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THE DETERMINANTS OF CHILDREN'S USE OF EXTRA-SCHOOL TIME IN EUROPE

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The determinants of children's use of extra-school time in Europe¹

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Abstract

In this paper, we describe what children do in their extra-school time in Europe, and explore the determinants of the use of their time in order to assess whether differences exist across families with different characteristics, as well as between European countries. Using data for the Multinational Time Use data, we analyse children's time engaged in sports and games, as well as social, cultural, and religious events. We also observe the time spent with parents, both playing and studying. We find parental background and family characteristics to be important: parental education increases the time spent together in both educational and playing activities, while parental work – probably as a proxy of income – increases children's time in sports, social and cultural events.

Keywords: time use data, children, activities, Europe, sport

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1. Introduction

In recent years, scientists from different disciplines have increasingly dedicated their efforts to understanding how childhood conditions influence the development of an individual. The school and the family play a role in this process, by making children able to enhance their potential abilities. In particular, interest has grown in the role of early care, since as "good" stimuluses (when the child is under the age of 3) have been shown to be very effective (Ruhm, 2004; Heckman et al, 2010; Brilli et al, 2016; Del Boca et al, 2018). Over time, and across regions, there has been considerable heterogeneity in terms of the ways in which very young children are looked after, especially given differences in the labour market participation of women, the availability of crèches, social policies, and the geographic proximity of grandparents. After the age of 3, about 85% of children in Europe are enrolled in kindergarten or pre-school (OECD, 2014). However, apart from differences in the quality of the schools attended, the effects of which having already been thoroughly investigated (Card and Krueger, 1992; Elango et al, 2016), children are exposed to other heterogeneous sources of development opportunities. In particular, between the end of the day at school and bedtime at home, there is lag of time which can be used for more or less structured activities. For example, playing a sport in a team, rather than playing freely in the park. Children can take part in such activities together with other children (friends, siblings, cousins) or with other adults (non-working parents, grandparents, instructors).

Very little is known about how children from different family backgrounds spend this time and what consequences it can have on their development and wellbeing. Moreover, little is known about the determinants of children's participation in extra-curricular activities (such as sport, foreign languages and music). Most of these activities are not for free, so a child's participation may depend on the parents' preferences, time and income constraints, the child's own inclinations and talents, and even on what activities the child's peers take part in. Parents may hold different beliefs about the importance of such extra-curricular activities; alternatively, even if convinced of their value, they may not be able to afford them or to manage the logistics. For example, they may not have the time to shuttle their child from school to a certain activity, and they may not want (or be able to afford) someone else to do so in their stead. For families with children of different ages, the situation is even more complicated. It is thus easy to expect that children from different family backgrounds have access to different opportunities.

Evidence from US shows that inequality in opportunities is increasing across children, making the American dream less and less realistic. In the US, we observe that income inequality and the achievement test score gap between high and low-income families has increased dramatically in the

last 40 years (Duncan et al, 2017). Children's lives and learning opportunities are strongly determined by the family (in the form of marital stability, a supportive parenting style, as well as economic and cultural resources). Participation in extra-curricular activities is becoming another mark of the diverging destinies of children (Putnam, 2015). Not only do parents spend more money on their children, but parents also spend more on childcare and education. Among various categories, socialcultural spending (music, arts, sports, toys, and holidays) accounted for one third of the total spent on American children in 2007 (Kornrich and Furstenberg, 2013).

In this paper, we study the impact of family background on the use of the extra-school time of children of primary-school age, using data from the time diaries of parents and of children of different European countries.

