Alma Mater Studiorum - Università di Bologna
DEPARTMENT OF ECONOMICS

On Intergenerational Transmission of Reading Habits in Italy: Is a Good Example the Best Sermon?

Anna Laura Mancini
Chiara Monfardini
Silvia Pasqua

Quaderni - Working Paper DSE N° 792

On Intergenerational Transmission of Reading Habits in Italy: Is a Good Example the Best Sermon?

Anna Laura Mancini
Banca d'Italia and CHILD

Chiara Monfardini
Università di Bologna, CHILD and IZA

Silvia Pasqua
Università di Torino, CHILD and Collegio Carlo Alberto

October 2011

ABSTRACT

The intergenerational transmission of preference and attitudes has been less investigated in the literature than the intergenerational transmission of education and income. Using the Italian Time Use Survey (2002-2003) conducted by ISTAT, we analyse the intergenerational transmission of reading habits: are children more likely to allocate time to studying and reading when they observe their parents doing the same activity?
The intergeneration transmission of attitudes towards studying and reading can be explained by both cultural and educational transmission from parents to children and by imitating behaviours. The latter channel is of particular interest, since it entails a direct influence parents may have on child's preference formation through their role model, and it opens the scope for active policies aimed at promoting good parents' behaviours. We follow two fundamental approaches to estimation: a "long run" model, consisting of OLS intergenerational type regressions for the reading habit, and "short run" household fixed effect models, where we aim at identifying the impact of the role model exerted by parents, exploiting different exposure of sibling to parents' example within the same household. Our long run results show that children are more likely to read and study when they live with parents that are used to read. Mothers seem to be more important than fathers in this type of intergenerational transmission. Moreover, the short run analysis shows that there is an imitation effect: in the day of the survey children are more likely to read after they saw either the mother or the father reading.

JEL Codes: J13 J22 J24 C21

Keywords: intergenerational transmission of preferences, parental role model, imitation, household fixed effects

We would like to thank Elena Argentesi, Pedro Carneiro, Margherita Fort, Virginia Hernanz, Andrea Ichino, Cheti Nicoletti, Giulio Zanella, and the participants at the Iza/Sole 10th Transatlantic meeting, the Zew Labour Market Seminar, the ISER JESS Seminar, the EALE 2011 Conference. We acknowledge the financial and technical support from Collegio Carlo Alberto (project "Children Outcomes").

1.Introduction

The intergenerational transmission has been the object of a great deal of attention in the economic literature, mainly for its effect on mobility across generations. In fact, most of the research focused on intergenerational transmission of education and income[1] and, more recently, on the transmission of cognitive abilities[2].

Another stream of literature has studied the intergenerational transmission of preferences, habits and attitudes. Lindbeck and Nyberg (2006) analyse the transmission of norms related to work; Alvarez and Miles (2008) look at children's attitude to women work and domestic tasks while Dohmen *et al.* (2011) show how parents transmit to their children risk and trust attitudes.

The recent development of time use data makes it possible to look at the transmission across generations of behaviours such as time use choices, a topic on which the existing research is scarce and mainly concentrated on labour supply decisions (Del Boca *et al.*, 2000; Fernandez *et al.*, 2004; Kawaguchi and Miyazaki, 2010).

In this paper we look at intergenerational transmission of the time devoted to an activity that is crucial in the production of human capital accumulation: the studying and reading activity. Reading is relevant for its positive links with educational outcomes and subsequent earnings (Connolly *et al.*, 1992). Therefore it is a concern for educators and policy makers to stimulate young people to read and study and parents may transmit preferences and attitudes to their children also acting as good role models in promoting reading behaviours (Mullan, 2010).

Our analysis relies on the Italian Time Use Survey (2002-2003) conducted by ISTAT. While most time use surveys only consider one member of the household, and hardly children in primary school age, the Italian dataset makes it possible to analyse the relationship between the time parents devote to studying and reading and the time children devote on their own to the same activity in a given day. Certainly reading and studying are not the only human capital building activities, but we want to focus on those activities that can be done on their own by children in the age range we consider (6-15).

Looking at attitudes in doing activities that produce human capital accumulation is probably more relevant than looking only at intergenerational transmission of IQ, because behaviours are matter of choices while intelligence is not. Moreover, if compared to the transmission of education, intergenerational transmission of attitudes for reading and studying is less affected by the economic status of the family, but it is crucial for its consequences on the continuous investment in human capital along individual's life.

A further advantage of our intergenerational transmission analysis is the objective measure of behaviour we look at, that is the time parents' and children devote to the activity, as opposed to research based on answers to qualitative questions such as the willingness to take risk and to trust other people (Dohmen *et al.*, 2011)

[1] For a survey on intergenerational transmission of education and earnings see Black and Devereux (2010).
[2] Brown *et al.* (2010) and Anger and Heineck (2010)

In a recent piece of research, Cardoso *et al.* (2010) document a positive association between parents and children time allocations into human capital building activities in France, Germany and Italy.

The intergeneration transmission of attitudes towards studying, reading and socializing activities can be explained by both cultural and educational transmission from parents to children (parents teach their children the importance of reading and studying and provide them with books) and by imitating behaviours (children see their parents reading and decide to read as well). The latter channel is of particular interest, since it entails a direct influence parents may have on child's preference formation through their role model, and it opens the scope for active policies aimed at promoting good parents' behaviours.

In this paper we extend Cardoso *et al.* (2010) analysis by distinguishing between these two mechanisms, exploiting a larger and richer time use dataset, which collects information about when, with whom and in the presence of whom any particular activity is performed, as well as information on a large number of siblings that allow us to control for family fixed effects.

We investigate if children are more likely to allocate time to studying and reading activities when they live in families where they see their parents reading (long run effect) and when they observe their parents doing this activity in the same day (short run or imitation effect). We also look separately to the effect of mothers and fathers since past researches have shown that each parent can affect differently her children's decisions and behaviour (Anger S. and Heineck G., 2010; Ermish an Francesconi, 2002; Louriero *et al.* 2006; Bjorklund *et al.*, 2006; Farré *et al.*, 2009; Dohmen *et al.*, 2011; and Mullan, 2010).

In particular, we start by estimating a long run model, in which we consider how the reading and studying activity of a child depends on whether the parents are used to read in the presence of their children. In this long run analysis we insert variables at family level to control for the effects of observed family characteristics and background. The intergenerational coefficient of this model is not able to separate the transmission that occurs through the parents' role model effect from the transmission that arises from genetic and environmental unobserved factors at the household level – including educational attitudes – that are potentially associated with both parental and children decisions to engage in human capital building activities.

Then, taking advantage of the presence of siblings in the data, we improve upon the identification of the effect of parental time use on children time use choices and we identify the short run effect of imitation using a family fixed effect approach. In doing this we exploit the variation that occurs at the siblings' level: different children, for exogenous reasons, may have been exposed differently to parents' reading activities in the survey day. This within family variation allows us to isolate the effect of imitation from the effects of the household environment and education received from the parents, which are shared by siblings.

Our results show that children are more likely to read and study when they live with parents that are used to read in their presence (long run effect): given a starting probability of about 20% that a child engages in the

reading and studying activity, we estimate an increase of about 10 percentage points when either parent is used to read in the presence of their children, 10 percentage points when we look at the mother's habit alone and 4 percentage points when we look at the father. We therefore find a more relevant role of the mother in the intergenerational transmission of the reading habit. Moreover, with our short run analysis, we show the existence of an imitation effect: in the day of the survey children are more likely to read after they saw their parents reading, with a probability of reading that doubles. The direct imitation of the mother and of the father are found very similar to each other, increasing the probability that their child reads from about 15% to about 30%. This seems to confirm the saying "a good example is the best sermon", since children imitate the observed parents behaviours.

This piece of research can be useful in the analysis of intergenerational transmission and in particular of the effects of parental role. Are parents able to influence their children preferences and choices? Do children imitate what their parents do? Do therefore policies targeted to adults produce effects also on individuals of the next generation and are, for that reason, more fruitful? Our findings suggest that the role model played by parents is a channel through which parental time use may affect children behaviour and time allocation decisions, and thereafter future children outcomes.

The paper is organised as follows. Section 1 presents a review of the relevant literature. Section 2 describes the dataset used and the sample selection made for our empirical analysis. In Section 3 the time use variables are presented, while Section 4 examines the empirical strategy used. Results are discussed in Section 5. Conclusions follow.

2. Background literature

There is a vast literature on intergenerational transmission and the research on this topic can be divided into three main streams: studies that look at the transmission of education and income, analyses of the transmission of cognitive abilities and papers that consider the transmission of behaviours, habits and attitudes.

The literature on the intergenerational transmission of education and income shows that the positive correlation between parents' and children is the result of both "nature" (genetic endowment), and choices, *i.e.* better educated parents invest more on their children's education (for a complete review see Black and Devereux, 2010). Moreover, better family environment and higher quality of child/parents relationship in household where parents are better educated, contribute to persistency of education and income across generations.

The transmission of cognitive abilities from parents to children has been less investigated. Brown *et al.* (2010) and Anger and Heineck (2010) consider the correlation in test scores for a British and a German sample respectively and find a strong transmission that is largely explained by the investments that parents

do on their children. In particular, parents with better reading skills are better able to help their children learn to read at home with positive effects on word fluency (see also Sènèchal and LeFevre, 2002). The opposite is true for the transmission of math abilities, that seem to be more the result of a genetic transmission.

The last stream of the literature focuses on the transmission of preferences, habits and attitudes. In 1976 Robert Pollak discussed how preferences, especially in the short run, are influenced by other people's past consumption behaviours: individuals' preferences are such that they want to consume a given good when they observe other people around them already consuming that good. Waldkirch *et al.* (2004) analyse the transmission of consumption preferences and behaviours, Booth and Kee (2006) consider the intergenerational cultural transmission of norms regarding fertility, Jackson *et al.* (1997) and Louriero *et al.* (2006) look at smoking habits, Lindbeck and Nyberg (2006) at the intergenerational transmission of norms related to work hard, while Wilhelm *et al.* (2008) study the intergenerational transmission of generosity and Dohmen *et al.* (2011) discuss the transmission of risk and trust attitudes. All these works, that aim at understanding how habits are transmitted and therefore which policies may be put into action to promote "good" habits and attitudes and to reduce "bad" ones, find that parents' influence their children preferences with their parental role, educational choices and behaviours.

The literature on the intergenerational transmission of time use preference and time allocation is certainly more scant and, as already mentioned, focuses more on labour supply (Del Boca *et al.*, 2000; Fernandez *et al.*, 2004; Kawaguchi and Miyazaki, 2010) and on domestic work time (Alvarez and Miles, 2008). Only Mullan (2010) and Cardoso *et al.* (2010) study the time allocation of parents and children in human capital accumulating activities. Due to data limitation, none of these studies is able to identify the imitation effect. In particular, Mullan (2010), using a time use dataset for UK, found a positive association between parents' and children's reading, in the age range 13-18. Cardoso *et al.* (2010), investigate the association between parents and children time allocations in France, Germany and Italy. In their paper they use the Multinational Time Use Study and focus on how adolescents in the age range 15-19 allocate their time into three different activities (reading and studying, socialising and watching TV) and how this time is affected by parents' time use decisions. By considering children between 6 and 15 years of age, we therefore extend their analysis to younger children. The Italian dataset, in fact, is one of few Time Use dataset that provides a time diary also for children older than three years. This allows us to study which activities both parents and children do in the selected day, where they perform these activities and which family member is present. Moreover, compared to the harmonised dataset used by Cardoso *et al.* (2010), our dataset contains a richer set of information and a large sample of siblings in the age range of interest that allow us to identify the imitation effect.

All the studies on intergenerational transmission share the methodological problem of how to separate "nurture" from "nature", *i.e.* of how to isolate the effect of the parents' variable of interest on the children's variable from the effect of a more general family effect, including common genetic traits between parents and children. This problem has been solved in different ways: Loureiro *et al.* (2006) and in Brown *et al.*

(2010) use instrumental variables, Akee *et al.* (2008), Black *et al..*, 2005 and Holmlund *et al.* (2008) use diff in diff estimation when changes and reforms occur. Other authors exploit datasets in which either twins or adopted children are present to use a fixed effect approach. The presence in a dataset of individuals that share the same genetic traits but that live in different families (for example the children of twins, as in Behrman and Rosezweig, 2002, in Currie and Moretti, 2007, and in Pronzato, 2011) or that have a common family background, but did not receive the same genetic transmission (for example natural and adopted children as in Plug, 2004) or, finally, individuals for which information is available for both natural and adoptive parents (as in Bjorklund *et al.*, 2006) allows to disaggregate the effects of genetic transmission form the effects of family environment.

In our dataset the number of twins is too small and we are not able to isolate the effect of nature from the effect of nurture. By exploiting the presence of a large number of siblings, however, we are able to disentangle, in our short run model, the effect of imitation from the overall effect of nature and nurture, comparing the reading decisions of a child who saw her parents reading, with that of her brother or sister not exposed to the same example from parents.

3. Data and sample selection

In order to spot the existence of intergenerational transmission of preference for reading and studying activities we resort to the Time Use Survey (2002-2003) conducted by ISTAT, that covers 21,075 households and reports information on each household member.

An individual questionnaire containing socio-demographic information and a time diary were collected. All members older than three years completed the time diary on a selected day[3]. In each municipality covered by the survey, households were divided into three groups and each group was asked to fill in the daily diary on a different day: a weekday, Saturday or Sunday[4]. Our analysis is based on diaries completed both during weekdays and weekend days. The diary reports information on the time spent on a large number of tasks. Activities are coded by the respondent as main or secondary activities[5].

For our empirical analysis we selected a sample of children in the age range 6-15, having at least one sibling in the same age range and living in a household where both parents are present. We excluded children for which the diary was filled in on a "special" day (own, sibling or parents' vacation or sickness day) and for which not both parents or not all siblings in the relevant age range filled the diary. We also excluded all

[3] The time diary of very young children was completed by parents.
[4] The oversampling of weekend diaries was a deliberate choice of the data collector (ISTAT).
[5] For example, someone may be cooking and watching television or cooking and looking after the children. In these cases the respondent chooses which of the activities is the main one and which is the secondary one.

children for which one or more variables used in the econometric analysis of Section 4 were missing. Our final sample consists of 1,447 children from 681 households.[6]

3.1. Time use variables definition and sample descriptive statistics

The aim of our analysis is to run intergenerational-type regressions to investigate whether children are more likely to allocate time to studying and reading activities when their parents have the habit of reading in their presence and when they observe their parents doing the activity in the day of the survey. Crucial to this purpose is the availability of information on where the activities are performed, that allows us to derive a measure of the time spent by parents reading or studying in the presence of their kids.

We define the content of the reading activities as follows:

- *For the children*: we consider whether the child is studying, reading or doing homework on her own, helping siblings in doing homework, talking and reading to the siblings. Notice that this measure only includes time autonomously spent by the child in these activities (i.e. with no adult doing the activity with her) and that is defined by the child as primary activity.
- *For the parents*: we consider whether the parent is studying or reading in the presence of her children or helping her siblings in doing their homework[7] , talking and reading to her siblings. The above mentioned activities are included when declared both as a primary or secondary ones[8].

For simplicity, we refer to these activities as to "Reading and Studying" activities hereafter.

Table 1 reports the basic description of the allocation of time to reading and studying activities in our sample. