WHAT ARE YOU DOING?
CHILDREN'S USE OF TIME AND WELL-BEING

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ABSTRACT

Several studies show that the way in which children spend their time affects their cognitive and social development (Harding, 1997; Hofferth and Sandberg, 2001) and to answer some question, such as "What are children doing" taking into account children as primary source of information, is necessary for to study children's well-being (Ben-Arieh et al., 2001).

Starting from an alternative way of measuring society's well-being, based on time use and affective (emotional) experience, called approach National Time Accounting (NTA) (Krueger, 2009), I try to understand how Italian children spend their time. But, the time that the child dedicates to compulsory (school and personal tasks) and extra-curricular activities depends upon a set of key factors such as: family demographic and economic characteristics (Larson and Verma, 1999; Brown, 2004), social and behavioural norms, and how parents allocate their time. Often, child is not free to choose especially in the first years of life. In fact, parental time use and their propensity to several activities as well as the economic resources may affect directly children time. Focusing on the strict connection in terms of time and resources between parents and children, we estimated jointly how mothers and sons spend their time through a Seemingly Unrelated Regression Estimation (SURE) model. Our model is applied to Italian children age 3-13 using dataset selected from ISTAT – Time Use Survey 2008-2009 (4223 children and their mother)

Keyword: children's well-being; use of time; SURE model; National Time Accounting

INTRODUCTION

Several factors influence the children's development. Family represents the place in which the child constructs his/her identity in the first years of their life. In particular his/her behaviour is affected by the parent's behaviour that influences directly the child's preference formation, through the transmission of certain values, social norms or cultural orientation (Hill and O'Neill, 1994). With the increase in developed countries of the time use data, researchers focus their interest about the intergenerational transmission not only of habits or attitudes but also of the models of allocation of time (Cardoso et al., 2010). How mothers and fathers allocate their time in several activities (paid work, unpaid work and leisure time) can affect the actual and future choice of the sons about their time allocation (Alvarez and Miles-Touya, 2012; Del Boca et al., 2012; Farrè and Vella, 2013). Mancini et al. (2011) using the Italian Time Use Survey (2002-2003) analyze the intergenerational transmission of reading habits, focusing their attention on the intergenerational transmission of attitudes towards studying and reading. These activities are considered crucial in the production of human capital accumulation, assuming that these attitudes can be explained by both cultural and educational transmission from parents to children and by a process based on the imitation of the parent's behavior. This means that parents transmit their role model and in a social system where for example the gender gap is relevant, as Italy, could transmit also this.

Through the Time Use Survey we can observe the activities carried out by an individual during a given day, but the specificity of subjects studied in this work, the children precisely, require further reflection. Children allocate their time in compulsory (school and personal tasks) and extra-curricular activities, but they are not totally free to choose, especially in the first few years of life.

Not only key factors like family demographic and economic characteristics (Larson and Verma, 1999; Brown, 2004), but also social and behavioural norms, the parental time use and their propensity to several activities, as well as the behaviour imitation process, must be considered. In this work, I start from the assumption that the way in which children spend their time affects their cognitive and social development (Harding, 1997; Hofferth and Sandberg, 2001), considering the children as primary source of information. Ben-Arieh et al., (2001), suggest that questions, for example, "What are children doing", are necessary to study children's well-being and their development. Moreover, the National Time Accounting (NTA) (Krueger, 2009) propose to measure the society's well-being, according to the time use and affective (emotional) experience[1].

Then, focusing on the particularity of the connection both in terms of time and input resources between children and other adult family members, I estimate jointly, how mothers and sons spend their time through a Seemingly Unrelated Regression Estimation (SURE) model, assuming that common latent factors influence jointly the different activities of both parents (mother, in particular) and children. These latent factors may be given by the imitation process and other psychological and cultural aspects. The model is applied to Italian children age 3-13 using dataset selected from ISTAT – Time Use Survey 2008-2009 (4223 children and their mother).

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[1] "National Time Accounting is a set of methods for measuring, categorizing, comparing, and analyzing the way people spend their time, across countries, over historical time, or between groups of people within a country at a given time (Krueger, 2009, pp.11)

CHILDREN: TIME USE AND WELL-BEING

The children's well-being and their cognitive and social development are extensive concepts that can be measured using various methodologies. In this work we focus on the relationship between the daily life of the children and the way in which their time is allocated.

In fact, the way in which children allocate their time in different activities and in general what do they do during the day time has important implications on cognitive and social development of the children (Harding, 1997; Hofferth and Sandberg, 2001) and data on time use can give an objective measure of exactly what children are doing (Bianchi and Robinson, 1997).

Studies about the time use become helpful in understanding the process of socializations in general, and in particular of the gender socialization and to promote their well-being. Several studies suggest that the time spent by children in school and after-school activities may be usefully to promote their future success in the labour market suggesting the importance that various factors as the territorial and family context have in the well-being and development of children (Larson and Verma, 1999; Hofferth and Sandberg, 2001).

