



”la Caixa”

**Working Paper Series** No. 01/2007

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## **Parental Employment and Time with Children in Spain**

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February 2007



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First Draft: January 2007

This Draft: April 2007

## Abstract

This paper studies the relationship between parental employment and time with children in Spain. We find large differences across genders in basic primary and secondary childcare, but not in quality primary childcare. The analysis shows no significant differences in quality primary childcare across employment status. Furthermore, the results indicate that more educated parents allocate more time to primary care. The study also suggests that a work schedule that finishes no later than 6 pm would raise significantly the time allocated to childcare by working parents.

JEL Classification: J13, J22

Keywords: childcare time and employment

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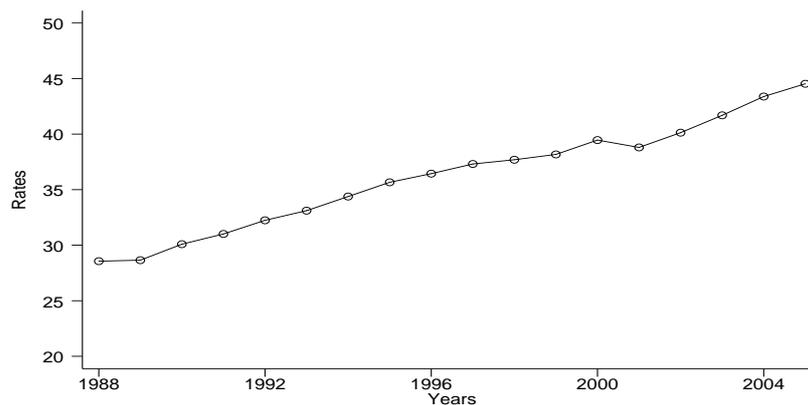
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\*I would like to thank Cristina Fernández, Almudena Sevilla-Sanz, John Ermisch, Dolores García-Crespo and participants in "la Caixa" seminar for their useful comments. The views expressed in this Working Paper are those of the author only and do not necessarily represent those of "la Caixa". Correspondence to: Maria Gutiérrez-Domènech, "la Caixa" - Research Department (9012), Av. Diagonal 629, torre I, 08028 Barcelona. E-mail: maria.gutierrez.domenech@lacaixa.es

# 1 Introduction

Over the last century, many countries experienced a significant rise in female labour force participation, especially women with young children. Spain was no exception and female activity rates increased remarkably in the last two decades (Figure 1).

Figure 1: Activity Rates of Spanish Married Women 1988–2005



Source: INE.

There are clear advantages of freeing maternal time for paid work such as maintaining mothers' human capital, and facilitating the future well-being of the children since employed mothers are more able to invest in extra education than non-employed mothers (Hansen et al. (2006)).

But the generalised increase in maternal employment has brought in a debate on whether this phenomenon may have deleterious consequences for children. This is because higher mothers' employment rates necessarily require a reallocation of time across different daily activities, including childcare time. For example, there exists the possibility that these mothers may have to reduce significantly the time they spend with children, compared to the non-working mothers, and this may have adverse effects on children's cognitive ability.

Following this debate, there has been some effort in the literature to calibrate whether the rapid rise in mothers' labour force participation had a negative impact on children's development. Although some studies find small negative effects on cognitive and behaviour outcomes when the mothers' employment occur before the first year of the child (Han et al. (2000) for the US) or employment occurs when the child was aged 0–5 (Ermisch and Francesconi (2002) for the UK), the overall reading of the literature is mixed and suggests that the effects are negligible (Greenstein (1995)). Interestingly, some studies point out that the impact of maternal

employment on children's academic achievement depend on the type of substitute care. Gregg et al. (2005) find evidence in the UK that full-time employment in the first 18 months after a birth by mothers who predominantly use informal substitute care from relatives or friends leads to poorer cognitive development for children. However, they find no evidence that part-time working or full-time working with more formal care substitution leads to any adverse cognitive outcomes.

The apparent lack of pervasive effects of mothers' employment on child development could possibly be explained by a number of factors. For example, working parents giving more quality time to their children (Nock and Kingston (1988)). Or employed mothers' childcare time being not that different to non-employed mothers (Sandberg and Hofferth (2001)). Bianchi (2000) points out that despite the upward trend in maternal employment, mothers' time with children has remained very similar over time in the US. This finding a priori might seem puzzling. How is it possible that the dramatic change in female time in the labour market was not accompanied by a significant drop on the time children receive? Bianchi (2000) outlines several possible reasons. First, we tend to overestimate maternal time with children in the past, assuming that housewives dedicated most of their time to children and not to other household or leisure activities. Second, we disregard the effort working mothers do to protect the investment in children. Third, even children of non-working mothers are currently spending more time in preschool. Fourth, there has been a simultaneously increase in men's involvement in child rearing.

In general, therefore, the literature for the US and the UK brings up a favourable balance for maternal employment since childcare time appears to be hardly affected by this factor.

This paper investigates parental employment and time with children in Spain. For the analysis, it is crucial sorting childcare time into its various categories. This is because the degree of human capital enrichment in each activity will have different effects on child outcomes. Zick et al. (2001) show, for example, that more parental involving in reading/homework activities decreases behavioural problems and improves grades of the children. Based on the survey we classify childcare as follows: *Primary Childcare* when the main activity was reported to be childcare, *Secondary Childcare* when childcare was mentioned as secondary use of time, and *Passive Childcare* in which a parent reported any activity (cooking or other) "with children" under 10 years old present. *Primary Childcare* is subsequently divided into basic (e.g. feeding) and quality primary care (e.g. reading).

We focus on a sample of individuals aged 17 years old and over, who are married or live in cohabitation, and who have at least a child under the age of 17. The study examines whether childcare time allocation varies across employment status and across certain characteristics such as education, income and origin. Although this will not provide us a straightforward answer about the relationship between employment and child development, it will definitely help to assess the magnitude of the overall possible effects. We also analyse whether job characteristics matter for the amount of childcare time that working parents allocate to their children.

The main results are the following. First, there are large differences across gender in the allocation of childcare time. Females spend much more time in overall childcare than males, no matter their employment status, and despite the two genders having similar education levels. For example, working mothers spend almost three times as much time in basic primary childcare and twice as much in secondary childcare time than working fathers. However, the differences in the allocation of childcare are insignificant in quality primary childcare, which suggests that males leave basic and secondary childcare to their partners, and concentrate their family duties on quality primary childcare. Fathers and mothers also differ in when they devote time to children, fathers being more involved over the weekend and mothers spending relatively more time during the working week.

Second, the quality primary childcare time is similar between working and non-working parents. This is an encouraging result if we are concerned that more working mothers may have deleterious consequences for children's development.

Third, education is a crucial factor. The higher the level of education, the longer time spent in primary childcare, for both fathers and mothers, and for both working and non-working individuals. Therefore, more education is not only beneficial for the individual per se, but also for their descendants. Interestingly, males increase their childcare time if their partners have higher levels of education or are working. By contrast, females are more or less unaffected by their partners' education and employment status.

Finally, regarding the relationship between certain job characteristics and childcare time, we find that for the same number of hours of work, individuals who finish working after 6pm reduce significantly the time spent in all types of childcare. This suggests that eliminating large breaks at noon and finishing work earlier could be beneficial for children's development. Longer hours seem to be prejudicial for childcare time for both working mothers and working fathers.

