time spent in household work and childcare.	Norway	1970-1990
Craig (2006b)	How parental education affects time in paid work and time with children.	Australia	1997
Guryan, Hurst & Kearney (2008)	How the allocation of time with children depends on the educational level of the parents.	U.S.	Pooled data 2003-2006

The effect of parental education on time spent with children is the main focus of this study, however the important factors mentioned above would also be taken into consideration. Many studies indicate that high educated parents spend more time on childcare compared to other parents (Kalenkoski et al, 2005; Dribe & Stanfors, 2009). But few studies have tried to examine this effect in detail. Table 1 provides a short description of three studies that examine the educational level of parents and how it affects their time with children.

The relationship between women's education level and time spent with children is clear: higher education is associated with more time (Craig, 2006b). This relationship is also found if the sample is divided between working and non-working women (Guryan et al, 2008; Kitterod, 2002). When it comes to men's education level and time with children the patterns are not as clear. Craig (2006b) found that with higher educational level men tend to spend more time on childcare. But when Guryan et al (2008) conditioned on work status, they did not find this relationship for non-working men.

There is also a clear positive effect of education level on time spent on childcare activities that contribute to the child's physical and mental development, such as educational or recreational childcare (Guryan et al, 2008; Craig 2006b; Kitterod, 2002). This effect holds for both men and women and also when conditioned on work status.

When time patterns for household work are examined for women, the education level has a negative effect (Craig, 2006b) and this result stands even if conditioned on work status (Guryan et al, 2008; Kitterod, 2002). However, the same pattern was not seen for men. When conditioned on work status Guryan et al (2008) found a negative effect for non-working men and the opposite for working men, while Craig (2006b) found a neutral effect for men.

As mentioned in the introduction, with some exceptions (Guryan et al, 2008), the empirical knowledge of country differences in the effect of parental education on childcare time is limited. As presented above, past research has examined within-country education effects and just touched upon differences between countries. This study contributes by analyzing cross-country variation concerning the effect of parents' education level.

The vast empirical research has included childcare activities as any other household production and thereby assuming the same degree of substitutability (Rogerson et al, 1995; Rupert et al, 2000; Burda et al, 2006; Olovsson, 2009). The implications of assuming childcare to have the same degree of substitutability as any other household production is as if to compare childcare activities to activities such as cooking and cleaning.

But there are some exceptions in the literature that distinguishes between childcare activities and other activities that are produced in the household (Aguilar & Hurst, 2007). The reasoning behind this, is that childcare activities do not have the same degree of substitutability as other

household production. One reason why childcare should be distinguished from other household production can be found in terms of the utility generated. Parents rank time spent on different childcare activities as being among the most enjoyable activities (Hallberg & Klevmarken 2003). Parents also report childcare being more enjoyable than activities typically associated with household production (Robinson & Godbey 1999). Therefore it might be appropriate to examine if patterns of household work and leisure are similar to childcare.

– THEORETICAL FRAMEWORK –

This section begins by presenting an economic model about time allocation. Thereafter, some important details about the economic model will be discussed. The section will end by presenting the theoretical foundations of the welfare state typology used in this study.

3.1 Allocation of time: An economic model

Let us consider a simple model which looks at utility derived from so called commodities produced by the households by combining inputs of time and market goods. Assume that the utility function looks like this:

$$U = U (X, C, L) \quad (1)$$

According to Eq (1) the utility an individual derives comes from commodities which have the character of household goods (X), quality of children (C) and leisure (L). The amount of household goods is determined by a production function based on the inputs of market goods bought on the market (g_x) and time input in order to produce household goods (t_x). The household good production function can be expressed as:

$$X = f (g_x, t_x) \quad (2)$$

In the same manner as for household goods, child quality is determined by a production function based on the inputs of market goods bought on the market (g_c), the mother's time with the child (t_m) and the father's time with the child (t_f). The child quality production function thus would have the following form:

$$C = f (g_c, t_{cm}, t_{cf}) \quad (3)$$

Furthermore, individual leisure is also expressed as a production function determined by inputs of market goods bought on the market (g_l) and time input devoted to leisure (t_l):

$$L = f (g_l, t_l) \quad (4)$$

As the equations above illustrate, when presenting the individual's utility derived from non-market activities, an important common denominator for all three commodities is that they all have time as a crucial input. Therefore the allocation of time to each commodity illustrates the value and utility that the individual receives from that production.

The utility is maximized subject to the individual's income and time constraint, thus determining the pattern of the individual's time allocation between t_x , t_c , t_l and time allocated to market work (in order to be able to buy "inputs" g_x , g_c and g_l) (Becker 1991;23).

3.1.1 Utility from children

As the focus of the study is the effect of parental education on time spent with children, the utility derived from having children has to be examined closely. The utility derived from having children and spending time with them can have three sources:

- i. Having well-cared children may make it more enjoyable to spend time with them and thereby increases the individuals' (parents') utility.³
- ii. It can be argued that the parents are altruistic towards their children and therefore spending time (and investing in the child's human capital for their future benefit) is an altruistic act which increases the parents' utility.
- iii. Or spending time with children is seen as a pure rational decision. Because when the human capital of the children increases, their future potential earnings also increase. This can be a source of support for parents later on in life.

3.1.2 The degree of substitutability

In order to make a distinction between the three different commodities in the model as depicted in Eq. (1) (which all have time as a crucial input), one can look at how the degree of substitutability between time and expenditure on market goods varies between them⁴. Let us take the example of household goods and leisure goods.

³ This kind of reasoning is usually referred to as process benefits, which implies that an activity yields well-being independent of its outcome.

⁴ Expenditure is referred to as: goods and/or services that can be bought in order to substitute time.

Leisure and childcare (to some extent) tend to have less substitutability between time and expenditure than household goods. Socializing (with one's family or friends) is a typical activity that is considered to be leisure. But the degree of substitutability is non-existent. No one can pay somebody else to socialize instead of oneself and expect to receive the same experience (and therefore receive the same utility). On the other hand, when it comes to *household goods*, the degree of substitutability between time and expenditure is high. If one really dislikes performing household chores, there is a possibility to pay someone else to do the chores instead without decreasing one's utility. That is to substitute expenditure (e.g. in the form of a butler) for time.

3.1.3 The opportunity cost of time

Opportunity cost is a central analytical concept in economics especially when it comes to time. How the wage rate (the opportunity cost of time) affects an individual's time allocation is important to illustrate. Whenever there is an increase in the wage rate one can expect that there is a substitution effect and an income effect.

The *income effect* is quite straightforward. If the wage rate increases, the demand for all non-inferior commodities would increase. The income effect would be especially large for "...[*non-inferior commodities*] where the elasticity of demand for the commodity with respect to additional income is relatively high" (Guryan et al 2008:32). An increase in the wage rate would lead to two kinds of *substitution effects*. Firstly, substitution would take place between different commodities, due to the change of relative prices of the commodities. Secondly, substitution when it comes to the production of commodities. Since the wage rate has been increased, inputs of market goods have become relatively cheaper than inputs of time. Therefore more market inputs would be used in the production of the commodity. (Cigno, 1991;16-20)

3.1.4 Expanding the model

One can expand the model to incorporate both taste and productivity of time.

- 1) Consider an individual that has a low opportunity cost when time is concerned. That individual would *ceteris paribus* tend to consume more leisure compared to an individual who has a high opportunity cost of time. This is due to the fact that there is not a high enough incentive (i.e. wage) to alter the individual's time allocation from leisure to market work.

- 2) Following the human capital theory, the productivity is higher for individuals with high opportunity costs (i.e. wage rates). For the more productive individual the marginal return to time inputs for each commodity is higher (i.e. less time is needed to produce the same quality of units compared with a less productive individual). But at the same time the opportunity cost for producing time intensive commodities is higher. Therefore the higher productivity has an ambiguous effect on how time is spent.

3.2 Welfare state typologies

As stated in the introduction, one of this paper's contributions is to analyze cross-country variation when the effect of parental education on time spent with children is concerned. Therefore a theoretical framework that analyzes differences between different types of welfare states will be presented.