But, in the same way in which for the adult there is a constrain of 1,440 minutes per day, also children are bound to this limit. In fact, increasing of the time spent in some types of activities, necessary decrease the time the children and adolescent spent in other activities or whit family members (Offer, 2013; Hofferth and Sandberg, 2001). Vandewater et al. (2006) studying the relationship between the time spent viewing television both with and without parents and siblings and other activities, they found a strongly negatively relation between watching TV and the time spent interacting with parents or siblings and with the time dedicated to homework and the time dedicated to creative play. Koolstra et al., (1996) show that there is a negative association between the time spent in watching television and the time dedicated to studying and reading.

Other studies about children's time use focus their attention on the family time and examine the associations between family time and adolescent's well-being. In fact, regarding to children's well being, literature suggests two questions, one based on quality time (Christensen, 2002) and one based on routine family time, as meal together or household conversation or household work. Offer (2013) applying a hierarchical linear model, examines the relationship between adolescent's emotional well-being and family time, through the four activities carried out together (mealtime, productive time, maintenance time and leisure time). She found that family meals were beneficial to children's well-being, with higher scores on positive affect and engagement, and lower level of stress. For Cardoso et al. (2010), reading and studying together are activities related to the acquisition of human capital, and opposed to other kinds of leisure, defined passive leisure, such as watching TV.

But, carrying out activities together or separately need an investment of resources and parental time, and, in general, the parental investments have important impacts on children cognitive and non cognitive outcomes (Carneiro and Heckman, 2003).

Several studies have demonstrated also the association between family income and child development and well-being. Considering an investment perspective, income is used to purchase goods and services necessary for the development of children and for construct their human capital. Children in families with lower income have limited access to resources that help them development (Haveman and Wolf, 1995). Yeung et al., (2002) using data from the Panel Study of Income Dynamics and its 1997 Child Development Supplement examine how two measures of income family (stability and level) were associated with preschool children's outcome. The results

of their study show that children in families with higher income scored higher on cognitive tests and had fewer behavior problems, but the size of the income effect was modest. Votruba-Drzal et al., (2004), found that children in low income families experience less consistent care giving, and an home environments less supportive and cognitively stimulating. Moreover, they show that live in a poor family implies a higher level of stress for these children compared to who live in wealthy families. In addition to family income, other characteristics of children and families may influence children's time use and their development process. Considering the effect of parental income on children's cognitive, social, and emotional development Blau, (1999) found that if income is treated as endogenous the effect of current income is small and that more than income are the family background characteristics that play a more important role in determining child outcomes. Davis-Kean, (2005), using a structural equation modeling techniques, examined the process of how socioeconomic status and in particular parents' education and income, indirectly relates to children's academic achievement through parents' beliefs and behaviors. Income and parental time use such as the children's time use depend also by two key factors: Parental education and employment (Guryan et al., among other).

The literature suggests that mothers spend more time with their children than fathers do, but the time spends in childcare increases as much as the education level of father. Mothers with a college education or greater spend more time per week in child care than mothers with a high school degree or less (Kimmel and Connelly, 2007; Guryan et al., 2008). Moreover, Hofferth and Sandberg (2001) using the Time Use Longitudinal Panel Study, examine how the children's time use in America has changed between 1981 and 1997. Their results show an increase in the time dedicated to the structured activities (school, day care, sports, and art activities), while they observe a decrease in the time spent in the unstructured activities (play, television viewing, visiting, and passive leisure). They found that several change are related to an increase of maternal employment, but most tend to be related to demographic characteristics such as increased of the level of parental education and the reduced family size.

Also if many studies focus on the impact of parental investments (time and resources) on child cognitive development, very little is known about the children's own investments. Recently, Del Boca et al. (2012) studying the impact of children's own time investments in their development, consider that information on how children use their time separately from parents becomes important when children start to take decisions independently from parents. Comparing the impacts of time investments by parents and children on child cognitive outcomes, they found that the time investments by children during adolescence affect their test scores much more than the time input by their mother. For this reason they suggest that a way to increase the adolescent human capital and cognitive abilities is by influencing their decisions and their investments in formative activities.

But children especially in the first years of their life, spend large part of their day at home or school or other doing activities alone or with adult family members, or in other structured contexts chosen by adults, in most cases.

It's possible conclude that child development is the result of reciprocal interactions between children and the multiple contexts inside which are included, primarily the family with its social and economic resources. Social resources include parenting skills and education, cultural practices and approaches, intra-familial relations, and the health status of family members. Economic resources include wealth, occupational status and dwelling conditions.