## 2 Data

We use the 2002–2003 Spanish Time Use Survey (STUS) for the empirical analysis. The STUS is part of the Harmonized European Time Use Surveys (HETUS) launched by the EU Statistics Office (Eurostat). The survey contains information on daily activities through the completion of a personal diary. It also comprises a household and individual questionnaires. The sample of 20,603 household is evenly distributed over the year in order to accurately represent time use patterns. Half of the households were assigned a day between Monday to Thursday and half were assigned a day from Friday to Sunday.

All members of the household who are 10 years old and over complete an activity diary of a selected day. The diaries time frame is 24 consecutive hours and it is divided into 10 minute intervals. In each of the intervals, the respondent records a main activity and a secondary activity (carried simultaneously with the primary activity), and whether the activity was performed in company of a child under 10 years old. Activities are coded according to a harmonized list of activities established by Eurostat.

Activities related to childcare involve children below age of 17. The data allow us to construct three definitions of childcare: time when the main (or primary) activity was reported to be childcare (*Primary Childcare*), time when childcare was mentioned as secondary use of time in response to the query “Were you doing anything else?” (*Secondary Childcare*), and time in which a parent reported any activity (cooking or other) “with children” under 10 years old present (*Passive Childcare*). Primary care is more likely to be closer to genuine childcare since it requires a higher degree of parental involvement.

For primary activities, the survey asks individuals further detail of specification. For example, within childcare, respondents can choose between 6 alternatives: non-specified childcare; physical needs such as feeding, dressing them up, bathing and custody; learning activities such as helping them doing the homework and teaching them specific issues; read, play, talking to children; accompanying children; and other. We use these subcategories to classify primary care into two: “*Basic*” *Primary Childcare* which encompasses activities related to children’s more essential needs (e.g. feeding) and “*Quality*” *Primary Childcare* which entails activities linked to children’s educational and cultural development (e.g. helping with the homework). This is important since we are especially concerned on the effect of maternal em-

Table 1: Summary Statistics

<i>Characteristics</i>	<i>Married<sup>1</sup> Males</i>		<i>Married Females</i>	
	<i>Mean</i>	<i>Std. Dev.</i>	<i>Mean</i>	<i>Std. Dev.</i>
<i>Employed</i>	0.91	0.28	0.49	0.50
<i>Age</i>	41.21	7.24	38.52	6.56
<i>Health</i>	0.81	0.39	0.82	0.38
<i>Spanish</i>	0.97	0.18	0.96	0.19
<i>Education</i>				
<i>Primary and Under</i>	0.54	0.50	0.54	0.50
<i>Secondary</i>	0.12	0.33	0.12	0.32
<i>Tertiary</i>	0.17	0.38	0.16	0.37
<i>University Degree</i>	0.17	0.38	0.18	0.38
<i>Number of Children</i>				
<i>Age 0-1</i>	0.17	0.39	0.17	0.38
<i>Age 2-5</i>	0.35	0.54	0.35	0.55
<i>Age 6-9</i>	0.36	0.55	0.36	0.55
<i>Age 10-16</i>	0.70	0.71	0.70	0.71
<i>Age 0-16</i>	1.58	0.68	1.57	0.68
<i>Dishwasher</i>	0.45	0.50	0.45	0.50
<i>External Help</i>	0.31	0.46	0.31	0.46
<i>Flat Owner</i>	0.84	0.37	0.84	0.37
<i>Observations</i>	4734		4760	

NOTE: Statistics based on the sample of individuals aged 17 and older, who have at least a child under the age of 17, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

<sup>1</sup>Married stands for both married and cohabitation.

ployment on children's development, and this will depend on the type of childcare that working mothers opt to reduce. It will also help us to identify whether there are differences between males and females in the sort of childcare provided.

Although we focus on childcare time defined as primary activity we also explore the other two definitions to reach a better consensus on the differences in childcare allocation across mothers' employment patterns. Secondary childcare time may be an important fraction of total childcare time. Zick and Bryant (1996a), for example, find that such secondary childcare time comprises about one-third of all parental childcare time.

We select the final sample for our analysis on the basis of the following criteria: individuals of 17 or more years old with at least a child under the age of 17, who cohabit or are married, and from whom we have information for all the variables

used in the study (4734 males and 4760 females). The number of observations for single parents is small, which makes it difficult to get a robust description of their patterns. For this reason, we disregard them from the analysis.

Table 1 presents the sample summary statistics for the key variables used in the analysis. The employment rate of mothers and fathers with at least a child under the age of 17 is 49% and 91%, respectively. The average number of children under the age of 17 is 1.57, and it differs slightly by the employment status (not reported in the table). For males, the average number of children under 17 is 1.58 and 1.53 for those who are working and not working, respectively. For females, the equivalent rates are 1.55 and 1.62. The percentage of individuals with Spanish nationality is 96%. Qualification rates are very similar between males and females, with around 50% of individuals not having reached more than a primary degree. Almost half of the sample have a dishwasher at home and around one third receive some sort of external help to manage the household.

## 3 Descriptive Statistics

### 3.1 How much time do parents spend with their children?

Table 2 shows the average number of minutes per day devoted to childcare per child under 17, either as primary activity (basic and quality) or secondary activity. The table displays the rates for males and females, and by their employment status. Since the age of the children is crucial in the sort of childcare that it is likely to be provided, we report this information for two subsamples: individuals with children aged under 10 (Table 3) and individuals whose children are aged between 10 and 16 (Table 4). This also allows us to explore passive childcare, which is only available for children under the age of 10.

We observe in Table 2 that there are substantial differences in the provision of childcare per child under 17 between males and females, especially concerning basic primary childcare. Females take clearly the lead in basic childcare, with three times as much time as males, irrespectively of their employment status. It is worthwhile pointing out that primary quality childcare is similar across genders (between 10 and 12 minutes), with females spending on average around 1–2 more minutes a day than males.

Another degree of comparison is across working status. Focusing on men, it is

Table 2: Time Devoted to Childcare per Child Under 17, by Employment Status

<i>Childcare Type</i>	<i>Married<sup>1</sup> Males</i>		<i>Married Females</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
<i>Primary Childcare</i>				
<i>Basic</i>	15.40 (36.18)	16.73 (43.76)	44.07 (67.66)	53.43 (72.19)
<i>Quality</i>	9.59 (24.82)	10.13 (24.88)	10.75 (26.27)	11.83 (26.57)
<i>Total</i>	24.95 (48.55)	26.86 (57.78)	54.82 (78.24)	65.26 (82.40)
<i>Secondary Childcare</i>	6.01 (25.64)	5.70 (22.58)	11.71 (37.72)	13.52 (46.57)
<i>Total Childcare</i>	30.96 (59.47)	32.55 (67.14)	66.53 (95.90)	78.78 (106.08)
<i>Observations</i>	4319	415	2338	2422

NOTE: Standard deviations in brackets. Statistics based on the sample of individuals aged 17 and older, who have at least a child under the age of 17, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

<sup>1</sup>Married stands for both married and cohabitation.

interesting to observe that the time spent in primary care for children under 17, for both basic and quality, is very similar between males who work and do not work. Therefore, on average, non-employed fathers are not generally using their extra free time to increase their allocation of primary childcare time.

Working mothers spend 10 minutes a day less in primary childcare than non-working mothers, although most of the difference is driven by basic primary childcare. In fact, for quality primary childcare, there is only one minute difference across employment status.