Esping-Andersen (1990) identifies three different welfare state types in his analysis of welfare states and social policy: *liberal*, *conservative*⁵ and *social democratic* welfare states. The liberal welfare state is characterized by the *logic of the market*: the belief that free market capitalism is the best and efficient way to resolve problems and redistribute wealth. The consequence of the liberal welfare state is that the state should not intervene when it comes to providing benefits and regulating social policies. In the conservative welfare states, benefits and social policies are differentiated by class and status. Benefits that are being provided by the state have the consequence to maintain the status quo when it comes to income distribution, class status and institutions (such as the state, church and the family). The social democratic welfare regime is characterized by universal benefits and services. The consequence of the policies is that the state spends relatively a lot on social schemes compared with other types of welfare states.

This welfare state typology suggested by Esping-Andersen has been criticized for neglecting the consequences of different welfare states on gender issues. The criticism has been that this typology does not address the question of why there are large gender differences, cannot predict women's employment rate in different countries and has neglected the role of social services, which is of relevance for gender inequality (Sainsbury, 1996; Korpi, 2000). As Sainsbury (1996:12-32) points out this categorization of welfare states can lead to high class inequality but low gender inequality, or vice versa.

⁵ Sometimes in the literature the conservative welfare state is referred to as corporatist.

Although there have been many legitimate criticisms of Esping-Andersen’s welfare state categorization, his typology has influenced the research (Pankratz, 2009). Korpi (2000) has incorporated the gender inequality aspect in a different welfare state typology. He distinguishes three different welfare states on the bases of gender and class: *market oriented support*, *general family support* and *dual earner support*. These three institutional models are supposed to capture “...central aspects of gender-relevant public policies, indicating differences in goal with respect to gender relations as well as the strength of policies” (Korpi, 2000:144).

The **dual earner support** are policies aiming to actively increase women’s labour force participation and enable the parents (both mother and father) to combine parenthood with paid work. The **general family support** are family policies aiming to be neutral but having the consequence of preserving the nuclear family and the traditional gender division of labour in the family as well as in society. The **market oriented support** is the lack of policies. The idea is that instead of the state (government) developing family policies, it should leave it to markets and families to create their own solutions. (Korpi, 2000)

Table 2

	Class Stratification in Labour market policies (Esping-Andersen (1990))	Gender Stratification in Family policies (Korpi (2000))
France	Conservative	General Family Support
United States	Liberal	Market Oriented Support

Source: Pankratz (2009)

Table 2 presents how the two countries in this study are ordered in the two typologies. France is ordered as being a conservative state and having general family policies, due to how the pension system, unemployment policies, sickness policies and childcare policies are formatted (Pankratz, 2009;496-9). In his analysis Pankratz (2009) found that France exhibited by far the most evidence of conservative stratification.

In Table 2 US is ordered as being a liberal state, due to the belief that free market capitalism is the best and efficient way to resolve problems and redistribute wealth. Furthermore it is also considered to have market oriented support, due to the limited availability of public daycares, cash child allowances, tax benefits and wage replacement. (Korpi, 2000)

- DATA & ESTIMATION METHOD -

This section begins by presenting the data used in this study. Thereafter the education variable, childcare variables and control variables will be discussed. Also discussed, is the method and model-specification used in this study.

4.1 Data

The data used in this study is from the MTUS, which is a cross-nationally harmonized set of time use surveys composed of identically recoded variables. The national time diary survey for France is conducted by INSEE (the French national institute for statistics and economic studies) and for the United States by the US Bureau of Labor Statistics.

Table 3 contains technical information on the time use surveys; such as survey year, age of the youngest respondent, the sample size, response rate and the time interval. The response rate of time surveys is 88 percent for France and 57 percent for US, which in the US case could be considered as low. However, the response rate is quite good considering the work-load that is required of the respondent in terms of the data collection process. In light of this France can be assumed to have an exceptionally good response rate.

Table 3

	Year	Age	Sample Size	Response rate	Time Interval
France	1998/9	15 +	14,631	88.3 %	10 min
US	2003-4	12 +	33,077	57 %	Free ⁶

⁶ *Free* implies that the individual can fill in the number of minutes.

The time diary for France has a sample size of 14,611 and that for the US has a little more than the double, namely 33,077. The survey year also differs between the two countries, but the difference is only 5 years and should not have too much effect on the results. The age range of the survey included individuals from the age of 15 and 12 years (France respectively US), but only parents between 21 and 55 are included in the samples that is used in this study. Since this study analyzes working parents, all non-working parents were excluded. Furthermore, only individuals with a complete diary, meaning having a total of 1,440 minutes of activity per day, were selected. These restrictions left a total of 3,776 parents from France and 10,289 from the US.

As discussed in Section 1, one disadvantage with the MTUS data is the fact that it lacks information on the secondary activities of the respondent. For most part of the day individuals perform several tasks at the same time.⁷ If the secondary activity is not reported in the survey, important information can be left out. This is particularly true for childcare. A lot of childcare consists of supervision but not active involvement from the parents. This fact might cause the result to be biased, especially if some groups of parents do not report time spent on childcare as the primary activity. If this is the case, it is important to state that some groups of parents tend to report time spent on childcare as a primary activity despite the option of also filling in the secondary activity. Because reporting childcare as a primary activity can be argued to involve more active interaction (between parents and children) than reporting the childcare as secondary activity.

4.1.1 Education variable

The variable education is the main focus of the study and is divided into four categories:

- i. Under 12 years
- ii. 12 years (i.e. completed upper secondary school or equivalent)
- iii. 13-15 years (i.e. education beyond upper secondary school)
- iv. Above 16 years (i.e. have completed a university degree or above)

Creating the variable from the original surveys was quite challenging, especially for France since there was 8 different categories which reflected the French school system. It should be noted that

⁷ For example, most people do not report listening to radio as their primary activity because for the most part they listen to radio while carrying out other activities. Another example is the fact that when small children nap parents must stay with them. But they do not necessarily report this as the primary activity even if it might be the case.

the important factor behind the second category (12 years of schooling) is not the fact that the individual has gone through 12 years in school. Rather that the individual actually has completed the upper secondary school, or equivalent.

Comparing the distribution over the different education levels between the two countries, one can see from Table 4 that there are quite large differences. This can reflect the fact that college education in the US is much more common for these cohorts compared to France. But it can be argued that since the sample size is large, both for the total group included and for the different subgroups of education, the results would be robust.

Table 4

Education	France		US	
	Frequency	Percent	Frequency	Percent
Under 12 years	643	17	809	8
12 years	1,632	43	2,730	27
13-15 years	1,041	28	1,988	19
Above 16 years	460	12	4,762	46

4.1.2 Childcare activities

The process of dividing the sample and creating different variables for this study follows the theory and past research. They provided a good guide for how to create the variables and divide the sample. Table 5 presents some descriptive data for the selected subgroups.

The samples are divided according to gender due to the fact that the theory assumes that women are the main caretakers. The result presented in Table 5 reflects this fact; women allocate more time to childcare than men. Having established this fact, past research indicates (see section 2) that there is not only a difference in the total time allocated to childcare between men and women but there is also a difference in different childcare activities. In order to find out if this is also reflected in the French and US samples, three different childcare activities have been created: *basic childcare*, *educational childcare* and *recreational childcare*.⁸

⁸ Basic childcare is usually referred in the literature as inflexible childcare while *recreational* and *educational* childcare is called flexible. It is due to the fact that activities such as feeding and dressing a child (*basic* childcare) cannot be carried out any time during the day but is more or less predetermined. This is not the case with recreational and educational childcare.

Table 5

		Working mothers	Working Fathers	In couple Working Mothers	In couple Working Fathers	Single Working Mothers	Single Working Fathers	Working mothers with child < 4years	Working fathers with child < 4years
Number of obs	France	1,697	2,079	1,478	1,994	219	85	498	732
	US	5,396	4,893	3,744	4,428	1,652	465	1,870	2,085
Total childcare	France	59.9	22.5	60.6	23.0	31.8	12.8	120.3	42.0
	US	81.3	52.4	89.3	54.7	63.2	30.0	136.6	79.2
Basic childcare	France	41.1	12.6	44.2	12.8	19.3	8.6	87.4	26.0
	US	27.8	15.8	31.5	17.1	19.2	3.2	76.5	35.7
Educational Childcare	France	8.2	7.0	8.7	7.2	5.6	1.3	31.3	13.8
	US	21.1	20.1	23.9	21.2	14.7	9.1	40.5	34.4
Recreational childcare	France	10.6	2.9	7.7	3	6.9	2.9	1.6	2.2
	US	32.4	16.5	33.9	16.4	29.3	17.7	19.6	9.1

Note: This table presents descriptive statistics for different groups of parents and different childcare activities. All values expect for the first two rows are measured in minutes per day and are averages.

The time spent on the basic needs of children is defined as *basic childcare* and includes activities such as: feeding, bathing, changing diapers, helping children dress, supervision, providing medical care, and similar activities. *Educational childcare* involves activities such as; helping with homework, teaching or showing how to do something, parent/teacher meetings, and similar activities. *Recreational childcare* is time spent on activities such as; reading to or reading with children, conversation with children, playing (outdoor or inside) with children, attending a child's different sporting activities, and similar activities.⁹

Earlier studies have indicated that men's time compared to that of women is higher in recreational and educational childcare. The descriptive statistics in Table 5 reflects this; working men in France spent only 22.5 minutes per day on basic childcare (inflexible) compared to 59.9 minutes per day for working women. But working men in France allocate 7 minutes per day in recreational childcare (flexible) compared to 8.2 minutes for French working women. The same pattern is evident for US.

4.1.3 Control variables

Past research has pointed out that family structure has an effect on the time spent with children (Sayer et al, 2004). Single parents allocate less time to childcare and this is also implied by the Beckerian framework where couples usually specialize (in form of division of labour) (Becker, 1991;31-55) and thereby have greater possibility to allocate more time to total childcare. Table 5 confirms this phenomenon for France and the US; single individuals spend less time in childcare activities than in-couple individuals. But looking at the subcategory educational childcare in table 5, one finds that regardless of family structure, parents allocate almost on average the same amount of time to educational childcare. Single working mothers in the US spend 29.2 minutes per day on educational childcare while in couple working mothers spend 33.8 minutes per day. The reason can be that educational childcare increases the children's human capital more than other childcare activities and therefore has high priority amongst parents.

The age of the parent should also have an influence on the time spent on childcare. For example, younger parents might have more energy to devote to childcare activities. Therefore variables such as age and age square will be created to capture this.

⁹ For a more detailed description of childcare activities, see MTUS coding procedures World 5.8 & World 6.0.

In his study, Price (2008) analyses the parent-child quality time and reaches the conclusion that the amount of time that parents spend with children decreases as the children get older. This phenomenon is also evident in the descriptive statistics shown in Table 5. Comparing the columns working mothers/fathers with the last column (Working mother / fathers with child < 4 years) it is evident that parents with small children allocate much more time to childcare activities, excluding educational childcare.

Analyzing the effects of parental education on time spent with children and whether this changes depending on which welfare regime the parents live in, is one of the aims of this study. Therefore it is interesting to see if welfare regimes really affect parents' time with their children. Comparing the time French working men or women spent on total childcare with that spent by US parents, one can see that the latter spent much more time on childcare. This pattern is especially evident for educational childcare. But when it comes to basic childcare activities this pattern is not as strong. Thereby it can be argued that Table 5 indicates the relevance of the welfare regime theory. This is so because in conservative welfare states (such as France) the welfare system is more established, including the kindergarten/pre-school/school system, while in liberal welfare states the general welfare systems such as kindergarten are not as extensive and more parents take care of and educate their young children at home.

4.2 Method and model-specification

This study is both a theoretical and empirical one in the sense that economic theory (about time allocation) is used to derive hypotheses about the expected relations between different variables, relations that are then analyzed econometrically. In both cases the focus is on the effect of parental education level on time spent on childcare. Thus in the econometric analyses ordinary least squares (OLS) regressions are estimated with focus on the different educational gradients.

Based on the reasoning in past research, theory and descriptive analysis; the following model-specification will be used:

$$t_i = \alpha_i + \beta_i X + \delta_i Z + \varepsilon_i \quad (5)$$

Where t_i is the dependent variable (total childcare), β are the coefficients for the educational variables, X is the vector for the three education dummy variables, δ are the coefficients for the control variables and Z is a set of control variables. The control variables are; age, age squared, number of children dummies, civic status dummy, age of the youngest child dummies, living in urban or rural area dummies and sector of employment dummies. For a more detailed description of the control variables see appendix. The same equation as (5) has also been estimated for household work, leisure, basic childcare, educational childcare and recreational childcare.

The focus of the study is how the educational gradients (i.e. the β of Eq (5)) varies depending on the dependent variable. Therefore, we will only analyze them in section 5. The complete estimation outputs of Eq (5) with different dependent variables can be found in the appendix.

- RESULTS -

The first part of this section presents the result for the education gradient for total childcare. The education gradient for different types of childcare activities will be presented for working men and women. Thereafter, advancing to the education gradient for different non-market activities.

5.1 Patterns for total childcare; *working mother's*

Table 5 presented descriptive statistics about minutes per day spent in childcare by various subgroups. It would be interesting to see how time spent in childcare would fluctuate with different education levels. Parents with different education levels spend noticeably different amounts of time in childcare. Table 6 shows that working women in France spend an average of 41 minutes per day in total childcare if having less than 12 years schooling compared to 80 minutes for working women with more than 16 years of schooling. The same pattern is evident for working women in US with an average of 53 minutes for the less educated group respectively 98 minutes for the higher educated group.

Table 6
Minutes per day spent in total childcare for working women by education level

<i>Years of schooling</i>	<i>Fraction in couple</i>	<i>Number of children</i>	<i>Minutes per day in total childcare</i>	
			<i>Not conditional</i>	<i>Conditional</i>
Panel A: France				
<12	0.84	1.8	41.47	---
12	0.87	1.7	55.12	0.04
13-15	0.87	1.7	60.10	3.23
≥16	0.90	1.7	80.43	12.34*
Panel B: US				
<12	0.57	2.1	53.47	---
12	0.64	1.8	66.29	23.34***
13-15	0.63	1.8	71.95	27.90***
≥16	0.77	1.8	97.75	48.40***

Note: This table presents means of fraction in couple, number of children non-conditional and conditional coefficients by education level for France and the US. All time use measures are presented in minutes per day. Conditional differences report the coefficient from an OLS regression with robust errors with the control variables presented in section 4.1.3. *, **, *** significant at 10%, 5% & 1%.

Table 6 shows a clear relationship between working mothers’ educational level and time allocated to childcare. But in order to make sure that this is not driven by other variables, OLS regressions have been estimated with the following control variables: mother’s age, age of the youngest child, number of children, civic status, living in urban or rural area and sector of employment. The conditional column in Table 6 reports the OLS regressions conditioned on the control variables. The reference category for the education dummies is working women with less than 12 years of education.¹⁰ For working women in the US the education gradient is even steeper when the regression with control variables is estimated. Working US women with 16 or more years of schooling allocate 48 minutes more to childcare than the reference group. The same positive education gradient is evident for French working women but with substantially lower values: 12 minutes. However, it should be noted that the pattern for French women’s education gradient for childcare is not as pronounced when compared to that of the US sample.

There is also a clear difference between the highest and lowest educational group when fertility is concerned. On average, higher educated women in the US have fewer children (1.8 children per woman) than less educated working women (2.1). The same pattern (but less pronounced) is also found for France. This result is quite surprising because as the number of children decreases with higher educational level, it is still the case that more time is allocated to total childcare.

Table 7

	France		US	
	Coeff.	P-value	Coeff.	P-value
Civic status	9.4774 (3.9386)	0.0162	9.4183 (2.7744)	0.0007

The results in Table 6 also indicate that low educated working women are more likely to be single parents. The fraction of working women in the US with lower education level who are in couple is 57 percent while the fraction for higher educated working women is 77 percent. The same patter between educational levels is observed for French working women but the fractions are much higher compared to US: 84 percent and 90 percent, respectively. Table 7 presents the result for how the dummy variable civic status (i.e. in-couple) affect the time allocated to total childcare. On average, both French and US working mothers allocate 9 minutes more per day to childcare activities than single mothers.

¹⁰ That is why no value has been reported for this group. Furthermore, since education<12 is the reference category, the results for the other levels of education should be interpreted as additional minutes spent on childcare relative to this group.

5.2 Patterns for Total childcare; *working father's*

Table 8 shows that working men in France spend an average of 12 minutes per day in total childcare if having less than 12 years schooling compared to 35 minutes for working men with more than 16 years of schooling. The same pattern is evident for working men in US with an average of 28 minutes for the less educated group respectively 65 minutes for the higher educated group.

Table 8
Minutes per day spent in total childcare for working men by education level

<i>Years of schooling</i>	<i>Fraction in couple</i>	<i>Number of children</i>	<i>Minutes per day in total childcare</i>	
			<i>Not conditional</i>	<i>Conditional</i>
Panel A: France				
<12	0.96	1.9	12.18	---
12	0.95	1.8	21.17	6.98***
13-15	0.95	1.7	26.75	10.63***
≥16	0.98	1.8	35.33	17.49***
Panel B: US				
<12	0.88	2.1	28.31	---
12	0.88	1.9	41.59	16.97***
13-15	0.87	1.9	47.96	22.77***
≥16	0.94	1.9	65.28	36.09***

Note: This table presents means of fraction in couple, number of children non-conditional and conditional coefficients by education level for France and the US. All time use measures are presented in minutes per day. Conditional differences report the coefficient from an OLS regression with robust errors with the control variables presented in section 4.1.3. *, **, *** significant at 10%, 5% & 1%.

Table 8 shows that the relationship between men's educational level and time allocated to childcare is not driven by other variables. The conditional differences, reported in the last column in Table 8, increases with the educational level. Working French men with 16 or more years of schooling allocate 17 minutes more to childcare than the reference group. The same positive education gradient is evident for working US men: 36 minutes.

The result presented in Table 8 is somewhat different to that of Table 6 (working women). The difference in fraction of working US men who are in couple is not as large compare to that of working US women. Furthermore, the result that the number of children decreases with higher education level is less pronounced.

5.3 Patterns for different childcare activities

In order to enrich the analysis, OLS regressions have been estimated for three different childcare activities: basic, educational and recreational childcare. Table 9 presents the conditional differences for the different childcare activities for working men and women across education level for France and the US.¹¹ The results in Table 9 suggest several interesting features between working men and women and also between liberal and conservative welfare states.

Table 9:
Conditional differences in minutes/day spent in different childcare activities across education levels

	<i>Women</i>			<i>Men</i>		
<i>Years of schooling</i>	<i>Basic childcare</i>	<i>Educational childcare</i>	<i>Recreational childcare</i>	<i>Basic childcare</i>	<i>Educational childcare</i>	<i>Recreational childcare</i>
Panel A: France (relative to education < 12)						
12	-3.03	0.55	2.52*	4.07***	1.41	1.51
13-15	-1.77	0.46	4.53***	6.74***	1.16	2.73*
≥16	5.66	-0.63	7.31***	12.10***	1.80	3.59*
Panel B: US (relative to education < 12)						
12	9.55***	5.98**	7.80***	8.40***	3.23	5.35**
13-15	11.18***	7.79***	8.94***	9.32***	7.45***	6.01**
≥16	18.38***	13.38***	16.64***	13.60***	9.70***	12.79***

Note: This table presents conditional differences by education level for France and the US. All time use measures are presented in minutes per day. Conditional differences report the coefficient from an OLS regression with robust errors with the control variables presented in section 4.1.3. *, **, *** significant at 10%, 5% & 1%.

When basic childcare is concerned, there is a clear increasing education gradient for working US men and women and also for French working men. But the same pattern is not as evident for French women. For men and women in the US, the gradient for educational childcare is increasing as the education level increases. On average, working US women with 16 years or more of schooling allocate 13 minutes more per day to educational childcare than those with less than 12 years of schooling. But the same pattern is not seen for either French men or women. The results in Table 9 show that the educational level of French parents does not affect the allocation of time to educational childcare.

The increasing education gradient for recreational childcare presented in Table 9 is evident for both French and US men and women. But there is a difference in the magnitude of the

¹¹ It should be noted that adding the estimates for these three groups corresponds with the estimates for total childcare.

coefficients between countries. Working US women with 16 or more years of schooling allocate on average 17 minutes more per day to recreational childcare than the reference group. The corresponding value for French women is 7 minutes.

5.4 Patterns for different non-market activities

Table 10 reports the estimated differences for time spent in total childcare, total household work and leisure for men and women across education levels and between different welfare state regimes (France and US). The same approach (control variables etc.) is used as for the conditional estimates described in Table 6.

The interesting question here is whether childcare activity follows similar patterns as other home production activities and whether the result is similar across different welfare regimes? But first, let us compare the results for leisure and household work.

Table 10
Conditional differences in minutes/day spent in different nonmarket activities across education levels

<i>Years of schooling</i>	<i>Women</i>			<i>Men</i>		
	<i>Total childcare</i>	<i>Total household work</i>	<i>Leisure</i>	<i>Total childcare</i>	<i>Total household work</i>	<i>Leisure</i>
Panel A: France (relative to education < 12)						
12	0.04	-10.38	-5.74	6.98***	8.32	5.45
13-15	3.23	-33.64***	-1.53	10.63***	15.46**	-3.78
≥16	12.34*	-85.08***	-11.22	17.49***	-3.87	-39.71***
Panel B: US (relative to education < 12)						
12	23.34***	-19.22**	6.81	16.97***	-2.85	-21.12*
13-15	27.90***	-10.96	-3.79	22.77***	11.32	-24.36**
≥16	48.40***	-24.83***	-8.17	36.09***	-8.52	-46.77***

Note: This table presents conditional differences by education level for France and the US. All time use measures are presented in minutes per day. Conditional differences report the coefficient from an OLS regression with robust errors with the control variables presented in section 4.1.3. *, **, *** significant at 10%, 5% & 1%.

Results presented in Table 9 indicate that as the opportunity cost increases (i.e. education level), for French and US women, there is a tendency for less time to be allocated toward household work and leisure. Furthermore, the educational gradient for household work is steeper than the educational gradient for leisure. For example, French women with 16 or more years of schooling

allocate 85 minutes per day less to household work than those with less than 12 years of schooling. The same group (French women with 16 or more years of schooling), have almost 12 minutes less leisure activities than the reference category. Although, the pattern in leisure activity is not as pronounced as in household work. Table 10 shows that the same results, as for French working women, is valid for working US women but with substantially lower values.

Table 10 indicates that French and US men allocate less time to leisure as the opportunity cost increases. This pattern is especially strong for men in the US and less strong for men in France. The results in Table 10 seem to be somewhat complicated when household work is concerned. For example, US men with 16 years or more education tend to have 9 minutes less leisure than men with less than 12 years of schooling. In other words, increased opportunity cost seems to decrease household work. But, US men with 13 to 15 years of schooling tend to allocate more time to leisure activities than the reference category. In other words, household work increases for those with 13 to 15 years of schooling. The same pattern is observed for French men.

Does childcare follow similar patterns as household work or leisure? The results presented in Table 10 indicate that the education gradient for childcare is positive for both French and US working men and women. Furthermore, as the education level increases the gradient gets steeper in terms of total childcare. Taking working men in US as an example; the education gradient increases stepwise by 17, 6 and 13 minutes per day for the three different education levels.

Thereby the results show that childcare does not follow the same patterns as household work and leisure for French and US women. The same result, but not as pronounced, can be seen for French and US men. However it is important to notice that the difference pattern between household work and childcare is not as distinct as that between leisure and childcare (for both French and US men).

- DISCUSSION -

This section discusses the results obtained in the previous section. The results are interpreted with help of the theoretical framework.

6.1 Childcare and Parental education

Analyzing the effects of parental educational level on total time spent with children is one of the aims of this study. The result presented in section 5.1 and 5.2 associates parental educational level with more time spent on total childcare. This result is very strong for men and women in US and men in France, and can also be seen for women in France. This positive education gradient for childcare is seen despite the fact that opportunity cost increases with the educational level. Therefore the findings suggest that parents highly value children's human capital development and are therefore allocating more time to childcare activities. The reason behind why higher educated parents spend more time with their children (despite their high opportunity cost) can be explained by the utility they receive; **i.)** it may be more enjoyable to spend time with well-cared children, **ii.)** it may depend on motives or **iii.)** pure rational motive.

Section 5.1 and 5.2 also reported the result that the increased educational gradient for total childcare is found despite the fact that the number of children decreases with higher educational level, especially for women. Although surprising, this fact corresponds with the findings of Craig (2006b) and Guryan et al (2008). This only strengthens the findings that parental educational level effects the time allocated to childcare activities.

6.2 Household work vs. Leisure

One interesting aspect of the result presented in section 5.4, which also is one of the aims of this study, is whether childcare activity follows similar patterns as household work and leisure. But first, let us discuss the results for leisure and household work.

Given the discussion about the theoretical framework in section 3.1, it can be argued that (*ceteris paribus*) individuals with higher opportunity costs (i.e. education level) would reduce their time in household work and leisure due to the substitutability between expenditure and time. Furthermore, the relationship between household work and education level (which is highly correlated with earnings) is expected to be more negative than that between leisure and education level. Results presented in Table 10 for US and French working women are in line with these predictions from the theory. The education gradient for household work is steeper than the education gradient for leisure for both US and French women. Furthermore, as the opportunity cost increases, there is a tendency for less time to be allocated toward household work and leisure for women. But this result is not consistent for men.

The fact that the different pattern between household work and childcare is not as distinct as that between leisure and childcare (for both French and US men) is surprising. But this may have an explanation. The highest education group (16 or more years of schooling) can be defined as careerists and they have a higher opportunity cost compared to the second highest education group (13 to 15 years of schooling). Thereby, having a negative educational gradient for household work compared to the reference category. However, the group 13-15 has also quite high educational level too. This high educational level can have contributed to their preferences and thereby promoting them to be more equal in sharing the household work. Thereby, contributing to their positive educational gradient for household work compared to the reference category. This finding (more education, endorse gender equality and thereby more time in housework by men) corresponds to the findings by Coltrane (2000).

The result for leisure implies (*ceteris paribus*) that individuals with lower opportunity cost tend to allocate more time towards leisure than others; meaning that high educated individuals spend less time on leisure. This corresponds with the findings of Aguiar & Hurst (2007), where they found that less-educated adults increase their consumption of leisure. The result for the education gradient for household work implies either: **i.)** the relative productivity for household work differs by education level: meaning high educated individuals are more productive in household work; or **ii.)** higher educated individuals tend to substitute more expenditure for time in household production; meaning that they tend to utilize the market instead of producing it themselves.

6.3 Childcare vs. household work & leisure

Does childcare follow similar patterns as household work or leisure? The results presented in Table 10 indicate that the education gradient is positive in terms of total childcare for both French and US working men and women. Furthermore, as the education level increases the gradient gets steeper in terms of total childcare. Taking working men in US as an example, the education gradient increases stepwise by 17, 6 and 13 minutes per day for the three different education levels. The result for childcare differs from those for household work and leisure. Three likely explanations are:

- 1.) The degree of substitutability between inputs of expenditure and time for childcare is quite small. According to table 10, this result also holds between welfare regimes. In other words, market based solutions for childcare are poor substitutes for parental time, according to the samples. The higher the level of education the parents have, the more likely they are to think that they themselves are better substitutes to spending time with their child compared to for example au pairs.
- 2.) In view of the result, one could argue that the return to investment in children's human capital from parents with higher educational level is higher, due to higher productivity of high educated parents in production of child quality. Therefore, parents with high education level allocate more time to childcare. However, productivity has an ambiguous effect on time use according to the theoretical framework. Higher educated parents, who are more productive, need less time to obtain a certain child quality and therefore could be expected to allocate less time to childcare than less productive parents. But the results presented in table 10 do not support this last argument.
- 3.) The investment in children might be considered by the higher educated parents as being more of a luxury good. As the education level increases (i.e. increased potential earnings) parents receive a higher utility from allocating more time towards childcare than towards household work or leisure. Hallberg & Klevmarken (2003) results, from using process benefits, indicate that parents usually receive higher utility from childcare compared to from other non-market activities.

6.4 Welfare state differences

Does living in different welfare states influence the time allocated toward childcare? Bearing in mind that we only are analyzing two countries (France and US), this study must be considered to be exploratory when it comes to the effect of welfare state regimes. However, there are important differences between France and the US, which might be due to differences in welfare state regime.

The educational gradient for total childcare for working US men and women is much steeper when compared to that for working French men and women. This indicates (*ceteris paribus*) that parents in US spend more time on total childcare than their counterparts in France. Dividing total childcare into three parts, illustrates for the French samples that parents' education level does not change the time allocated towards educational childcare. However, there exists a clear educational gradient for educational childcare for parents in the US.

This might be due to welfare state differences. In liberal welfare states, general welfare systems such as kindergarten are not as extensive compared to in conservative welfare states. Parents in liberal welfare states are more inclined to find individual solutions. For example, estimates show that between 1.2 million to 1.7 million American children are schooled at home (McDowell & Ray 2000). Thereby it can be argued that the difference in the educational gradient for educational childcare between France and US might be due to welfare state regimes.

– FINAL COMMENTS –

This study has found a positive educational gradient for childcare for working mothers and fathers in France and US, thereby associating parental educational level with more time spent on childcare. Furthermore, childcare activity does not seem to have similar patterns as household work or leisure. Therefore it could be appropriate to distinguish childcare from other household production. There seems to be a difference in how time is allocated to childcare in different welfare states, but more research is needed in order to more definitely establish such differences.

Time-use data can help to shed some light on the intergenerational transmission literature, where the discussion about the effect of nature versus nurture dominates (Anger etc, 2010). In this study, we have found that high educated parents spend more time with children. This could imply that nurture (investment by the parents) plays a significant roll on intergenerational transmissions. But this study has not touched upon the effect of nature (abilities inherited by genes). Therefore, how large the effect of nature versus nurture is, analyzed with time-use data, can be a topic for future research.

– APPENDIX –

Descriptive statistics of the control variables

Variable	Dummies	France		US	
		Frequency	Percent	Frequency	Percent
Number of Children age<18	1 (<i>ref. variable</i>)	1,721	45.58	4,189	40.71
	2	1,457	38.59	4,083	39.68
	3	486	12.87	1,491	14.49
	4	79	2.09	403	3.92
	5	26	0.69	83	0.81
	6	5	0.13	23	0.22
	7	1	0.03	12	0.12
	8	0	0	4	0.04
	9	0	0	1	0.01
	10	1	0.03	0	0
Civic status	Couple (<i>ref. variable</i>)	3,472	91.95	8,172	79.42
	Not in couple	304	8.05	2,117	20.58
Age of youngest child	Age 0-4 (<i>ref. variable</i>)	1,230	32.57	3,955	38.44
	Age 5-12	1,610	42.64	4,486	43.6
	Age 13-17	936	24.79	1,848	17.96
Sector of employment	Missing value (<i>ref. variable</i>)	10	0.26	1,266	12.3
	Public sector	955	25.29	1,616	15.71
	Private sector	2,811	74.44	7,407	71.99
Urban/Rural household	Missing value (<i>ref. variable</i>)	0	0	18	0.17
	Urban	1,113	29.48	8,298	80.65
	Rural	2,663	70.52	1,973	19.18

Total Childcare

Variable	Working Mothers			Working Fathers		
	Coefficient	Std, Error	P-value	Coefficient	Std, Error	P-value
Panel A: US						
C	4.645009	32.00016	0.8846	-92.32071	26.13580	0.0004
AGE	4.947572	1.529383	0.0012	5.629780	1.332453	0.0000
AGE2	-0.071215	0.019655	0.0003	-0.072708	0.016822	0.0000
NRC2	12.14545	2.980633	0.0000	9.558965	2.746634	0.0005
NRC3	15.02116	4.630301	0.0012	9.597546	3.988699	0.0162
NRC4	26.77665	8.720210	0.0021	5.323644	6.742751	0.4298
NRC5	5.912924	16.25859	0.7161	7.241289	14.43128	0.6158
NRC6	2.287037	28.48038	0.9360	30.67966	39.06842	0.4323
NRC7	-6.380005	47.47862	0.8931	13.65949	37.63362	0.7167
NRC8	---	---	---	26.26997	49.12013	0.5928
NRC9	---	---	---	99.25942	3.619794	0.0000
CIVIC 1	9.418346	2.774481	0.0007	2.343414	3.390849	0.4895
AGEYCHILD2	-68.54545	3.671176	0.0000	-38.51342	3.113485	0.0000
AGEYCHILD3	-100.9673	4.109730	0.0000	-59.77586	3.555346	0.0000
URB2	19.83030	15.97146	0.2144	37.72064	9.967400	0.0002
URB3	10.61663	16.10471	0.5098	35.53188	10.27761	0.0006
SEC3	-25.51332	5.352291	0.0000	-9.782276	4.848016	0.0437
SEC4	3.770456	3.297373	0.2529	4.746370	3.855194	0.2183
EDU2	23.33536	4.957045	0.0000	16.96895	3.926303	0.0000
EDU3	27.90457	5.100881	0.0000	22.76947	4.451257	0.0000
EDU4	48.39842	4.879945	0.0000	36.08552	3.862082	0.0000
R-squared		0.208193			0.106743	
Ad. R-squared		0.205542			0.103076	
F-statistic		78.54420			29.10979	
Prob(F-stat.)		0.000000			0.000000	
Observations		5396			4893	
Panel A: France						
C	126.9164	42.51603	0.0029	-28.19023	21.08327	0.1813
AGE	-0.053055	1.991423	0.9787	2.741563	1.215572	0.0242
AGE2	-0.002503	0.025158	0.9208	-0.037200	0.015098	0.0138
NRC2	8.585894	3.918454	0.0286	0.629374	2.414411	0.7944
NRC3	12.47482	5.949459	0.0362	-3.378940	2.987790	0.2582
NRC4	-12.87931	12.89414	0.3180	-2.738539	6.262757	0.6620
NRC5	-2.737233	21.48785	0.8987	-3.872030	17.98777	0.8296
NRC6	66.26916	6.040905	0.0000	-27.90200	4.263121	0.0000
NRC7	-65.17099	6.434745	0.0000	---	---	---
NRC10	---	---	---	16.92289	4.277201	0.0001
CIVIC 1	9.477421	3.938606	0.0162	-2.931183	4.981614	0.5563
AGEYCHILD2	-74.86459	4.848252	0.0000	-25.28843	2.647193	0.0000
AGEYCHILD3	-102.8130	5.114079	0.0000	-34.70211	2.962718	0.0000
URB2	-2.945130	3.372076	0.3826	-3.942130	1.885211	0.0366
SEC2	-19.44060	23.65700	0.4113	22.49825	4.310875	0.0000
SEC3	-17.96568	23.52380	0.4451	15.94346	3.884904	0.0000
EDU2	0.043428	4.207235	0.9918	6.983326	2.108521	0.0009
EDU3	3.226901	4.250025	0.4478	10.63041	2.719404	0.0001
EDU4	12.34383	7.121776	0.0832	17.49363	3.611380	0.0000
R-squared		0.319891			0.133864	
Ad. R-squared		0.313005			0.126719	
F-statistic		46.45429			18.73723	
Prob(F-stat.)		0.000000			0.000000	
Observations		1697			2079	

Household work

Variable	Working Mothers			Working Fathers		
	Coefficient	Std, Error	P-value	Coefficient	Std, Error	P-value
Panel A: US						
C	48.72537	50.75839	0.3371	-153.5889	46.65574	0.0010
AGE	4.458342	2.089037	0.0329	8.612129	2.342803	0.0002
AGE2	-0.026551	0.028031	0.3436	-0.093723	0.030815	0.0024
NRC2	17.65602	4.287650	0.0000	-0.777902	4.890065	0.8736
NRC3	21.42077	6.097157	0.0004	6.747754	6.779616	0.3196
NRC4	26.70557	10.20515	0.0089	-12.22312	10.17255	0.2296
NRC5	24.73763	23.63282	0.2953	78.37567	36.76257	0.0331
NRC6	17.00242	39.32432	0.6655	-57.76332	23.82078	0.0153
NRC7	69.63813	75.09954	0.3538	5.324695	62.02274	0.9316
NRC8	---	---	---	17.50518	90.49393	0.8466
NRC9	---	---	---	-28.04529	5.893168	0.0000
CIVIC 1	28.37463	4.196805	0.0000	-16.06752	7.426558	0.0305
AGEYCHILD2	0.244583	4.663409	0.9582	5.102709	4.991696	0.3067
AGEYCHILD3	-4.499459	6.270593	0.4731	1.374381	7.297828	0.8506
URB2	-14.55184	35.51982	0.6821	69.75081	23.26331	0.0027
URB3	-4.104777	35.73462	0.9086	78.55126	23.74467	0.0009
SEC3	-4.168306	7.216533	0.5636	27.51329	7.922562	0.0005
SEC4	-7.764457	5.170045	0.1332	-0.569127	6.584744	0.9311
EDU2	-19.21843	8.600012	0.0255	-2.854414	7.891480	0.7176
EDU3	-10.95889	8.829223	0.2146	11.32195	8.526896	0.1843
EDU4	-24.83159	8.355886	0.0030	-8.520874	7.669196	0.2666
R-squared		0.036438			0.016997	
Ad. R-squared		0.033212			0.012962	
F-statistic		11.29639			4.212138	
Prob(F-stat.)		0.000000			0.000000	
Observations		5396			4893	
Panel A: France						
C	78.76722	72.35771	0.2765	-25.69310	63.54551	0.6860
AGE	-3.355877	3.781376	0.3750	2.416586	3.236507	0.4554
AGE2	0.085071	0.050975	0.0953	-0.017438	0.040482	0.6667
NRC2	12.44397	6.136423	0.0427	-12.63971	5.038389	0.0122
NRC3	25.17829	9.482505	0.0080	-8.994979	6.623712	0.1746
NRC4	51.46793	28.39472	0.0701	-8.131991	11.18369	0.4672
NRC5	-28.93917	35.19866	0.4111	-22.37676	14.55806	0.1244
NRC6	-104.2691	10.19237	0.0000	-53.41514	7.973419	0.0000
NRC7	-151.4349	9.785948	0.0000	---	---	---
NRC10	---	---	---	-70.34623	11.39640	0.0000
CIVIC 1	37.26761	7.695284	0.0000	-2.443580	13.20608	0.8532
AGEYCHILD2	-1.811371	7.210353	0.8017	-1.557650	5.188727	0.7641
AGEYCHILD3	3.530570	9.500476	0.7102	-7.025795	7.107755	0.3230
URB2	23.37018	6.176861	0.0002	11.84894	4.756402	0.0128
SEC2	75.04923	31.79690	0.0184	38.93187	29.84297	0.1922
SEC3	63.99198	31.45979	0.0421	18.32008	29.62050	0.5363
EDU2	-10.38411	8.719314	0.2338	8.322497	5.332460	0.1187
EDU3	-33.64303	8.630890	0.0001	15.45855	6.462504	0.0168
EDU4	-85.07837	9.924493	0.0000	-3.872302	6.847308	0.5718
R-squared		0.116699			0.027193	
Ad. R-squared		0.107756			0.019169	
F-statistic		-10353.16			-12309.20	
Prob(F-stat.)		13.04852			3.388908	
Observations		1697			2079	