Understanding whether children from families with different characteristics (cultural and economic resources, family structure) have the same opportunities in their extra-school time is important if the different uses of that time have an impact on child development. Indeed, a number of studies show that this is the case. Regarding single activities, several studies have looked at the effect of reading, video-screen time, sport, and religious activities. There is a consistency amongst the findings of the few studies that have examined the effects of reading. Anderson et al (1988) and Taylor et al (1990) find that the amount of time spent reading contributes significantly to gains in students' reading achievements (using US data). Among many studies, different studies on sports participation involving US sourced data are reported, which are particularly interesting for the variety of outcomes they reveal. Among the earliest studies, one by Spreitzer and Pugh (1973) shows that athletic involvement has a positive effect on degree attainment expectations, after controlling for the socioeconomic status of the family, parental academic encouragement, and student grade averages. Lipscomb (2007), exploiting the availability of data over time, tests whether participation in activities provides an immediate return in student learning. Independent of individual ability, athletic participation and club participation increase scores in math, in science, and degree attainment expectations. Stevenson (2010), exploiting a policy change aimed at boosting female athletic participation rates to approximately male levels in schools, finds that increased girls' participation leads to higher female college attendance, female labour force participation, and female participation in high-skill occupations. Eccles et al (2003) find that participation in service and religious activities predicts lower rates of drinking and drug use. Some research has been done on the topic with European representative data. Using UK data, Meroni, Piazzalunga, and Pronzato (2017) study the relationship between activities and child behaviours at the age of 7 and 11. They find there to be beneficial effects from engaging in sport, activities with parents, and helping with household chores, while they find video-screen time to have a detrimental effect. No effect is found for participating in religious activities.

The most rigorous study is the one carried out by Fiorini and Keane (2014), using Australian data. The main difference between this study and those previously cited is that Fiorini and Keane study the impact of all activities at the same time, making use of children's time diaries. The result of their research is a ranking of activities (from the most to the least beneficial), rather than the effect one activity versus "all the rest". They find that time spent in educational activities, particularly with parents, is the most beneficial to cognitive skill development.

Other disciplines give importance to less structured uses of time. In an article in Paediatrics, Ginsburg (2007) stresses the importance of free child-centred play (versus further academic or enrichment activities) in promoting healthy child development: "Play allows children to create and explore a world they can master [...]. Undirected play allows children to learn how to work in groups, to share, to negotiate, to resolve conflicts, and to learn self-advocacy skills". Consistent with this theory, a recent study published in Frontiers in Psychology (Barker et al, 2014), and using time allocation data for 70 children aged 6-7, shows that children who spend more time in less structured activities are better able to set their own goals and take action to meet those goals without encouragement from adults.

This paper uses data on seven European countries from the Multinational Time Use Data to study the determinants of children's uses of time. Given the previous research finding and the information available in the data, we focus on the time spent together by children and mothers/fathers, and on the time that children spend reading, doing sport, as well as at cultural events, social occasions, and religious activities. We select families with children in primary schools (between 5 and 11 years old). At that age, children are already involved in many activities beyond school: for example, 26% of UK children do sport on weekly basis when 5 years old; 46% when 7 years old; and 76% when 11 years old (Meroni et al, 2017). Moreover, as such children are not old enough to stay alone at home and parents' decisional roles are still dominant, the way in which extra-school-time is organized is – for families – an important issue.

The paper is organized as follows: in Section 2 we describe the data, the selection of the sample, and the variables used through the analysis; in Section 3 we present the results concerning the determinants of the time that parents and children spend together, while in Section 4 the determinants of the different uses of children's time are presented. Conclusions follow (Section 5).

2. The Multinational Time Use Study, sample selection, and variables

The data we use is drawn from the Multinational Time Use Study. The Multinational Time Use Study brings together and harmonizes time-use data from over 70 national surveys. This allows researchers to analyse the time spent by different people in various sorts of work and leisure activities (over the last 55 years and across 30 countries). Time use data collects information on the activity, the place of the activity, and the people with whom the activity is shared every 5-10-15 minutes, depending on the country.

Since the aim is to understand what formative experiences children may encounter over the day, we need to restrict our analyses to countries' datasets with a good level of description of children's activities. This leads us to work on data for seven countries: Austria (1992), France (1998), Germany (1991), Italy (1989), Netherlands (2005), Spain (2009), and the United Kingdom (2000). For all seven countries, we have information from adults' diaries about the time parents and their children spend together. For only four countries (Austria, Italy, Spain, UK) we have also information on children's activities, directly from children's diaries.

When looking at the time spent by children together with their parents, we can discern two different uses: time spent in school activities (teaching, helping with homework) and time in other educational/playing activities (reading, talking or playing). From children's diaries, we focus on five groups of activities: time spent engaged in games (solitary or social) and other in-home social activities; time spent playing sport; time spent in religious activities; time spent attending a show (sporting events, cinema, theatre, opera, concert); and time spent in social activities (receiving or visiting friends; at a restaurant, café, ...).

Regarding the sample selection, when using information from children's diaries, we selected children aged between 5 and 11 years old. The situation is more complicate when using information from parents' diaries. Ideally, we would like to study the time that parents spend with children aged between 5 and 11, but we only know whether the parent is spending time with his/her own child, how many children are in the household, and the age of the youngest child. Therefore, we select parents who spend time with any of their children, and whose youngest child is between 5 and 11 (singleton, or with siblings). We analyse their activities using both the sample of singletons (in this case, we are sure that the parent is spending time with that child) and the whole sample (in order to have a larger sample size and to be able to generalise the results to more families). Consequently, we exclude families with younger children, even if some of them could also have a sibling in the considered age-range, as we cannot derive this information.

Identifying parents is also problematic, since relationships in household are often not clearly defined. We decide to define parents as adults aged between 20 and 60 years old, in households where no more than one adult per gender is present (losing around 2% of cases because of two women in the same household, and around 1% of the cases because of two men in the same household).

Our dependent variables are the total number of minutes - over the diary day - spent in each of the seven activities. Tables 1 and 2 summarise these measures. In Table 1, we observe that mothers spend - on average - around 9 minutes per day helping children with homework, and 11 in other educational/playing activities. The number of minutes increase to 12 and 10, respectively, when considering the sample of all children (with/without siblings). The time that fathers spend with children is much less, especially when considering school activities (3-4 minutes per day). The average time spent in other education/playing activities is instead higher (10 minutes). In Table 2, we observe that children on average spend more than 2 hours per day engaged in games, 35 minutes in social events with friends, 19 minutes in sport activities, 5 minutes attending sport events or watching movies at cinemas, and 9 minutes in religious activities.

3. The determinants of European children and parents' time together

In this section, we explain how the time spent with parents depends on both child and family characteristics. We are interested to determine, in particular, whether a richer (in a cultural and economic sense) family background increases the time devoted to more stimulating activities. We have information on parental education and on parental work. Parental work, in this specific context, could also decrease the amount of time spent together, since it implies higher opportunity costs. We control for the age of the youngest child and the country of residence. The independent variables are summarised in Table 3 while results from the linear regressions are reported in Tables 4 and 5. The tables are organized in four columns: the first two reporting the time with the mother, the second two reporting the time with the father; the first and the third ones refer to singletons, the second and the fourth to all children (singletons and children with older siblings). In most countries, only one adult per household is interviewed, so that is not possible to know both parents' characteristics. Before passing to the regressions, we summarise the characteristics of the samples, reported in Table 3. Most parents have upper secondary education, around one fourth have post-secondary education; around 60% of mothers and 90% of the fathers work. 30% of the samples have a youngest child aged 5-7 years old; almost 50% have a youngest aged 8-9; for the remaining 20-25%, the youngest is aged 10-11. We have larger samples available for Italy, Austria, and Germany.

Table 4 comprises the results for time spent in teaching and helping a child with homework. Coefficients express more/fewer minutes spent in this activity. Regarding parental background, we observe a positive effect of parents' education on the time spent helping children with homework. The effect is larger for mothers than for fathers. Mother's work has a negative effect thereof, while father's work is not relevant. We can expect younger children to study less, as confirmed by our estimates for the samples of singletons, but this is not the case for children with older siblings, who may be of an age-range at which they need help.

Table 5 comprises the results for time spent in reading, talking, and playing with the child. Time spent playing or reading to the child is less when parents work. Interestingly, the negative effect is stronger for fathers than for mothers. Parental education, especially the mother's education, has a positive effect. There is no difference, however, between parents with and without secondary education in families with more children. Parents spend more time playing when they have younger children. Looking at both Table 4 and Table 5, we can observe differences across European countries: Austrian and Spanish mothers spend – ceteris paribus – more time with their children. Italian parents spend less time engaged in educational and playing activities than their European counterparts do.