As expected, comparing the average times by age groups (Table 3 and 4) we see that parents allocate much more time to the care of children under 10 than to the 10 to 16 years old. Working females spend around 20–25% less time in total primary childcare than non-working females, in both age groups. Working males devote around 25% less time in total primary childcare than non-working males for the under 10 years old, but the gap is reduced to 8% for the 10–16 years old. It is important to emphasise that the differences in quality primary childcare time across employment status and gender are small, especially for the 10–16 years old.

Focusing on individuals with younger children, Table 3 shows that females spend more than twice as much time in basic primary care than males, no matter the employment status. Females spend more time in both secondary and passive care, which suggests that women tend to do more activities in the presence of children than males. Both men and women spend more time in secondary and passive childcare

when they do not work.

Interestingly, Table 3 shows that non-employed fathers spend an extra 15 minutes a day caring for children under 10 than employed fathers. The fact that we do not observe such a difference when looking at children under 17 (Table 2) suggests that non-employed males contribute more in childcare than their employed counterparts only when their children are young.

There is evidence that more quality primary care has a positive effect on child's cognitive development (Zick et al. (2001))). Hence, the finding that quality primary childcare is very similar across working status is encouraging since it relaxes the negative implication that higher female employment rates might have a negative impact on children education.

The link between passive childcare time and child development is less straightforward since it depends on the type of activity that the individual is doing in the presence of children. On the one hand, for example, our data shows that males spend 24 and 38 minutes a day watching TV in the presence of children, for working and non-working fathers, respectively. The equivalent averages for females are 15 and 26 minutes a day. Non-working individuals are therefore clearly spending more time watching TV in the presence of children, which depending on the show is probably not the most productive way to spend time with children. In this situation, passive childcare might not be very beneficial. On the other hand, there are no differences across employment status in passive care devoted to cultural activities such as going to concerts, cinema, theater and museums. For example, the average time attending cultural events in the presence of children under 10 is 2.58 and 1.98 for working and non-working males respectively. The average is 2.57 and 2.87 for working and non-working females.

The similarity of quality primary childcare across employment status differs from the results in Ichino and Sanz de Galdeano (2004) who find a substantial loss in quality primary childcare for working mothers in Italy and Germany. The authors argue that, in both countries, working mothers prioritise basic childcare over quality childcare. By contrast, and more in line with our results, they also find slightly higher means of quality primary childcare for working mothers relative to non-working mothers in Sweden. Other studies such as Zick et al. (2001) are more consistent with ours. They find that in the US employed mothers engage in reading/homework activities with their children more often than do non-employed mothers. We need, however, to be cautious in driving comparisons across countries since the choice of

Table 3: Time Devoted to Childcare per Child Under 10, by Employment Status

<i>Childcare Type</i>	<i>Married<sup>1</sup> Males</i>		<i>Married Females</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
<i>Working</i>				
<i>Primary Childcare</i>				
<i>Basic</i>	28.89 (47.73)	39.35 (63.88)	80.12 (82.01)	100.75 (82.70)
<i>Quality</i>	16.87 (32.28)	22.03 (35.00)	17.40 (33.41)	19.61 (33.28)
<i>Total</i>	45.76 (62.20)	61.38 (81.99)	97.52 (93.38)	120.37 (92.18)
<i>Secondary Childcare</i>				
<i>Total Childcare</i>	56.96 (76.49)	75.62 (94.16)	117.98 (115.54)	147.24 (125.16)
<i>Passive Childcare</i>				
<i>Observations</i>	1926	143	1081	1002

NOTE: Standard deviations in brackets. Statistics based on the sample of individuals aged 17 and older, with at least a child below 10 and no child aged 10–16, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

<sup>1</sup>Married stands for both married and cohabitation.

Table 4: Time Devoted to Childcare per Child Aged 10–16, by Employment Status

<i>Childcare Type</i>	<i>Married<sup>1</sup> Males</i>		<i>Married Females</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
<i>Working</i>				
<i>Primary Childcare</i>				
<i>Basic</i>	3.26 (16.31)	4.27 (21.21)	7.37 (22.04)	10.87 (33.42)
<i>Quality</i>	2.56 (13.49)	2.32 (12.08)	4.21 (16.76)	4.79 (18.74)
<i>Total</i>	5.82 (22.01)	6.59 (25.19)	11.58 (28.76)	15.66 (41.78)
<i>Secondary Childcare</i>				
<i>Total Childcare</i>	7.15 (25.44)	7.36 (26.40)	13.98 (32.98)	17.93 (46.07)
<i>Observations</i>	1523	196	823	910

NOTE: Standard deviations in brackets. Statistics based on the sample of individuals aged 17 and older, with at least a child aged 10–16 and no child below 10, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

<sup>1</sup>Married stands for both married and cohabitation.

activities, as well as the definition of each childcare type, are likely to differ.

It is interesting to compare childcare time between a working day and a weekend. For example, do working individuals catch up a bit in terms of childcare time over the weekend? Are there differences across genders? Table 5 shows a quite distinctive pattern between males and females. Working fathers have higher means for all types of childcare time over the weekend. Remarkably, non-working fathers have lower primary childcare over the weekend than from Monday to Friday and, although

they have higher childcare time than working fathers over the working week, this pattern is reversed over the weekend.

Mothers, both employed and non-employed, reduce their primary childcare time over the weekend, being the reduction greater for the latter group. This reduces the difference across employment status for females. In fact, we observe in Table 5 that working mothers still spend less primary basic childcare time than non-working mothers over the weekend, but the opposite holds for both quality primary and secondary childcare time. This indicates some compensation of quality primary childcare amongst working mothers over the weekend.

Table 5: Time Devoted to Childcare per Child Under 17, by Employment Status, by Day of the Week

<i>Childcare Type</i>	<i>Married<sup>1</sup> Males</i>		<i>Married Females</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
<i>Working</i>				
<i>Monday to Friday</i>				
<i>Primary Childcare</i>				
<i>Basic</i>	14.00 (34.55)	19.33 (49.23)	47.13 (70.16)	58.79 (73.37)
<i>Quality</i>	8.05 (21.39)	11.77 (26.91)	11.24 (26.81)	13.66 (27.32)
<i>Total</i>	22.05 (43.82)	31.10 (64.08)	58.36 (80.47)	72.45 (84.74)
<i>Secondary Childcare</i>	4.82 (23.41)	6.63 (23.34)	11.26 (35.97)	14.84 (51.96)
<i>Total Childcare</i>	26.87 (53.91)	37.73 (73.84)	69.63 (97.86)	87.30 (112.12)
<i>Observations</i>	2826	275	1554	1558
<i>Weekend</i>				
<i>Primary Childcare</i>				
<i>Basic</i>	18.06 (38.96)	11.61 (29.80)	38.01 (62.02)	43.82 (68.99)
<i>Quality</i>	12.37 (30.07)	6.92 (20.03)	9.78 (25.15)	5.59 (24.86)
<i>Total</i>	30.43 (56.02)	18.52 (41.76)	47.80 (73.18)	52.42 (76.41)
<i>Secondary Childcare</i>	8.28 (29.73)	3.85 (20.96)	12.60 (40.98)	11.11 (34.69)
<i>Total Childcare</i>	38.71 (68.12)	22.37 (50.19)	60.39 (91.65)	63.43 (92.35)
<i>Observations</i>	1493	140	784	865

NOTE: Standard deviations in brackets. Statistics based on the sample of individuals aged 17 and older, who have at least a child under the age of 17, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

<sup>1</sup>Married stands for both married and cohabitation.