Leisure

Variable	Working Mothers			Working Fathers		
	Coefficient	Std, Error	P-value	Coefficient	Std, Error	P-value
Panel A: US						
C	395.5982	69.97363	0.0000	549.8830	181.2419	0.0024
AGE	-6.547546	2.686319	0.0148	-5.913798	3.499226	0.0911
AGE2	0.069706	0.035276	0.0482	0.056543	0.044549	0.2044
NRC2	-11.73256	5.220597	0.0247	-12.84112	6.768224	0.0579
NRC3	-12.85560	7.660095	0.0934	-17.68157	8.944075	0.0481
NRC4	-22.31649	12.91035	0.0839	-14.69105	13.88764	0.2902
NRC5	-29.08079	25.24386	0.2494	-17.29125	38.54881	0.6538
NRC6	40.36552	46.77110	0.3882	-49.70205	46.67260	0.2870
NRC7	-25.66338	71.16949	0.7184	-39.58739	110.8639	0.7210
NRC8	---	---	---	-137.6935	47.63692	0.0039
NRC9	---	---	---	23.89219	8.141612	0.0034
CIVIC 1	-6.061776	5.297730	0.2526	-10.68536	10.97756	0.3304
AGEYCHILD2	32.28956	5.530340	0.0000	27.41130	6.839373	0.0001
AGEYCHILD3	47.40135	7.902178	0.0000	41.05694	10.28282	0.0001
URB2	-35.43090	49.05831	0.4702	-105.4687	166.2487	0.5258
URB3	-39.03743	49.22741	0.4278	-107.1584	166.3919	0.5196
SEC3	13.91708	8.169700	0.0885	16.27493	11.35093	0.1517
SEC4	-8.757040	5.924100	0.1394	-11.38415	8.739943	0.1928
EDU2	6.805371	10.85261	0.5306	-21.12039	11.70065	0.0711
EDU3	-3.790822	10.98354	0.7300	-24.36315	12.36126	0.0488
EDU4	-8.166156	10.56123	0.4394	-46.77143	11.01826	0.0000
R-squared		0.017888			0.019729	
Ad. R-squared		0.014600			0.015705	
F-statistic		5.440875			4.902800	
Prob(F-stat.)		0.000000			0.000000	
Observations		5396			4893	
Panel A: France						
C	552.6666	136.2357	0.0001	434.3011	112.3549	0.0001
AGE	-15.28099	6.058620	0.0118	-14.31899	5.841325	0.0143
AGE2	0.185392	0.078239	0.0179	0.179828	0.073871	0.0150
NRC2	7.998266	8.739521	0.3602	3.964566	9.910574	0.6892
NRC3	-11.99697	12.58916	0.3407	3.926583	13.14494	0.7652
NRC4	-1.963641	33.23061	0.9529	33.83114	27.27754	0.2150
NRC5	14.19557	71.56801	0.8428	83.03348	49.76723	0.0954
NRC6	288.8536	13.86922	0.0000	-12.34324	82.04292	0.8804
NRC7	-158.9510	14.16676	0.0000	---	---	---
NRC10	---	---	---	-193.4660	24.17104	0.0000
CIVIC 1	-10.97128	11.23413	0.3289	-16.35779	22.85292	0.4742
AGEYCHILD2	21.56941	10.28493	0.0361	3.143979	10.95497	0.7741
AGEYCHILD3	14.55707	13.61083	0.2850	12.77178	15.25112	0.4024
URB2	-2.425863	8.167620	0.7665	-1.434987	9.142913	0.8753
SEC2	-26.03934	75.14682	0.7290	161.4953	45.13594	0.0004
SEC3	-55.30836	74.98719	0.4609	119.0876	44.62435	0.0077
EDU2	-5.744632	11.08319	0.6043	5.449324	11.30094	0.6297
EDU3	-1.530481	11.47772	0.8939	-3.780102	12.93809	0.7702
EDU4	-11.22223	15.16360	0.4594	-39.70736	14.75905	0.0072
R-squared		0.021894			0.022363	
Ad. R-squared		0.011991			0.014299	
F-statistic		2.210758			2.773174	
Prob(F-stat.)		0.003031			0.000132	
Observations		1697			2079	

Basic childcare

Variable	Working Mothers			Working Fathers		
	Coefficient	Std, Error	P-value	Coefficient	Std, Error	P-value
Panel A: US						
C	23.08839	18.05509	0.2010	-7.747191	14.92507	0.6037
AGE	2.407858	0.966667	0.0128	1.099458	0.743373	0.1392
AGE2	-0.035768	0.011963	0.0028	-0.013627	0.009046	0.1320
NRC2	3.181359	1.854811	0.0864	1.229794	1.516344	0.4174
NRC3	4.262466	3.158059	0.1772	0.607291	2.148891	0.7775
NRC4	7.494340	6.107180	0.2198	-4.689064	3.786825	0.2157
NRC5	0.785899	11.18278	0.9440	-10.25929	3.584052	0.0042
NRC6	2.015678	16.46757	0.9026	-11.20933	9.213549	0.2238
NRC7	1.744649	47.63552	0.9708	44.04290	42.66988	0.3020
NRC8	---	---	---	-18.01903	7.925471	0.0230
NRC9	---	---	---	20.33568	2.166640	0.0000
CIVIC 1	2.284061	1.714932	0.1830	2.766591	1.086578	0.0109
AGEYCHILD2	-72.65528	2.483731	0.0000	-34.63507	1.725799	0.0000
AGEYCHILD3	-69.36451	2.691562	0.0000	-35.26525	1.963772	0.0000
URB2	4.226086	1.875230	0.0243	9.436990	6.537133	0.1489
URB3	1.746888	2.283625	0.4443	11.72386	6.744988	0.0822
SEC3	-9.950794	3.244090	0.0022	-3.218854	2.487863	0.1958
SEC4	2.457920	1.809332	0.1744	2.831415	1.937682	0.1440
EDU2	9.554451	3.034620	0.0017	8.395580	2.010978	0.0000
EDU3	11.17788	3.194103	0.0005	9.319232	2.510663	0.0002
EDU4	18.37900	2.995340	0.0000	13.60116	2.015314	0.0000
R-squared		0.279550			0.133859	
Ad. R-squared		0.277138			0.130304	
F-statistic		115.9107			37.64754	
Prob(F-stat.)		0.000000			0.000000	
Observations:		5396			4893	
Panel A: France						
C	129.7736	36.41759	0.0004	-14.15838	15.09192	0.3483
AGE	-2.213875	1.755931	0.2076	1.793148	0.874753	0.0405
AGE2	0.023142	0.021922	0.2913	-0.025183	0.010690	0.0186
NRC2	6.029059	3.353214	0.0724	-0.710679	1.785521	0.6907
NRC3	4.040073	4.350369	0.3532	-1.106499	2.272684	0.6264
NRC4	-8.276141	11.08303	0.4553	-4.014621	4.218660	0.3414
NRC5	5.802476	18.16924	0.7495	-12.37477	5.098224	0.0153
NRC6	84.69830	5.233359	0.0000	-15.73647	3.454827	0.0000
NRC7	-50.91709	5.743769	0.0000	---	---	---
NRC10	---	---	---	-12.68093	2.917428	0.0000
CIVIC 1	10.22094	3.033340	0.0008	-3.781223	4.077723	0.3539
AGEYCHILD2	-68.96507	4.106961	0.0000	-17.72287	1.924246	0.0000
AGEYCHILD3	-85.87977	4.295932	0.0000	-23.26550	2.256294	0.0000
URB2	-1.225243	2.903275	0.6731	-2.553189	1.298443	0.0494
SEC2	4.510870	18.89100	0.8113	13.32517	3.582392	0.0002
SEC3	3.826508	18.77571	0.8385	8.175524	3.312464	0.0137
EDU2	-3.027165	3.503830	0.3877	4.072993	1.452967	0.0051
EDU3	-1.767988	3.479989	0.6115	6.735944	1.827188	0.0002
EDU4	5.663536	6.069837	0.3509	12.10148	2.593175	0.0000
R-squared		0.337687			0.130596	
Ad. R-squared		0.330982			0.123425	
F-statistic		50.35629			18.21117	
Prob(F-stat.)		0.000000			0.000000	
Observations:		1697			2079	