4. The determinants of European children's use of time

In this section, we analyse – through linear regressions – the determinants of children's activities, as stated by children in their own time diaries. Unfortunately, analyses are restricted to four countries (the only ones that collect data from children), but there are more independent variables whose effects we can look at. In fact, we have information on both parents.

Table 6 summarises the characteristics of the sample. 44% of mothers and 77% of fathers work; the maximum level of parents' education is post-secondary for 21% of the sample, upper secondary for 54% of the sample, and less than secondary for 24% of the sample. Half of the sample is composed of boys, three quarters of the interviewed children have siblings, and half of the interviewed children are 10-11 years old. Italy and the UK present much larger samples.

In Table 7, we report the results for time spent in the five categories. Interestingly, parental education only affects one time dimension, with a positive effect on time spent in social activities. Parents' work can signal the effects of different things: of a higher income, of less spare time available, of a less traditional family (in the case of mothers working). We probably see all these meanings in our estimates. Parents' work increases the chances of being able to afford sports, cultural and social events, and decreases the time engaged in religious activities, as well as the time spent playing and

studying with their children (as seen previously in the results of Tables 4 and 5). Younger children spend less time in all activities, with the exception of games. Children with siblings are more likely to play games – having companions– while their families probably have more difficulty (or less need to) organizing social events, such as going to restaurants and visiting friends. Children with siblings are also more likely to participate in religious activities, which could be due to the fact that religious parents are likely to have more children (reverse causality). Boys are more involved in sports while girls are more involved in social events and religious events. Italian children play more, and participate more in social and religious activities, but participate less in physical activities.

5. Conclusions

In this paper, we use data on seven European countries from the Multinational Time Use Data to study the determinants of children's uses of extra-school time. Given the beneficial effects of some structured activities, as stressed by the economic and social research, and the importance of unstructured playing underlined by psychologists and paediatrics, we focus on seven typologies of activity: studying and playing (with parents, from parents' diaries); doing sport, doing games, participating in cultural events, social occasions, and religious activities (from children's diaries).

We find parental background and family characteristics to be important. Highly educated parents spend more time helping their children with homework and playing with them. Mother's work reduces the time spent engaged in the above activities, but post-secondary education offsets the negative effect. The role of fathers is particularly relevant to more entertaining activities: while there is a large difference between the time fathers and mothers spend helping children with homework, the gap in time spent playing is much narrower. We also find a positive effect of father's work on sports and on show attendance, probably as a proxy of income. Age, gender, and the presence of siblings also matter. We observe some differences across countries that, however, are difficult to interpret. Countries' sample sizes do not allow for precise estimates at the country level.

This paper also calls for further, and more accurate, harmonization of the data collected in European countries on children's time use. As has become clear throughout the paper, that data has some important limitations: it is relatively old (we miss video-screen time, for example), reports the time that adults spend with children (not specifying which child), only reports the age of the youngest child and the total number of children, and does not state the relationships across household members. While harmonization is possible for some of the broad categories of time and for a small subsample

of countries, if not organized and financed through a structured project, as was the case for the Multinational Time Use Study, it is hard for smaller categories and a large number of countries.

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TABLES

Table 1: Parents' time spent with their children in Europe (minutes)

	Time with	the mother	Time with	the father
	Singletons	All children	Singletons	All children
Teaching their child a skill, helping	9.11 (23.91)	12.15 (28.13)	3.03 (15.45)	3.82 (17.41)
with homework				
Reading or talking to or playing with	11.18 (28.69)	9.74 (25.72)	10.29 (29.02)	7.52 (25.62)
their child				
Observations	3,088	5,975	2,353	5,369

Notes: means (standard deviations) of the minutes children spent with their mother or the father in different activities. The samples "Singletons" comprise all families with an only child between 5 and 11 years old; the samples "All children" comprises all families, with the youngest child between 5 and 11 years old (with/without older siblings).

Table 2: Children's use of time in Europe (minutes)

Religious activities	8.56 (24.30)
Sports	19.06 (53.87)
Shows (cinema, sport events)	4.85 (29.63)
Social life (restaurants, receiving friends)	35.53 (70.52)
Games	124.61 (122.74)
Observations	4,603

Notes: means (standard deviations) of the minutes children spent in different activities.

Table 3: Characteristics of the parent samples

	Mc	ther	Fa	ther
	Singletons	All children	Singletons	All children
Post-secondary (%)	25.23	25.89	23.20	28.78
Upper secondary (%)	37.92	37.32	38.72	37.60
Less than secondary (%)	36.85	36.79	38.08	33.62
Work (%)	64.25	59.50	91.46	93.72
Child's age: 5-7 years old (%)	28.69	30.98	28.52	31.29
Child's age: 8-9 years old (%)	48.06	46.49	47.60	44.20
Child's age: 10-11 years old (%)	23.25	22.53	23.88	24.51
Austria (%)	19.30	12.57	19.97	12.24
France (%)	8.78	11.25	9.31	11.32
Germany (%)	17.13	19.46	16.45	18.81
Spain (%)	13.02	9.77	12.92	9.50
Netherlands (%)	7.19	9.10	3.57	11.40
United Kingdom (%)	10.59	14.74	8.58	11.99
Italy (%)	23.99	23.11	29.20	24.74
Observations	3,088	5,975	2,353	5,369

Notes: means of the explanatory variables. The samples "Singletons" comprise all families with an only child between 5 and 11 years old; the samples "All children" comprise all families with the youngest child between 5 and 11 years old (with/without older siblings).

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	Time with	the mother	Time with	the father
	Singletons	All children	Singletons	All children
Post-secondary	3.07** (1.24)	4.30*** (1.01)	2.33** (0.91)	2.52*** (0.65)
Upper secondary	2.11* (1.11)	2.97*** (0.90)	0.83 (0.82)	1.00* (0.60)
Less than secondary				
Work	-4.68*** (0.92)	-4.49*** (0.77)	-0.78 (1.16)	-0.13 (1.00)
Child's age: 5-7 years old	-2.29* (1.22)	1.77* (1.05)	-2.44*** (0.91)	0.08 (0.67)
Child's age: 8-9 years old	0.33 (1.22)	1.22 (1.03)	-0.70 (0.90)	0.14 (0.67)
Child's age: 10-11 years old				
Austria	3.48** (1.52)	6.26*** (1.37)	-1.95* (1.10)	-0.95 (0.90)
France	1.96 (1.72)	2.55* (1.35)	-0.88 (1.21)	1.52* (0.86)
Germany	1.59 (1.67)	-0.88 (1.33)	-1.74 (1.18)	-1.40 (0.86)
Spain	5.02*** (1.58)	2.82* (1.44)	1.85 (1.17)	2.62*** (0.96)
Netherlands	-4.08** (1.86)	-4.54*** (1.44)	-2.78 (1.80)	-1.26 (0.89)
United Kingdom	-3.21** (1.60)	-5.86*** (1.23)	-1.76 (1.25)	-0.74 (0.84)
Italy				
Observations	3,088	5,975	2,353	5,369

Notes: coefficients (standard errors) are reported together with the significance levels (* p < 0.1, ** p < 0.05, *** p < 0.01). The samples "Singletons" comprise all families with an only child between 5 and 11 years old; the samples "All children" comprise all families with the youngest child between 5 and 11 years old (with/without older siblings).