THE PRESENT STUDY

Research Questions and Hypotheses

Analyzing the use of time we analyze a variety of phenomena which are interconnected with each other. Understand how children spend their time have important implications for public policy. Know what children and adolescents prefer and what they do in a day, the context in which their live and the economic resources available, become of primary importance (Kooreman, 2007). In this case the use of the diary method to collect information is necessary. A need exists to understand the flow of daily living in order to understand the opportunities it provides and the constraints it imposes (Harvey, 1993). Children are not completely independent in the choosing how allocate their time, especially in the first years of life. In fact, influence of parents' beliefs systems, the parental time use and their propensity to several activities as well as the economic resources may affect directly children time and their future habits. The inputs from families or from school system, where children and adolescent spend most of their time during childhood play a significant role in their cognitive, social, and behavioral outcomes (Heckman et al., 2006). While the socio-economic status is related to the access to societal resources that enable families to make choices and take decisions in the best interests of children, including the choice of services and of the participating in extracurricular activities, one of the most valuable input for children development is the time spent with their mother. Several studies about the children's time use, generally, focus their attention on the quality and quantity of time analyzing the kinds and how frequently several activities engage when parents and children are together or analyzing the dimension of children's time use.

Therefore considering the mother as the primary font of support in the children's early years and the importance of intergenerational transmission, in this study I focus my interest on the strict connection in terms of time and input between mothers and children in Italy, taking into account the relevance of the attitudes and of the others psychological and cultural factors that can influence the allocation of time of adult women.

The aim of this study is not only understand the determinants of the differences between Italian children in the allocation of time, focusing on three principle hypotheses:

H1: the allocation of children's time is related to the family economic resources and family structure (Brown, 2004). In addition, in Italy where one in four Italian people is at risk of poverty and one in two if foreign born (Istat, 2011), also the mother's citizenship could affect the allocation of time of their child;

H2: Following others study we want to verify if also in Italy, the educational level of mothers is the most pervasive predictor of Italian children's well-being (Bianchi and Robinson, 1997; Hofferth and Sandberg, 2001);

H3: The same sex-typing of tasks between Italian men and women (Anxo et al., 2011; Bloemen et al., 2010; Del Boca and Vuri, 2007) is also present in boys and girls activities. We can suppose that exist a intergenerational transmission of attitude and preference (Farrè and Vella, 2013; Fan and Marini, 2000).

Italy is a country where persists a traditional gender and familistic ideology, with a markedly gendered specialization of the family members in working activities. Also if with difficulty, in the last decades, in several European Countries women have increased the access to the market work. This implies a reallocation of the intra-household family time. But, comparing Italy to most of the European countries, national and international studies show that Italy is characterized by a low rate of female participation in the labor market, in particular considering mothers with young children (Anxo et. al, 2011; Bloemen et al., 2010; Mencarini and Tanturri, 2004), while men contribute little to housework and childcare, while spend more time in leisure time respect to women (Campolo, 2012). A gender discrimination presents in all stages of the life course (Del Boca et al., 2012; Mencarini, et al., 2012) and that is accentuated with the transition from one state to another (e.g. marriage, birth of a child, retirement, etc.) (Anxo *et al*., 2011; Bloemen *et al*., 2010; Caltabiano et al., 2014; Campolo and Di Pino, 2012; Campolo et al. 2013; Del Boca and Vuri, 2007).

In the current study, modeling directly the children's use of time (compulsory activities, and activities that increase the human capital included the time dedicated to activities of socialization) and the allocation of time of their mothers, and considering several unobservable factors, gender attitude and the potential intergenerational transmission of attitudes and preference between mothers and children, I try to explain the factors that can influence the development and the well-being of children, considering the child as primary font of information collected through the diary technique.

The results obtained from an analysis of time use may be supportive, not only to the development of policies in favor of family that could remove obstacles that makes women and children economically disadvantaged, but also policies for encouraging others activities, necessary for the cognitive and social development, for example the leisure time that includes both socializing activities and non-socializing activities. In particular, socializing activities and leisure participation contributes substantially to well-being and can be considered as a measurement of patterns of sociability.

The Model

For all these reasons I consider the several activities (for example, the time dedicated to personal care, studying, sport), in a single model considering, *inter alia*, the influence that socio-demographic factors have on the decisions taken by the members of the family about the allocation of time. The empirical analysis is carried out at two different level: at individual level, taking into account the different way of distribution of time, and at familiar level where the mother's time allocation is considered crucial.

Focusing on the strict connection in terms of time and resources between mothers and children, we consider the potential intergenerational transmission of attitude, as latent factors common to parents and children and conditioning their behaviour in terms of use of the time. Therefore, assuming how common latent factors are included in the error terms of a simultaneous equation model explaining the different time activities of both mother and children we estimated simultaneously how mothers and sons spend their time through a Seemingly Unrelated Regression Estimation (SURE) model (Zellner, 1962). In this way, SURE specification allows us to estimate the variation of not just one dependent variable, as in the univariate multiple regression model, but the variation of a set of dependent variables, given by the different time activities, correlated each one by common latent factors.

In fact, the SURE model is based on the assumption that all the dependent variables, given in this case by the amount of time spent by each individual in the different activities, are jointly related to factors usually not observable, but common to the others subjects (namely, the other family members). In this way, the time spent on each activity by the subject is influenced not only by the time that he/she dedicated to other activities, but also by the time spent by the other family members. The joint correlation between the dependent variables can be formalized by imposing restrictions on the covariances of the error terms of the system equations between children and mothers. Thus by using a SURE-GLS approach we can estimate the cross-correlation between the errors of the individual equations as a result of an iteratively utilization of residuals, that will be used as a correction term for the dependent variables.

In particular, in our model we use a 3Stage - SURE estimation model[2] where, at the first stage, I estimate by OLS or Tobit, if the dependent variables are censored, the simultaneous equations separately for children (12 equations) and mothers (4 equations); at the second stage I regress the residuals of the first stage OLS or Tobit estimates on the residuals of the other equations; and, finally, at the third stage, the predicted residuals of the second stage are used to correct the dependent variables of the final estimation of the model (Campolo, 2012; Campolo and Di Pino, 2012). Specifying the equations system concerning the relationship between the errors, we assume that the unobservable component of a dependent variable is related to unobservable components of the others dependent variables, i.e., of the other activities performed, which relates either to the same subject, but also the other family component. In this way, taking account of the error terms' correlations across equations we can better predictions of future values of the dependent variables (Zellner,1962).

Then in our SURE model, we have four dependent variables for mothers: paid work, unpaid work, childcare and leisure time (Table 1), and twelve dependent variables for children (Table 2): Sleep and relax; Eating; Day care, Domestic work, School, Studying, Church and volunteer activities, Social life (visiting and cultural events), Sport, Play, Reading for pleasure, Mass media (TV and Radio)

Considering jointly these activities, the proposed model allows us to estimate simultaneously, the allocation of time for mother and children.

DATA AND METHODS

Time use survey

In this study I investigate the time allocation of Italian children and the relationship between this time and the use of time of their mothers using data draw from the National Time Use Survey 2008-2009 carried out by the Italian National Statistic Office – ISTAT, with the time diary method. Robinson and Godbey, (1997) defined the time diary as a social microscope that allows to examine aspects of daily life otherwise unobservable. In fact, the diary method is an important instrument

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[2] Zellner and Theil, (1962) using the three stage least squares estimator, consider the correlation of error terms in equations of the system by use of joint estimation of coefficients in equations of structural models.

that allows to investigating how people organize their day and the relationship between the different times of the members of the same family with an extremely high level of accuracy.

In Italy, the diary is self-administered with fixed 10-minute intervals to be filled in during randomly designated diary days, and the respondents record the activities. The 24 hours are in fact divided into 144 intervals of 10 minutes, and the subject noted in his diary the primary activity and if this is performing together with the possible secondary activity at the same time (e.g. listening to the radio while coking). Moreover, the subjects can also indicate with whom and where.

In this way, researcher can study jointly a variety of aspects of daily life, such as the external work, the domestic work, the child care, leisure time, the use of mass-media, etc. The target population of the survey is formed by the household residents in Italy and the individuals that compose them. These are 18,250 families with a total of 40,944 individuals, which filled also the diary day, while, in total, respondents are 44,606 individuals.

Sample and Descriptive Analysis

For the empirical analysis I selected a sample of 4223 children aged 3-13 and the corresponding mother (Italians or foreign born). In particular, was chosen this age range because at this age, the child allocation of time is strictly dependent by the choices of adults and can be influenced by the intra-household allocation of parents and unobserved factor as the mother's gender attitudes, and the way of distribution of time may affect social and cognitive development of child. The average age 8 for children and 47% are girls.

Considering mothers, 57% are worker and the mean of age is equal to 39. The mean of years in the education system is 11.42. Regarding to the Italian citizenship the sample is formed by 92% of Italian mother and 94% of Italian Children.

Table 1 and Table 2 provide the distribution of time allocation respectively of mothers and children, while all sample statistical descriptive are reported in Table 3.

Generally, studying the time use for adult, the activities are grouped in three or four macro-area, paid work, unpaid work, child care and leisure time (Kimmel and Connelly, 2007; Campolo, 2012).

Also in this case I consider for mothers the following four macro-area (Table 1).

TABLE 1 Average Minutes Spent per Day on Paid work, Domestic activities, Childcare, and Leisure for Women with Children aged 3-13

Variable	Descriptive	Mean	sd
Paid Work	Paid work	99.07	177.56
Unpaid Work	Domestic activities	295.66	154.53
Child Care	Childcare activities	88.01	93.42
Leisure Time	Leisure Time	202.31	128.04

Note: the means are calculated on all subjects, even those who do not carry out that particular activity at a time when they fill out daily diary

In particular: Paid Work includes principal and secondary work, break, job search; Domestic Work includes house work and family care (washing, cooking, cleaning, gardening, pet care, shopping, care and support to adults in the family, repairs); Child Care is referred to physical care, help with homework, play and accompaniment; and Leisure Time that includes both Media Leisure

(TV, radio, reading books and magazines) and Non Media Leisure. Finally, considering the Non Media Leisure Time, according to the distinction suggested by Robinson and Godbey (1997), this is composed by the informal leisure activities (socializing, conversations, sports and hobbies), which allow an exchange of feelings and opinions, and formal activities (activities voluntary, aid to other families, social participation and religious, adult education, cultural events), allowing, however, a cultural development of the individual.