Finally, Table 6 shows whether there are differences in behaviour according to education. That is, do more educated individuals experience smaller or greater difference in the means of childcare across their employment status? How different is the effect of education across genders? We observe that the degree of education plays a crucial role for both mothers and fathers, no matter if they work or not, and for all

types of childcare, with individuals with higher education spending significantly more time in childcare. For males, the gains in primary childcare time for higher levels of qualifications are substantial and even larger for non-working fathers, which suggests that highly educated non-working males use more of their extra free time in childcare than do less educated non-working males. The gains in primary childcare time for highly educated mothers are similar across employment status, being around 30 minutes per child a day. It is interesting to observe that working parents with higher education spend on average more time a day with their children than non-working parents with lower education.

Table 6: Time Devoted to Childcare per Child Under 17, by Employment Status, by Qualifications

<i>Childcare Type</i>	<i>Married<sup>1</sup> Males</i>		<i>Married Females</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
<i>Secondary, Primary and Under</i>				
<i>Primary Childcare</i>				
<i>Basic</i>	11.60 (30.32)	14.69 (37.59)	32.27 (54.84)	47.72 (68.00)
<i>Quality</i>	8.38 (23.62)	8.96 (22.97)	7.45 (19.88)	10.32 (25.03)
<i>Total</i>	19.98 (42.40)	23.65 (48.79)	39.72 (62.45)	58.03 (78.02)
<i>Secondary Childcare</i>	4.66 (21.51)	4.99 (21.81)	8.01 (32.65)	10.13 (36.38)
<i>Total Childcare</i>	24.64 (51.62)	28.64 (58.01)	47.72 (76.42)	68.17 (95.47)
<i>Observations</i>	2756	349	1254	1869
<i>Tertiary and University</i>				
<i>Primary Childcare</i>				
<i>Basic</i>	22.11 (43.90)	27.5 (67.04)	57.72 (77.80)	72.79 (81.10)
<i>Quality</i>	11.59 (26.69)	16.34 (32.75)	14.57 (31.69)	17.02 (30.70)
<i>Total</i>	33.70 (56.78)	43.84 (90.40)	72.29 (90.16)	89.81 (91.65)
<i>Secondary Childcare</i>	8.41 (31.50)	9.39 (26.17)	15.99 (42.45)	24.91 (69.68)
<i>Total Childcare</i>	42.11 (69.87)	53.23 (100.89)	88.28 (110.48)	114.71 (129.69)
<i>Observations</i>	1563	66	1084	554

NOTE: Standard deviations in brackets. Statistics based on the sample of individuals aged 17 and older, who have at least a child under the age of 17, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

<sup>1</sup>Married stands for both married and cohabitation.

The descriptive statistics in this section outline four main patterns. First, there are significant differences across genders, with mothers spending between double and triple time in all types of childcare, except for quality primary care. Second, the under tens get much more time than the 10 to 16 years old. Third, working fathers significantly catch up in childcare time over the weekend. Working mothers

also catch up slightly, especially in quality primary care. Fourth, higher levels of education are associated with much more time spent in childcare.

Clearly, however, some of the factors might be driven by other aspects such as, for example, highly educated individuals having younger children or receiving more extra help for other household activities that relieve time for childcare. To investigate this possibility, in Section 4 we analyse the effect of different interrelated factors on childcare time. We also evaluate whether there are job characteristics that are positively associated with the time devoted to childcare for the working group, for both males and females.

### **3.2 Diary activities reported by the 10 to 16 years old and parents' characteristics**

This section describes the relationship between parental labour force status/education and two activities that are related to children's cognitive development: watching TV (depending on the show probably 'bad') and homework ('good'). Table 7 displays the average number of minutes a day that children of age 10 to 16 report watching TV and doing homework for compulsory studies.

It is interesting to observe that children whose mothers are employed watch on average less TV, and they spend approximately the same time doing homework for compulsory studies than children whose mothers are not working. This shows that mothers' employment do not seem to play a prejudicial role for the development of 10 to 16 years old. We also observe that children whose fathers are unemployed watch more TV and clearly spend less time doing their homework.

Focusing on parents' qualifications, Table 7 distinguishes between primary and under, secondary degree, tertiary degree and university degree. It is important to be aware that tertiary degree corresponds to professional training, which often is below the secondary degree in the scale of levels of education. We observe in the table that children whose parents have a university degree watch much less TV and they spend slightly more time doing homework. From the children's time diaries we also learn that higher levels of parental education have a positive relationship with children's development.

Table 7: Average Time a Day Watching TV and Doing Compulsory Homework Reported per Child Aged 10 to 16, by Labour Force Status and Qualifications of their Parents

	<i>Fathers</i>		<i>Mothers</i>	
	<i>Watching TV</i>	<i>Homework</i>	<i>Watching TV</i>	<i>Homework</i>
<i>Parents' Labour Force Status</i>				
<i>Employed</i>	87.50 (95.48)	50.53 (71.72)	85.08 (94.05)	48.76 (70.18)
<i>Unemployed</i>	96.78 (106.05)	34.57 (57.41)	88.50 (95.21)	50.34 (70.42)
<i>Inactive</i>	89.22 (99.64)	46.71 (71.00)	92.69 (99.82)	48.38 (69.68)
<i>Parents' Qualifications</i>				
<i>Primary and Under</i>	93.57 (99.83)	46.51 (67.29)	94.16 (100.12)	44.85 (66.75)
<i>Secondary</i>	78.33 (92.91)	58.31 (80.37)	87.08 (97.14)	58.73 (72.54)
<i>Tertiary</i>	92.75 (100.09)	47.16 (68.96)	83.25 (93.48)	54.14 (73.86)
<i>University</i>	70.37 (78.13)	55.45 (78.51)	71.12 (81.57)	54.68 (77.76)

NOTE: Standard deviations in brackets. Statistics based on the sample of individuals aged 10 to 16 who live with their father and mother.

## 4 Econometric Model and Variables

This section analyses the allocation of childcare. Before estimating the relationship between individual characteristics and the quantity of time devoted to childcare, there are three points to take into account. First, there are a number of parents who report spending no time in particular types of childcare. This indicates the presence of zeros in the dependent variable, and for this reason we use Tobit rather than ordinary least squares (OLS) to estimate the model.<sup>1</sup>

Second, the time spent in childcare by mothers and fathers is interdependent since it is decided jointly in the household (García-Crespo and Pagán-Rodríguez (2005)). This means that a bivariate tobit model that estimates the choice of childcare time by both mothers and fathers jointly would possibly be better than estimating the two equations separately since the latter implies a loss of efficiency.

Third, we are interested in the relationship between employment status and childcare time. But hours of market work (or employment status) and parental family care time are endogenously determined, which implies that the error term in the childcare time equation will be correlated with actual hours of market work (Zick and Bryant (1996a), Baydar et al. (1999) and Zick and Bryant (1996b)). As a result, standard

<sup>1</sup>The choice between OLS and Tobit for time use data is however currently being discussed in the literature. See, for example, Gershuny and Egerton (2006) and Stewart (2006).

estimating techniques would generate biased and inconsistent parameter estimates. For this reason, it is necessary to estimate the model using instrumental techniques. That is, first we estimate the employment status (or number of hours work) and use the estimates to predict this variable for all individuals, either for those who work or do not work.<sup>2</sup> Then, we use these expected employment status (or expected hours) as an instrumental variable in the main estimation of childcare time. The use of expected employment rather than actual employment reduces (if not eliminates) the simultaneous equations bias that may arise if hours of market work are jointly determined with parents' childcare time.

Addressing points two and three simultaneously is cumbersome. We opt for estimating an equation for males and females separately but taking into account the fact that employment and childcare time are endogenously driven.<sup>3</sup>

Following McDonald and Moffitt (1980), the specific equation estimated is:

$$y_i^* = X_i\beta + u_i \quad (1)$$

$y_i^*$  is a latent variable that is observed for values greater than 0 and is censored for values less than or equal to 0. The observed  $y_i$  is defined by the measurement equation:

$$\begin{aligned} y_i = y_i^* &= X_i\beta + u_i & \text{if } y_i^* > 0 \\ y_i &= 0 & \text{if } y_i^* \leq 0, \end{aligned} \quad (2)$$

$i=1,2,\dots,N$ ,

where  $N$  is the number of observations,  $y_i$  is the dependent variable (the number of minutes a day that each individual spent on childcare),  $X_i$  is a vector of independent variables,  $\beta$  is a vector of unknown coefficients, and  $u_i$  is an independently distributed error term assumed to be normal.

We estimate the model for various definitions of childcare: basic primary childcare, quality primary childcare and secondary childcare. The explanatory variables are

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<sup>2</sup>The regressors are the same than in the main estimated equation, but we also add region dummies, non-labour income, a dummy for receiving external help and a health dummy, which are used to identify the model.

<sup>3</sup>We also estimated a bitobit model for working couples. This estimation takes into account the joint household decision. We restricted our sample to households where both members responded the diary, were working and did not have missing variables (1720 observations). We found that the effect of the job characteristics was similar to the results obtained in Section 5.2, but the positive and significant effect of education on childcare time disappeared. This could be however due to the large sample selection and the choice of very specific households.

the following:<sup>4</sup> *Age* and its square; *Weekday*=1 if calendar time refer to a day from Monday to Friday; *Health*=1 if the individual reports having good health; seven regional dummies, the omitted region corresponding to the north-west; the number of children in age groups 0–1, 2–5, 6–9 and 10–16; *Spanish*=1 if the individual has the Spanish citizenship; *Dishwasher*=1 if the household owns a dishwasher; *Flat Owner*=1 if the individual lives in an own flat; *External Help*=1 if the household receives some sort of external help to manage the tasks; four dummies for the non labour income (household income minus the individual employment wage), being the dummy with zero non labour income the reference category; four individual qualification dummies (*Primary and Under*, *Secondary*, *Tertiary*, *University Degree*), being the lower level the omitted variable; partner qualification dummies, following the same categories; *Working Partner* = 1 if partner is employed; the expected number of hours work (*Expected Hours*) or the expected employment status (*Expected Employment*), alternatively, since we try both variables as instruments.

We also undertake the analysis focusing on those individuals who are in paid work only, interviewed from Monday to Friday, with the aim to investigate the link between some job characteristics and time spent in childcare. In this regression, we add the following explanatory variables: ten occupation dummies; *Public Sector*=1 if the individual is employed in the public sector, 0 if he/she is any type of self-employed, employed in the private sector or other; *Continued*=1 if individual does not have a break in his/her working day; *Working After 6pm* = 1 if the individual reports working after 6pm, 0 if he/she if finishes work before 6pm; *Hours at Work* the number of hours at the workplace.

## 5 Results

### 5.1 Parental Employment and Time with Children

Table 8 presents the results of the Tobit analysis for males for basic primary childcare, quality primary childcare and secondary childcare. Table 9 shows the equivalent results for mothers. The units of the coefficients are minutes a day. Because it is a Tobit equation, the coefficients relate both to the probability of spending any time at all in childcare activities and the time spent if any time is spent, and refer to the latent variable  $y_i^*$ . A more intuitive interpretation of the coefficients is given by the estimated impact of the  $k$ -th variable on the expected time spent with chil-

<sup>4</sup>More details can be read in Appendix A.

dren, based on the observed variable  $y_i$  ( $\partial E(y_i)/\partial x_{ik} = \beta_k \Phi(\beta x_i/\sigma_u)$ ).<sup>5</sup> Under this interpretation, for example, we have that fathers with a *University Degree* spend about 7 more minutes in basic primary childcare than fathers with a *Primary and Under* degree.

Table 8: Tobit Parameter Estimates of Basic Primary Childcare, Quality Primary Childcare and Secondary Childcare, Fathers

<i>Variable</i>	<i>Basic Primary</i>	<i>Quality Primary</i>	<i>Secondary</i>
<i>Age</i>	1.02 (2.55)	1.56 (2.63)	1.17 (4.20)
<i>Age square</i>	-0.04 (0.03)	-0.05 (0.03)	-0.05 (0.05)
<i>Weekday</i>	-6.82** (3.42)	-10.03** (4.07)	-22.69*** (6.47)
Number of children			
<i>Nchild01</i>	74.41*** (4.52)	43.22*** (5.30)	41.34*** (8.41)
<i>Nchild25</i>	44.09*** (3.40)	35.13*** (4.05)	43.66*** (6.52)
<i>Nchild69</i>	22.23*** (3.23)	24.39*** (3.84)	20.16*** (6.14)
<i>Nchild1016</i>	-13.60*** (3.14)	-17.16*** (3.86)	-23.78*** (6.44)
<i>Spanish</i>	17.90* (9.40)	-2.24 (10.76)	28.40 (19.00)
<i>Dishwasher</i>	10.75*** (3.62)	-0.02 (4.35)	-5.65 (6.99)
Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	29.92*** (5.35)	18.91*** (6.47)	23.09** (10.47)
<i>Tertiary</i>	17.72*** (4.69)	4.68 (5.64)	19.33** (8.92)
<i>University Degree</i>	30.08*** (5.37)	17.05*** (6.48)	33.45*** (10.29)
Partner's Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	16.95*** (5.41)	11.94* (6.52)	12.51 (10.55)
<i>Tertiary</i>	12.99*** (4.77)	15.13** (5.69)	12.37 (9.16)
<i>University Degree</i>	26.79*** (5.33)	20.41*** (6.44)	31.72*** (11.18)
<i>Flat Owner</i>	1.18 (4.74)	5.08 (5.63)	15.36* (9.25)
<i>Working Partner</i>	23.85*** (3.51)	6.25 (4.19)	15.92** (6.74)
<i>Expected Employment</i>	-4.87 (13.09)	19.26 (16.35)	0.17 (25.26)
<i>Observations</i>	4734		

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

NOTE: Standard errors in brackets. Regression based on the sample of individuals aged 17 and older, who have at least a child under the age of 17, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

Table 8 shows that fathers focus all types of childcare time over the weekend. By contrast, we observe in Table 9 that mothers spend relatively more time in primary and secondary care during the working week.

Unsurprisingly, both sexes spend longer time in childcare for the age groups 0–1, 2–5 and 6–9 than for the age group 10–16. Regarding basic childcare, the gap between

<sup>5</sup>This calculation can be approximated by multiplying the betas estimated with the proportion in the sample of non-zero values.

0–1 years old and older children groups is much more pronounced for females than for males.