Educational childcare

Variable	Working Mothers			Working Fathers		
	Coefficient	Std, Error	P-value	Coefficient	Std, Error	P-value
Panel A: US						
C	5.900339	21.49530	0.7837	-42.62076	14.35288	0.0030
AGE	0.062185	0.841260	0.9411	1.760147	0.685088	0.0102
AGE2	0.000256	0.011446	0.9822	-0.021361	0.009377	0.0228
NRC2	12.38663	1.666231	0.0000	8.915387	1.400010	0.0000
NRC3	19.87879	2.601228	0.0000	12.60764	2.248987	0.0000
NRC4	29.76863	4.693415	0.0000	17.33084	4.479331	0.0001
NRC5	10.69418	5.921309	0.0710	14.50326	6.593502	0.0279
NRC6	23.12279	25.19333	0.3588	6.180764	8.966616	0.4907
NRC7	6.227047	7.008606	0.3743	-0.277909	3.087798	0.9283
NRC8	---	---	---	74.05806	47.47680	0.1189
NRC9	---	---	---	14.47242	1.453877	0.0000
CIVIC 1	2.656555	1.627033	0.1026	-3.546513	2.331826	0.1283
AGEYCHILD2	31.18238	1.833518	0.0000	17.27455	1.579853	0.0000
AGEYCHILD3	2.342739	2.152062	0.2764	5.097469	1.863871	0.0063
URB2	-2.091026	16.05488	0.8964	10.01252	7.385503	0.1753
URB3	-7.208629	16.08992	0.6542	7.611695	7.480920	0.3090
SEC3	-7.250259	3.219792	0.0244	-2.159353	3.019906	0.4746
SEC4	-1.745334	2.171532	0.4216	-1.946034	2.433404	0.4239
EDU2	5.984178	2.927416	0.0410	3.226083	2.059179	0.1173
EDU3	7.788643	2.959382	0.0085	7.445096	2.448037	0.0024
EDU4	13.37852	2.826567	0.0000	9.695619	2.083243	0.0000
R-squared		0.108938			0.060219	
Ad. R-squared		0.105955			0.056361	
F-statistic		36.52057			15.60921	
Prob(F-stat.)		0.000000			0.000000	
Observations:		5396			4893	
Panel A: France						
C	-22.77189	10.96244	0.0379	-7.801639	6.313840	0.2167
AGE	1.457574	0.490838	0.0030	0.222022	0.398374	0.5774
AGE2	-0.017244	0.006846	0.0119	-0.001766	0.005289	0.7384
NRC2	3.212113	1.097155	0.0035	1.080017	0.690667	0.1180
NRC3	8.112584	2.183609	0.0002	1.349916	0.908393	0.1374
NRC4	-3.797612	2.464438	0.1235	1.759588	2.036596	0.3877
NRC5	2.003126	6.751335	0.7667	-2.128108	0.586854	0.0003
NRC6	-4.219172	1.624203	0.0095	-1.476786	0.743382	0.0471
NRC7	-1.379259	1.632834	0.3984	---	---	---
NRC10	---	---	---	-1.674623	1.442784	0.2459
CIVIC 1	-0.849765	1.601080	0.5957	-1.452103	1.745606	0.4056
AGEYCHILD2	5.109998	1.317928	0.0001	1.011976	0.721419	0.1608
AGEYCHILD3	-2.204051	1.474423	0.1351	-0.113430	1.022937	0.9117
URB2	-1.325670	1.012429	0.1906	-1.008451	0.583930	0.0843
SEC2	-3.251176	7.709499	0.6733	5.468279	1.090044	0.0000
SEC3	-1.782843	7.689174	0.8167	4.060352	0.763094	0.0000
EDU2	0.553412	1.470092	0.7066	1.405296	0.809927	0.0829
EDU3	0.459936	1.544082	0.7658	1.161056	0.913868	0.2041
EDU4	-0.625616	1.929710	0.7458	1.797706	1.305248	0.1686
R-squared		0.066157			0.011650	
Ad. R-squared		0.056702			0.003498	
F-statistic		6.996875			1.429100	
Prob(F-stat.)		0.000000			0.113050	
Observations:		1697			2079	

Recreational childcare

Variable	Working Mothers			Working Fathers		
	Coefficient	Std, Error	P-value	Coefficient	Std, Error	P-value
Panel A: US						
C	-24.34372	14.61291	0.0958	-41.95276	14.56623	0.0040
AGE	2.477529	0.774738	0.0014	2.770176	0.777396	0.0004
AGE2	-0.035702	0.009757	0.0003	-0.037720	0.009563	0.0001
NRC2	-3.422536	1.537447	0.0260	-0.586217	1.669429	0.7255
NRC3	-9.120091	2.212297	0.0000	-3.617387	2.419660	0.1350
NRC4	-10.48632	4.118130	0.0109	-7.318131	3.470472	0.0350
NRC5	-5.567158	7.410003	0.4525	2.997317	11.05983	0.7864
NRC6	-22.85143	9.957013	0.0218	35.70824	31.84658	0.2622
NRC7	-14.35170	19.80451	0.4687	-30.10551	5.054832	0.0000
NRC8	---	---	---	-29.76906	5.985918	0.0000
NRC9	---	---	---	64.45133	2.246687	0.0000
CIVIC 1	4.477729	1.327818	0.0008	3.123335	1.691853	0.0649
AGEYCHILD2	-27.07256	1.938496	0.0000	-21.15290	1.933346	0.0000
AGEYCHILD3	-33.94553	2.152715	0.0000	-29.60808	2.071705	0.0000
URB2	17.69524	3.078644	0.0000	18.27113	2.735861	0.0000
URB3	16.07837	3.304038	0.0000	16.19633	3.136289	0.0000
SEC3	-8.312262	2.598631	0.0014	-4.404069	2.697013	0.1025
SEC4	3.057871	1.635963	0.0617	3.860989	2.245193	0.0856
EDU2	7.796732	2.177784	0.0003	5.347288	2.442936	0.0287
EDU3	8.938042	2.225020	0.0001	6.005146	2.519075	0.0172
EDU4	16.64090	2.123018	0.0000	12.78874	2.337367	0.0000
R-squared		0.104967			0.073931	
Ad. R-squared		0.101971			0.070129	
F-statistic		35.03328			19.44732	
Prob(F-stat.)		0.000000			0.000000	
Observations:		5396			4893	
Panel A: France						
C	19.91472	21.68602	0.3586	-6.230210	11.26954	0.5804
AGE	0.703246	0.644361	0.2753	0.726392	0.630217	0.2492
AGE2	-0.008401	0.008379	0.3162	-0.010251	0.007968	0.1984
NRC2	-0.655279	1.392974	0.6381	0.260036	1.365236	0.8490
NRC3	0.322164	2.389814	0.8928	-3.622357	1.452305	0.0127
NRC4	-0.805559	3.863232	0.8348	-0.483506	3.518497	0.8907
NRC5	-10.54284	5.523418	0.0565	10.63085	15.55591	0.4944
NRC6	-14.20997	1.932442	0.0000	-10.68874	1.901448	0.0000
NRC7	-12.87464	1.850650	0.0000	---	---	---
NRC10	---	---	---	31.27845	2.545850	0.0000
CIVIC 1	0.106243	1.374061	0.9384	2.302143	1.678284	0.1703
AGEYCHILD2	-11.00952	1.708670	0.0000	-8.577529	1.497197	0.0000
AGEYCHILD3	-14.72916	1.829183	0.0000	-11.32318	1.514973	0.0000
URB2	-0.394217	1.182199	0.7388	-0.380490	1.054763	0.7183
SEC2	-20.70030	19.08233	0.2782	3.704800	1.224213	0.0025
SEC3	-20.00934	19.02352	0.2930	3.707587	1.004370	0.0002
EDU2	2.517181	1.191364	0.0348	1.505037	1.235894	0.2235
EDU3	4.534953	1.264854	0.0003	2.733413	1.554041	0.0787
EDU4	7.305909	2.249735	0.0012	3.594441	1.862098	0.0537
R-squared		0.074634			0.054146	
Ad. R-squared		0.065265			0.046345	
F-statistic		7.965718			6.940237	
Prob(F-stat.)		0.000000			0.000000	
Observations:		1697			2079	

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