Table 5: Read to, talk to, or play with child

	Time with	the mother	Time with	the father
	Singletons	All children	Singletons	All children
Post-secondary	4.11*** (1.46)	4.25*** (0.90)	2.59 (1.70)	1.86* (0.95)
Upper secondary	2.46* (1.31)	0.42 (0.80)	2.87* (1.53)	0.83 (0.88)
Less than secondary				
Work	-1.01 (1.09)	-3.15*** (0.69)	-6.32*** (2.16)	-6.79*** (1.45)
Child's age: 5-7 years old	12.97*** (1.44)	8.53*** (0.94)	12.21*** (1.68)	8.96*** (0.97)
Child's age: 8-9 years old	6.95*** (1.44)	4.90*** (0.92)	3.59** (1.67)	4.64*** (0.98)
Child's age: 10-11 years old				
Austria	15.98*** (1.79)	16.78*** (1.22)	5.57*** (2.05)	7.52*** (1.31)
France	1.78 (2.02)	2.37** (1.20)	-2.49 (2.26)	0.23 (1.26)
Germany	5.44*** (1.97)	4.42*** (1.19)	0.99 (2.20)	2.17* (1.25)
Spain	4.51** (1.87)	4.63*** (1.29)	-0.23 (2.17)	3.50** (1.40)
Netherlands	11.59*** (2.20)	17.30*** (1.29)	1.84 (3.36)	6.99*** (1.29)
United Kingdom	10.10*** (1.89)	7.53*** (1.10)	5.44** (2.33)	2.56** (1.23)
Italy				
Observations	3,088	5,975	2,353	5,369

Notes: coefficients (standard errors) are reported together with the significance levels (* p < 0.1, ** p < 0.05, *** p < 0.01). The samples "Singletons" comprise all families with an only child between 5 and 11 years old; the samples "All children" comprise all families with the youngest child between 5 and 11 years old (with/without older siblings).

Table 6: Characteristics of the child samples

Max education: post-secondary (%)	21.49
Max education: upper secondary (%)	54.10
Max education: less than secondary	24.41
Mother's work (%)	43.58
Father's work (%)	77.28
Child's age: 5-7 years old (%)	20.81
Child's age: 8-9 years old (%)	28.63
Child's age: 10-11 years old (%)	50.56
Boy (%)	50.21
Siblings (%)	75.62
Austria (%)	11.73
Spain (%)	6.02
United Kingdom (%)	24.88
Italy (%)	57.37
Observations	4,603

Notes: means of the explanatory variables.

	Religious activities	Sports	Shows (cinema, sport events)	Social life (restaurants.	Games
				entertaining friends)	
Max: post-secondary	0.63 (1.12)	1.02 (2.48)	1.61 (1.39)	5.86* (3.29)	-1.28 (5.45)
Max: upper secondary	1.22 (0.93)	0.50 (2.06)	1.19 (1.15)	4.74* (2.74)	7.36 (4.54)
Max: less than sec.					
Mother's work	-1.81** (0.73)	3.08* (1.61)	1.12 (0.90)	3.54* (2.13)	1.20 (3.54)
Father's work	0.04 (0.87)	4.21** (1.93)	1.93* (1.08)	3.99 (2.56)	-1.63 (4.25)
Child's age: 5-7 y. o.	-4.73*** (1.06)	-14.15*** (2.35)	-3.82*** (1.32)	-3.35 (3.12)	82.17*** (5.18)
Child's age: 8-9 y. o.	-1.76* (0.90)	-5.52*** (1.99)	-1.94* (1.12)	-8.94*** (2.65)	33.89*** (4.39)
Child's age: 10-11 y. o.					
Boy	-1.27* (0.70)	13.30*** (1.56)	0.10 (0.87)	-4.82** (2.07)	7.43** (3.44)
Siblings	1.84** (0.83)	-1.35 (1.84)	0.87 (1.03)	-8.32*** (2.45)	9.14** (4.06)
Austria	-8.61*** (1.31)	4.08 (2.91)	-2.91* (1.63)	6.45* (3.87)	-16.30** (6.41)
Spain	-11.44*** (1.70)	14.06*** (3.77)	-2.28 (2.11)	-16.00*** (5.00)	-26.01*** (8.30)
United Kingdom	-9.84*** (0.98)	7.54*** (2.16)	-1.96 (1.21)	3.25 (2.87)	-21.15*** (4.77)
- Italy					
Observations	4,603	4,603	4,603	4,603	4,603

 Table 7: The determinants of children's uses of time

Notes: coefficients (standard errors) are reported together with the significance levels (* p < 0.1, ** p < 0.05, *** p < 0.01).