A priori, we expect that higher levels of technology in a household will liberate time that could possibly be spent in primary childcare. We proxy the degree of household technology with the variable *Dishwasher*. We observe that “better technology” somehow increases the primary childcare for males, being significant for basic care. But it does not have any impact on females’ childcare time.

Table 9: Tobit Parameter Estimates of Basic Primary Childcare, Quality Primary Childcare and Secondary Childcare, Mothers

<i>Variable</i>	<i>Basic Primary</i>	<i>Quality Primary</i>	<i>Secondary</i>
<i>Age</i>	8.10*** (2.09)	10.66*** (2.56)	7.02 (4.64)
<i>Age square</i>	-0.15*** (0.03)	-0.16*** (0.03)	-0.13** (0.06)
<i>Weekday</i>	34.85*** (2.97)	22.72*** (3.43)	11.07* (6.43)
Number of children			
<i>Nchild01</i>	149.72*** (4.18)	24.37*** (4.60)	78.99*** (8.55)
<i>Nchild25</i>	65.18*** (3.05)	21.30*** (3.41)	59.42*** (6.46)
<i>Nchild69</i>	35.54*** (2.81)	18.77*** (3.16)	35.82*** (6.07)
<i>Nchild1016</i>	-10.07*** (2.57)	-10.92*** (3.03)	-12.09** (5.85)
<i>Spanish</i>	16.56** (7.29)	-15.23* (7.86)	33.43** (15.69)
<i>Dishwasher</i>	0.09 (3.12)	0.98 (3.54)	-9.51 (6.88)
Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	15.49*** (4.81)	17.53*** (5.39)	36.10*** (10.47)
<i>Tertiary</i>	15.37*** (4.17)	11.38** (4.72)	36.03** (8.99)
<i>University Degree</i>	22.53*** (5.12)	31.36*** (5.65)	65.39*** (10.98)
Partner’s Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	-2.81 (4.80)	6.56 (5.32)	1.47 (10.53)
<i>Tertiary</i>	-4.54 (4.01)	2.02 (4.54)	27.16*** (8.54)
<i>University Degree</i>	0.89 (4.74)	12.84** (5.21)	16.12 (10.11)
<i>Flat Owner</i>	2.93 (3.93)	1.54 (4.44)	-14.41 (8.33)
<i>Working Partner</i>	12.59** (5.21)	16.70* (6.33)	7.77 (11.84)
<i>Expected Employment</i>	-26.93*** (6.03)	-4.20 (6.89)	-24.70* (13.25)
<i>Observations</i>	4760		

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

NOTE: Standard errors in brackets. Regression based on the sample of individuals aged 17 and older, who have at least a child under the age of 17, who are married or cohabiting, and from whom there is complete information of all the variables used in the analysis.

The higher the level of education, the more time both fathers and mothers dedicate to childcare, especially to primary childcare. It is interesting to observe that males with highly educated partners spend longer time in childcare. By contrast, there is no clear association between females and their husband’s level of education.

Finally, we observe in Table 8 that there is no significant relationship between the expected employment status (used as an instrument for the endogenous variable being at work or not) and fathers' childcare time. Interestingly, for females, the estimates in Table 9 show that there is a negative relationship between employment and primary childcare time. But the relationship is not significant for quality primary childcare. This corroborates the fact that working mothers prioritise spending quality time with their children over other sort of childcare time.

Alternatively, we have also estimated the Tobit equation using the expected number of hours worked after being purged of its endogeneity with childcare time (not reported). We find that there is no clear-cut pattern for fathers since the expected number of hours is insignificant for basic primary childcare, it has a positive relationship with quality primary childcare, while it has a negative relationship with secondary childcare. This could be signalling that males who work longer hours focus on quality primary childcare time and disregard the others. Focusing on mothers, we find that the longer the expected hours females spent working, the lower the overall allocation of childcare. Interestingly, the expected number of hours do not affect significantly quality primary childcare, which suggests once more that working mothers prioritise this sort of childcare amongst others.

The main results are summarised as follows. First, the econometric analysis confirms that fathers concentrate their childcare time over the weekend and mothers during the working week. Second, higher levels of education are crucial for both sexes, especially regarding primary childcare. Third, while females do not respond significantly to their partners' education, males increase their childcare time allocation if their partners are highly educated. Finally, there is evidence that working mothers prioritise spending quality time with their children over other sort of childcare time.

## 5.2 Job Characteristics and Time with Children

Tables 10 and 11 report the results of estimating the model for working fathers and mothers, respectively. We restrict our sample to those individuals who completed their diary during the week since we want to capture the pattern of their working hours.<sup>6</sup>

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<sup>6</sup>We have also estimated the model for employed males and females who complete their diary both during the week and over the weekend to analyse the effect of the weekend on childcare time. In this estimation, we do not control for job characteristics that can only be constructed by diaries completed during the week. Results from this estimation confirm that working males spend longer time with their children over the weekend, and working females spend longer time during the week.

As expected, we observe that the number of children and its age is crucial in determining the quantity of childcare time, for both males and females.

Interestingly, there is a positive effect of receiving external help on overall childcare time in this subsample of working individuals. This positive association is especially remarkable for basic primary childcare for males, and quality primary childcare for females. Therefore, receiving help to deal with household duties free time for childcare for working individuals. If we want to design policies aimed at achieving that working mothers spend more time with their children, helping the households to finance their external domestic help may be a plausible way of action. Belgium, for instance, implemented a system in 2003 in which the government returns to the households a percentage of their domestic expenses. (*dienstencheques*).<sup>7</sup> Although the main objective in Belgium was to regulate the market of domestic work, this policy implemented in Spain may have the additional role of allowing working mothers the choice of devoting more time to their children. Furthermore, the fact that for the working parents there is no clear positive association between the non-labour income and the time with children suggests that a policy that would give lump sum cash transfers to working parents may not be effective.

The higher the level of education, the higher the time spent in primary childcare for both sexes. For working males, the level of education of their partners is important, while this is not significant for working females. Working fathers also increase their childcare time whenever their partners are in paid work, but mothers do not significantly change their childcare time allocation depending on their partners employment status. This suggests that non-employed males tend to contribute little in childcare, independently of their partners working or not. This is in line with some of the results by Fernández and Sevilla-Sanz (2006). For example, they observe that in Spain wives who earn more than their husbands still undertake more than 50% of childcare.

Focusing now on the effect of the job characteristics, we observe that the occupation dummies do not show a clear pattern. Working continuously rather than having a large break at noon increases the time spent in all types of childcare only for fathers. For mothers, results reveal that not working after 6pm is crucial for spending more time with children. This suggests that there are clear gains in childcare time of implementing a working hours timetable that has no long breaks at noon and that finishes before 6pm. Working in the public sector has a positive association with

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<sup>7</sup>For more information, see <http://www.familiehulp.be/pit/pit.php> and <http://www.dienstencheques.be>.