For this reason, I preferred considering more categories for children (reported in Table 2), taking into account the different impact that the time spend in each of this category can have for their development (Larson, 2001).

TABLE 2 Average Minutes Spent per Day on 12 different activities for Children aged 3-13

Variable	Descriptive	Mean	sd
Sleep & relax	Sleep and relax	639.75	107.82
Eating	Eating	122.59	47.5
Day care	Day care	53.16	30.75
Housework	Domestic work	21.82	43.2
School	School	129.77	168.12
Studying	Homework and other courses	48.19	68.08
Church & Voluntary	Attending to Church and voluntary activities	10.79	31.02
Social life	Social life, visiting	49.16	74.76
Sport	Sport	34.96	65.89
Play	Play, arts and internet	156.73	123.71
Reading	Reading for pleasure	6.35	20.54
TV & Radio	Mass Media: TV and Radio	102.06	85.66

Independent Variables

Several demographic explenatory variables are used. Table 3 provides a summary of study variable used to estimates our model, including the gender of child (*Sex C*: 1= girl; 0=boy), the child's age express in years (*Age C*) and mother's age (*Age M*), the Italian citizenship of children and mothers (*Citizenship C* and *Citizenship M*). *Geo* is a dummy variable that indicates if family lives in the South of Italy or Islands (value=1) or in the North-Center of Italy (value=0). The mother's level education is valuated considering the number of years of education (*Education M*).

The Italian version of the Time Use survey does not provide information about the wage of adult member or income family. Several studies shown as the family economic resources impact in the development of children. In this study I use as proxy of these variables the mother's perception about the family economic resources (*Economic M*: 1=insufficient,.., 4=optimal), the mother's level of satisfaction of the economic situation (*Satisfaction M*: 1= very or somewhat satisfied) and the her work status (*Work M*: 1=currently working full or part time; 0=otherwise). Moreover we include several indicators regarding the house: a *House Index* constructed as the ratio between the number of room and the number of components, for which, for the same number of rooms, with increasing in the number of components, this index decreases, indicating a situation of hardship for the family; a Dummy variables that indicate if family lives in a rented house (*Rent*: 1=yes; 0=no).

I consider also the presence of an internet connection in the house (*Internet*: 1=yes; 0=no). In general people with higher levels of access to the Internet had greater access to education, income, and other resources that help people get ahead (Hoffman and Novak, 1998; Jackson et al., 2006).

To evaluated the relation with the neighbor and with the territorial context, I considered two dummy variables that indicate if the mother is inside a relational network outside the family. I consider then, the degree of religiosity of mother that was captured using a dummy variable regarding to the frequency of attend at church or place of worship (*Religiosity M*: 1= if mother goes to a church or other place of worship every day, some once a week, once a week, 0 otherwise), and a dummy variable about the frequency of contact with friends (*Friends M*: 1 if mother meet her friends during free time every day, some once a week, once a week, 0 otherwise). While *Stress M* is a Dummy variable that take value 1 if mother is always or often stressed.

The family structure is analyzed through the following variables. For the marital status we consider cohabiting, married, and single (divorced, widowed and never married) are considered to construct the corresponding dummy variables: *Cohabiting*, *Married* and *Single* mother (as reference group). If in the family there are others sons (*Siblings*) and the number of children aged 0-5 (*Children 0-5*), and the number of children aged 6-13 (*Children 6-13*).

Finally, it's necessary taking into account that the amounts of time spent in several activities that children and mothers carried out during the week change if we consider the weekdays or weekend diaries. Some studies run the estimation separately for type of days (Bloemen et al. 2010). In our study we control for the day of the diary using a control variable that take value 1 if the day is Monday-Friday, 0 if the day is Saturday or Sunday (*Day*).

Table 3 Means or percentages and Standard Deviation for Independent Variables

Variable	Descriptive	Mean or %	sd	min	max
Sex C	Sex of child (Dummy: 1= girl)	0.47	0.5	0	1
Age C	Child's age (in years)	8.04	3.13	3	13
Citizenship C	Child's Citizenship (Dummy: 1=Italian citizenship)	0.94	0.23	0	1
Geo	geographical area (*Dummy:*1 South and Islands, 0=North-Center).	0.39	0.49	0	1
Siblings	Siblings of child (Dummy: 1=yes)	0.79	0.41	0	1
Age M	Age of mother	38.84	5.66	17	63
Education M	Education level of mother expressed in years	11.42	3.67	2	21
Work M	Working status of mother (Dummy: 1= worker)	0.57	0.5	0	1
Cohabiting	If mother is cohabiting (Dummy: 1=yes)	0.05	0.21	0	1
Married	If mother is married (Dummy: 1=yes)	0.86	0.34	0	1
Single Mother	If mother is Single (Reference)				
Citizenship M	Mother's Citizenship (Dummy: 1=Italian citizenship)	0.92	0.27	0	1
Stress M	Level of stress of mother (Dummy:1= if she feels always or often stressed)	0.31	0.46	0	1
Satisfaction M	Mother's level of satisfaction about the economic situation (Dummy: 1= very or somewhat satisfied)	0.51	0.5	0	1
Rent	If they live in a rented house (Dummy: 1= yes)	0.17	0.38	0	1
Internet	If there is an Internet Connection in the house (*Dummy:1= yes*)	0.62	0.48	0	1
House Index	number of rooms / number of components	1.25	0.49	0.2	5
Economic M	As mother considers the economic resources of the family (1 = insufficient,…4= optimal)	2.52	0.67	1	4
Religion M	If mother goes to a church/place of worship at least once a week (Dummy:1=yes)	0.36	0.48	0	1
FriendsM	If mother meet his/her friends during free time at least once a week (Dummy: 1 = yes)	0.6	0.49	0	1
Day	The day of diary (Dummy: 1= Monday-Friday)	0.37	0.48	0	1
Children 0-5	Number of children 0-5 years	0.56	0.7	0	3
Children 6-13	Number of children 6-13 years	1.19	0.76	0	6

RESULTS

Descriptive statistic for the allocation of time for mothers and children are reported in Table 1 and Table 2 respectively. The major activities engage from children in the sample regarding the time dedicated to compulsory activities: sleep and relax, eat and school. Moreover, children spend their leisure time especially in activities as play and Media leisure (TV and Radio) as reported in Table 2. The econometric model specified in this work allow to estimate jointly how Italian children and their mother allocate their time, controlling for several unobservable characteristic. Table 6 presents the results of estimation for women and Table 7 for children.

The first results show that age is positively related to time studying, house work, social life, watching TV and reading for pleasure, in contrast with the results found by Bianchi and Robinson for the US (1997), as well as the family economic resources. Significant differences are found considering the geographical area of residence. Children who live in the northern and central Italy spend more time in extracurricular activities than those who live in the south and in the islands, which means fewer opportunities for the latter development and well-being. All activities except "Play" and "TV & RADIO", are positively affected by family economic resources. If mother is a worker, child helps more in housework and spends more time in reading for pleasure, and socializing, but less in studying and attending church. Also children in cohabiting families seem to be more responsible at home and dedicated more time also in sport and play and eating.

Also if the children's citizenship is not significant, we can observe, instead, that the mother's citizenship is a relevant variable. In fact, children with Italian mothers spend more time in reading, attending church and social life and less in watching TV and school. May be that less time in school, in particular for children in preschool age, may mean that exist other informal child caring services that support mothers during the day, including grandparents (Hypothesis 1).

Several studies (Bianchi and Robinson, 1997; among others), shown that the mother's educational level is one of the most pervasive predictor of children's well-being. Following these previous studies, also in Italy, the mother's education level plays a significant role as a measure of social class and for determine the different way in which children allocate their time. Higher is the level of education of mothers, more time children spend in personal care, studying, and reading (Hofferth and Sandberg, 2001; Timmer et al., 1985) but also in sport, play, attending church and voluntary activities and housework and less time watching television (Hypothesis 2).

To better understand the impact on the children's time use, the mother's education level expressed in years was divided into low education level (high school degree or less) and high level (college education or greater). Table 4 presents the differences in means in each activity. In general, if mother has a high education, children spend more time in leisure time activities (Sport, Play and Reading).

Table 4 Children's time by mother's education level

| | Mother's education level | | | |
| | Low | High | diff. | sign. |
	means	means	in means	p
SLEEP & RELAX	639.349	640.133	-0.784	
EATING	123.639	121.614	2.025	
DAY CARE	52.145	54.108	-1.963	*
HOUSE WORK	21.949	21.696	0.253	
SCHOOL	129.344	130.174	-0.830	
STUDYING	50.661	45.873	4.788	*
CHURCH & VOLUNTARY	10.323	11.220	-0.896	
SOCIAL LIFE	48.790	49.500	-0.710	
SPORT	32.664	37.111	-4.447	*
PLAY	152.111	161.045	-8.935	**
READING	5.093	7.524	-2.431	***
TV & RADIO	110.509	94.149	16.360	***

*Note: * p<0.05; ** p<0.01; *** p<0.001*

Regarding to the gender, the estimation results (Table 7) show that already in the first years of life we can see how there are some typical gender differences that appear among adults. In fact, the girls spend more time than boys in day care, domestic work, studying, social life and attending church and reading, but spend less time watching TV and playing games.

If there aren't significant differences between boys and girls respect to the some compulsory activities, the differences became relevant if we consider the others activities, and in particular the different kinds of leisure time and the domestic activities. The differences in mean by gender and the relative test are reported in Table 5. In Italy, studies about the adult's time use (Anxo et al., 2011; Bloemen *et al*., 2010; Del Boca and Vuri, 2007; Campolo, 2012; Campolo and Di Pino, 2012; Caltabiano et al., 2014) show as female and male allocate in different way their time emphasizing a gender gap in the time use very noticeable in every stage of the life. The time use report provided by Istat (Istat, 2008) shown the gender difference in the allocation time considering student (aged from 15 years), worker and older people. Comparing women and men, the first group spend more time in domestic work and less in leisure time, in every range of age. The same trend is present in children. Between boys and girls the difference in mean considering all time dedicated to leisure time is 22 minutes in favor of boys sample. While girls help more in domestic activities (7 minutes, p<0.001). If we concentrate our attention about the leisure time, we can observe that also the different kind of leisure time (formal and informal), follow the same gender trend of adult sample. The significant differences in favor of boys regard "Sport", "Play" and "Tv & Radio". Girls spend more time respect to boys contingency in Reading for pleasure, Church and Voluntary activities and in "Social life", but in this last case the difference is not significant. From this results that report the differences in mean between boys and girls is evident that the same sex-typing of activities between Italian men and women is also present in boys and girls activities. It seems that the assumptions about gender differences is supported (Hypothesis 3). This study supports other researches that show how there are differences between girls defined more ''people oriented'', engaged in relationship activities, and boys more ''things oriented'' (Galambos et al., 2009; Su, Rounds, & Armstrong, 2009).

Table 5 Children's time by gender

Activities	boys mean	girls mean	diff. in mean	sign. p
Sleep & Relax	639.122	640.462	-1.340	
Eat	122.415	122.793	-0.378	
Day Care	51.707	54.787	-3.080	***
House Work	18.329	25.731	-7.402	***
School	129.122	130.502	-1.380	
Study	45.766	50.904	-5.138	**
Church & Voluntary	9.839	11.848	-2.010	*
Social Life	48.356	50.055	-1.700	
Sport	38.284	31.236	7.048	***
Play	164.176	148.373	15.803	***
Reading	5.166	7.675	-2.509	***
Tv & Radio	104.579	99.237	5.342	*

Note: * p<0.05; ** p<0.01; *** p<0.001

In the last two table are reported all estimation result of the SURE model for mothers (Table 6), and children (Table 7).

Tab. 6 Estimation Results Sure Model - MOTHER

Dependent Variables	PAID WORK Coeff.		UNPAID WORK Coeff.		CHILD CARE Coeff.		LEISURE TIME Coeff.	
_cons	-8.60	***	5.25	***	2.11	***	4.58	***
Age M	0.05	***	0.01	***	-0.03	***	0.01	*
Edu M	0.07	***	-0.01	*	0.06	***	0.03	***
Work M	2.46	***	-0.68	***	-0.56	***	-0.44	***
Married Ref.	-0.16		0.23	***	0.03		-0.02	
Cohabiting Single	0.90	***	-0.06		0.09		0.15	
Citizenship M	-1.08	***	-0.03		0.36	***	0.21	**
Day	4.56	***	-0.04		0.68	***	-0.82	***
CH 0-5	-0.70	***	0.03		1.01	***	-0.11	***
Ch 6-13	0.00		0.11	***	0.39	***	0.02	
Index House	-0.21	**	0.07	*	0.18	**	0.08	*
Religion M	-0.97	***	0.02		0.04		0.00	
Friends M	-0.48	***	-0.01		-0.02		0.16	***
Geo	0.11		0.05		-0.13	*	-0.13	***
Economics M	0.27	***	-0.06	**	-0.01		0.01	
r2_a	0.65		0.16		0.21		0.15	

Note: * p<0.05; ** p<0.01; *** p<0.001

Tab. 7 Estimation Results SURE Model - CHILDREN

Dependent Varables N°4223	SLEEP & RELAX coeff.		EATING coeff.		DAY CARE coeff.		HOUSE WORK coeff.		SCHOOL coeff.		STUDYING coeff.	
Constant	6.72	***	4.92	***	3.76	***	-3.95	***	-3.00	***	-5.95	***
Sex C	0.00		-0.01		0.06	*	0.47	***	-0.04		0.39	***
Age C	-0.02	***	-0.02	***	0.00		0.23	***	0.10	***	0.52	***
Citizenship C	-0.03	*	-0.02		0.10		0.07		0.06		0.38	
Geo	-0.02	***	0.01		0.07	**	-0.68	***	0.60	***	-0.28	***
Siblings	0.00		-0.01		0.09	**	-0.07		-0.18	*	0.02	
Age M	0.00		0.00		-0.01	***	0.01		0.00		0.00	
Edu M	0.00		0.00		0.02	***	0.07	***	0.01		0.06	***

Variables		coeff.	coeff.	coeff.	coeff.	coeff.	coeff.
Work M		0.00	-0.01	0.02	0.30 ***	0.23 ***	-0.29 ***
Cohabiting	Ref.	0.04 ***	0.11 **	0.06	0.35 *	0.59 ***	0.10
Married	Single	0.00	0.07 **	0.00	0.19	0.11	0.23 *
Citizenship M		-0.01	0.03	0.06	-0.03	-1.11 ***	-0.12
Stress M		0.00	0.00	0.07 *	0.05	-0.14 *	-0.05
Satisfaction M		0.01 *	0.03 *	0.00	0.03	-0.31 ***	-0.17 *
Rent		0.00	0.02	0.02	0.04	0.25 **	0.03
Internet		-0.01 **	-0.01	-0.05	-0.04	0.17 **	0.08
Index House		0.02 ***	0.03	-0.04	-0.15 *	0.11	-0.01
Economics M		0.00	-0.02	0.03	0.13 **	0.10 *	0.15 **
Religion M		-0.03 ***	-0.05 ***	-0.01	0.03	-0.69 ***	0.51 ***
FriendsM		-0.02 ***	0.01	-0.03	-0.23 ***	-0.15 **	-0.15 *
Day		-0.13 ***	-0.24 ***	-0.21 ***	-0.62 ***	5.36 ***	1.45 ***
R^2		0.37	0.10	0.04	0.24	0.70	0.47

*Note: * p<0.05; ** p<0.01; *** p<0.001*

Tab. 7   *continued*

Variables		CHURCH & VOLUNTARY coeff.	SOCIAL LIFE coeff.	SPORT coeff.	PLAY coeff.	READING coeff.	TV & RADIO coeff.
Constant		-8.03 ***	0.94 **	-4.78 ***	6.12 ***	-10.78 ***	4.29 ***
Sex C		0.22 ***	0.22 ***	-0.11	-0.28 ***	0.26 ***	-0.11 *
Age C		0.15 ***	-0.01	0.18 ***	-0.23 ***	0.30 ***	0.06 ***
Citizenship C		-0.04	-0.40	0.00	-0.13	0.25	0.04
Geo		-1.02 ***	-0.23 ***	-0.37 ***	-0.52 ***	-0.38 ***	-0.04
Siblings		0.24 ***	-0.08	-0.10	0.20 **	0.04	0.12
Age M		0.00	0.01 *	0.00	-0.01	0.00	0.01 *
Edu M		0.09 ***	0.01	0.09 ***	0.03 ***	0.06 ***	-0.03 ***
Work M		-1.09 ***	0.38 ***	0.10	0.07	0.50 ***	0.01
Cohabiting		0.44 **	-0.26	0.73 ***	0.51 ***	-0.14	-0.02
Married	Ref. Single	0.06	-0.28 **	0.13	0.33 ***	0.09	-0.18
Citizenship M		0.71 ***	0.60 **	0.26	0.27	0.34 *	-0.61 ***
Stress M		-0.01	0.19 **	-0.11	0.06	-0.05	0.08
Satisfaction M		0.04	0.06	0.12	-0.01	0.02	0.21 ***
Rent		-0.05	-0.07	0.11	-0.03	-0.02	0.09
Internet		-0.18 **	-0.01	-0.06	0.04	-0.05	-0.06
Index House		-0.04	0.07	-0.15	0.24 ***	-0.15 *	-0.06
Economics M		0.12 *	0.03	0.16 **	-0.05	0.12 **	-0.09 *
Religion M		0.76 ***	0.04	-0.07	-0.32 ***	0.56 ***	-0.13 *
FriendsM		-0.13 *	-0.08	0.10	-0.19 ***	-0.03	-0.13 *
Day		-3.23 ***	-1.50 ***	-0.95 ***	-0.70 ***	-0.45 ***	-0.34 ***
R^2		0.53	0.15	0.16	0.26	0.40	0.05

*Note: * p<0.05; ** p<0.01; *** p<0.001*

CONCLUSION

This study has examined time allocation of children and their mother. Supposing that a strict relationship between the time of mothers and sons exists, and in particular taking into account the importance of the influence of several factors (time and resources), I had estimated jointly in a SURE model how mothers and children allocate their time. The model allow to consider the potential intergenerational transmission of attitude as a latent factor common to mothers and children. Estimating in a single model all activities and including the unobservable components in the error terms of the simultaneous equation model, give us an innovative way of analyzing the time allocation of children.

In a comparative and gender perspective, the results show that the same trend present between Italian women and men, exist also between girls and boy. In particular, compared to boys, girls tend to spend more time in domestic activities, day care and reading for pleasure, and less in free time in general. As well as other studies have shown, also Italy the level of education of the mother plays an important role.

Also economic resources and territorial context impact on the time use. In particular, children who live in the northern and central Italy spend more time in extracurricular activities than those who live in the south and in the islands, which means fewer opportunities for the latter development and well-being. These results are very important in a Country such as Italy, where there are great regional differences, since the South economically less developed.

The present study points toward several directions for future research. For example, in this study only mothers are considered in the model. But the importance of the intergenerational transmission of preference and the gender gap that have emerged between children, suggest to replicate the model including also father, to better understand also the impact that the different family structure could have in well being and time use of children.

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