Table 10: Tobit Parameter Estimates of Basic Primary Childcare, Quality Primary Childcare and Secondary Childcare, Working Fathers

<i>Variable</i>	<i>Basic Primary</i>	<i>Quality Primary</i>	<i>Secondary</i>
<i>Age</i>	3.28 (2.97)	2.06 (3.48)	4.35 (6.25)
<i>Age square</i>	-0.05 (0.04)	-0.05 (0.04)	-0.08 (0.07)
Occupation (Omitted category <i>Occ0</i> )			
<i>Occ1</i>	-25.46 (18.22)	-10.35 (25.18)	25.25 (47.09)
<i>Occ2</i>	-1.47 (17.34)	5.46 (21.76)	39.77 (43.17)
<i>Occ3</i>	-1.40 (17.13)	10.28 (21.57)	42.61 (43.02)
<i>Occ4</i>	-19.25 (17.79)	20.97 (22.30)	54.93 (43.68)
<i>Occ5</i>	-7.39 (17.14)	12.33 (21.63)	26.23 (43.42)
<i>Occ6</i>	-21.96 (23.72)	-3.71 (29.38)	-12.67 (58.23)
<i>Occ7</i>	-12.28 (17.16)	23.29 (21.58)	34.84 (43.17)
<i>Occ8</i>	-24.32 (17.45)	11.54 (21.92)	22.07 (43.70)
<i>Occ9</i>	-22.77 (17.85)	28.32 (22.17)	29.40 (44.23)
<i>Continued</i>	14.20*** (4.64)	0.03 (5.50)	16.80 (9.25)
<i>Work After 6pm</i>	-6.43 (5.51)	-22.81*** (6.70)	-10.45 (10.96)
<i>Public Sector</i>	0.11 (5.68)	2.14 (6.85)	-26.56** (11.46)
Number of children			
<i>Nchild01</i>	62.38*** (4.98)	33.57*** (6.90)	27.15** (11.58)
<i>Nchild25</i>	38.12*** (3.86)	29.64*** (5.23)	32.76*** (8.98)
<i>Nchild69</i>	19.46*** (3.63)	23.80*** (4.93)	17.67** (8.44)
<i>Nchild1016</i>	-13.24*** (3.60)	-9.90** (4.95)	-11.80 (8.47)
<i>Spanish</i>	16.68 (12.52)	13.51 (14.49)	38.80 (27.42)
<i>Dishwasher</i>	10.32*** (4.64)	2.77 (5.59)	-12.01* (9.35)
<i>External Help</i>	7.83* (4.16)	1.62 (5.73)	15.20* (9.31)
Non Labour Income			
<i>Nonlabinc1</i>	-0.99 (5.87)	-8.45 (6.99)	-12.59 (11.68)
<i>Nonlabinc2</i>	-3.68** (8.26)	-8.85 (10.08)	-7.81 (16.27)
<i>Nonlabinc3</i>	-2.27 (32.62)	-24.69 (41.81)	-669.34 (.)
Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	18.46*** (7.17)	15.78* (8.06)	13.88 (14.64)
<i>Tertiary</i>	9.80* (5.95)	2.10 (7.11)	12.25 (11.78)
<i>University Degree</i>	13.61* (8.59)	20.12** (10.24)	32.04* (16.96)
Partner's Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	15.62*** (6.83)	1.65 (8.25)	9.47 (13.93)
<i>Tertiary</i>	14.65** (6.09)	11.69* (7.17)	9.55 (12.09)
<i>University Degree</i>	24.49*** (6.85)	6.02 (8.32)	15.88 (13.75)
<i>Flat Owner</i>	9.23 (6.34)	1.27 (7.33)	21.05* (12.89)
<i>Working Partner</i>	18.23*** (6.01)	5.29 (7.22)	28.25** (12.12)
<i>Hours at Work</i>	-4.51*** (0.75)	-2.96*** (0.88)	-1.51 (1.51)
<i>Observations</i>	2140		

\*  $p < .1$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ .

NOTE: Standard errors in brackets. Regression based on the sample of individuals aged 17 and older, who responded during the week, who have at least a child under the age of 17, who are married or cohabiting, work and from whom there is complete information of all the variables used in the analysis. Regression also includes region dummies, not reported.

Table 11: Tobit Parameter Estimates of Basic Primary Childcare, Quality Primary Childcare and Secondary Childcare, Working Mothers

<i>Variable</i>	<i>Basic Primary</i>	<i>Quality Primary</i>	<i>Secondary</i>
<i>Age</i>	10.71 (4.07)	4.86 (4.81)	16.94* (8.79)
<i>Age square</i>	-0.18** (0.05)	-0.09 (0.06)	-0.27** (0.12)
Occupation (Omitted category <i>Occ1</i> )			
<i>Occ2</i>	1.52 (19.93)	39.03 (25.34)	-23.95 (35.14)
<i>Occ3</i>	-5.92 (20.23)	25.36 (25.61)	-19.63 (35.58)
<i>Occ4</i>	-18.96 (20.73)	40.13 (26.06)	-36.47 (36.77)
<i>Occ5</i>	-9.21 (20.88)	27.99 (26.23)	-41.32 (37.14)
<i>Occ6</i>	-34.72 (41.99)	23.38 (49.44)	-668.76 (.)
<i>Occ7</i>	-20.88 (23.08)	22.10 (28.67)	-58.22 (42.79)
<i>Occ8</i>	-1.19 (24.60)	15.55 (31.18)	-67.80 (47.29)
<i>Occ9</i>	-2.32 (21.47)	23.58 (26.94)	-42.81 (38.62)
<i>Continued</i>	-1.24 (5.72)	0.41 (6.56)	31.25 (11.38)
<i>Work After 6pm</i>	-17.29*** (6.28)	-18.49*** (7.30)	18.89 (11.90)
<i>Public Sector</i>	-3.73 (6.02)	13.44** (6.76)	-7.59 (11.45)
Number of children			
<i>Nchild01</i>	121.13*** (7.34)	13.61* (6.16)	47.48*** (13.37)
<i>Nchild25</i>	55.71*** (5.42)	10.73* (6.05)	34.85*** (10.09)
<i>Nchild69</i>	21.12*** (4.99)	13.82** (5.73)	22.75** (9.46)
<i>Nchild1016</i>	-11.22** (4.89)	-6.05 (5.68)	4.86 (9.45)
<i>Spanish</i>	25.60* (14.86)	-15.53 (16.29)	6.43 (27.63)
<i>Dishwasher</i>	-9.15 (5.33)	-5.98 (6.09)	-18.64 (10.40)
<i>External Help</i>	7.36 (5.24)	14.24** (5.98)	21.09** (10.08)
Non Labour Income (Omitted category <i>Nonlabinc0</i> )			
<i>Nonlabinc1</i>	15.72 (12.60)	16.87 (15.43)	14.43 (25.57)
<i>Nonlabinc2</i>	7.58 (12.96)	27.72* (15.81)	20.50 (26.21)
<i>Nonlabinc3</i>	-1.71 (17.47)	-10.69 (21.74)	30.49 (33.29)
Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	28.35*** (8.65)	21.22** (9.85)	42.72*** (16.62)
<i>Tertiary</i>	30.21*** (7.45)	11.20 (8.69)	9.01 (14.80)
<i>University Degree</i>	27.65*** (9.64)	16.77** (10.87)	30.32 (18.42)
Partner's Qualifications (Omitted category <i>Primary and Under</i> )			
<i>Secondary</i>	9.31 (7.87)	0.79 (8.94)	8.44 (13.97)
<i>Tertiary</i>	-8.42 (6.83)	-8.28 (7.95)	27.09** (15.06)
<i>University Degree</i>	7.01 (7.69)	2.41 (8.67)	14.49 (14.66)
<i>Flat Owner</i>	18.15** (7.05)	0.99 (8.08)	-2.62 (13.44)
<i>Working Partner</i>	-0.38 (10.53)	-9.38 (12.29)	-24.18 (20.34)
<i>Hours at Work</i>	-6.83*** (0.86)	-1.34 (0.98)	-3.03** (1.66)
<i>Observations</i>	1245		

\* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

NOTE: Standard errors in brackets. Regression based on the sample of individuals aged 17 and older, who responded during the week, who have at least a child under the age of 17, who are married or cohabiting, work and from whom there is complete information of all the variables used in the analysis. Regression also includes region dummies, not reported.

quality primary childcare time, but for other sorts of childcare the pattern is unclear. Finally, longer hours at work, *ceteris paribus*, reduces time of childcare, especially basic care, for both genders.

To summarise, focusing on working individuals outlines the following three patterns in the allocation of childcare time. First, receiving external help to deal with household tasks is positively associated with the overall time devoted to children by working fathers and mothers. Second, a continuous working timetable ending no later than 6pm has also a positive relationship with overall childcare time. Third, the higher the level of education, the more time spent in childcare. Males' childcare time has a positive association with their partners qualifications and working status, but females are unaffected by these factors. This suggests that working males with working partners participate more in family duties and hence compensate slightly for the lower overall childcare time that working mothers do.

## 6 Conclusions

This paper analyses the relationship between parental employment and time with children in Spain. More precisely, it studies whether there are differences between fathers and mothers, and across employment status. It also evaluates the relationship between the allocation of childcare time and individual and job characteristics. It considers four types of childcare: basic primary childcare, quality primary childcare, secondary childcare and passive childcare. Primary care refers to time where childcare is the first activity and secondary childcare when it is undertaken as the second activity. Passive activity involves any time where a parent is doing any other activity in the presence of a child under 10 years of age.

There is evidence that the allocation of childcare time will have a direct effect on children's wellbeing. We expect that the longer the time devoted to primary childcare, especially quality time, the better for children's cognitive development. The recent increase in mothers' employment rates raises the question of whether these higher rates may have adverse effects on children. Hence, getting a sense of the differences in childcare across employment status can provide us with useful information regarding the plausibility and magnitude of this effect. At the same time, a better understanding of which characteristics are associated with longer time devoted to childcare can give us some hints about the sort of policy that can help in raising childcare time.

First, we find that, despite having similar levels of education, fathers and mothers differ substantially in the allocation of childcare time, except in quality primary childcare. This implies that the equalisation of human capital skills across genders has not been translated into an equalisation of family duties. For example, working mothers spend three times as much time in basic primary childcare and twice as much in secondary childcare than both working and non-working fathers. The finding that the differences in the allocation of childcare time are insignificant in quality primary childcare suggests that males clearly concentrate their family duties in quality primary childcare.

Second, we find evidence that, although non-working mothers devote longer time to overall childcare, the difference across working status is not significant for quality primary childcare time. The econometric analysis confirms that working mothers prioritise quality primary childcare over other types of childcare, and they compensate slightly on quality time over the weekend. Furthermore, the fact that males' childcare time is positively associated with their partners employment indicates that there is also some compensation within the couple. Therefore, the overall effect of mothers taking up jobs on quality primary childcare is likely to be very small, a finding that is encouraging. Moreover, although non-working mothers devote longer time to passive childcare, we observe that the main activity done in the presence of children is often rather unsatisfactory for child's development, for example, watching TV.

Third, the econometric analysis shows that higher levels of education, independently of income and other factors, are crucial in increasing primary childcare time. This finding suggests that reaching higher levels of education in the population will benefit not only the current generation but also their descendants, through increases in primary childcare time. Furthermore, the analysis of the 10 to 16 years old activity diary reveals that children whose parents have a university degree tend to spend much less time watching TV and more time doing cognitive development activities.

Finally, our evidence is consistent with the following policy that may potentially facilitate longer childcare time amongst working individuals: establishing a continuous working timetable ending no later than 6pm, more in line with the scholar timetable.

## A List of Variables

- Seven 0–1 regional dummies. *NW* includes Galicia, Principado de Asturias and Cantabria, and it is the omitted category. *CM* is Comunidad de Madrid. *NE* includes País Vasco, Navarra, La Rioja and Aragón. *E* includes Catalunya, Comunidad Valenciana and Baleares. *C* includes Castilla León, Castilla la Mancha and Extremadura. *S* includes Andalucía and Murcia. *OP* includes Canaries, Ceuta and Melilla.
- *Age* and its square.
- *Weekday*=1 if calendar time refer to a day from Monday to Friday.
- *Health*=1 if the individual reports having good health; seven regional dummies, the omitted region corresponding to the north-west.
- Four variables with the number of children in the following age groups 0–1, 2–5, 6–9 and 10–15 (*Nchild01*, *Nchild25*, *Nchild69* and *Nchild1015*), being the latter the omitted category.
- *Spanish*=1 if the individual has the Spanish citizenship.
- *Dishwasher*=1 if the household owns a dishwasher.
- *Flat Owner*=1 if the individual lives in an own flat.
- *External Help*=1 if the household receives some sort of external help to manage the tasks.
- Four dummies for the non-labour income (*Nonlabinc*), being zero the reference category. There are some missing values when individuals do not report the household income or when despite working, they do not report the wage. It is important to notice that the income and wage values are given within intervals, which makes it harder to construct accurate non labour income dummies. We build four dummies: *Nonlabinc0* = 1 when it is zero; *Nonlabinc1* = 1 when it is roughly between 0 and 1,000 euros, *Nonlabinc2* = 1 when it is between 1,000 and 1,500 euros and *Nonlabinc3* = 1 when it is more than 1,500 euros.
- Four 0–1 dummies that capture the highest education level achieved by each individual. (*Primary and Under*, *Secondary*, *Tertiary*, *University Degree*), with the omitted variable measuring the lowest level.
- Partner qualification dummies, following the same classification as the individual's qualifications dummies.

- *Working Partner* = 1 if partner is employed.
- Expected number of hours work (*Expected Hours*) or expected employment status (*Expected Employment*) used alternatively as instruments. The *Expected Hours* is estimated with a Tobit model for individuals who work and report the number of hours, using the same regressors as in the main equation, but including regional dummies and a *Health* dummy. We use the estimates of the parameters to predict the value of the working hours for all individuals, either those who work or do not work and these will be used in the main regression. The *Expected Employment* is estimated with a probit model using the same explanatory variables as in *Expected Hours*. The variables *Health* and region dummies do not appear in the main equation for the quantity of time spent in childcare. These are the variables that make that after including *Expected Hours* or *Expected Employment* as regressors, the equation is still identified.
- Ten 0–1 occupation dummies that correspond to the occupation of first job, following the CNO-94 classification: *Occ0* = 1 if military forces (reference category); *Occ1* = 1 if director of firms and public administration; *Occ2* = 1 if technicians, professionals and intellectuals; *Occ3* = 1 if technicians, professionals and intellectuals of support; *Occ4* = 1 if administrative workers; *Occ5* = 1 if commercial and restaurants workers; *Occ6* = 1 if qualified workers in fishing and agriculture; *Occ7* = 1 if handcrafters, qualified workers in mines and building; *Occ8* = 1 if operators; *Occ9* = 1 if non-qualified workers.
- *Continued* = 1 if the individual reports to work without a break during his/her working day.
- *Public Sector* = 1 if the individual is employed in the public sector, 0 if he/she is any type of self-employed, employed in the private sector or other
- *Working After 6pm* = 1 if the individual reports working after 6pm, 0 if he/she finishes work before 6pm
- *Hours at Work* = number of hours a day the individual spends at work

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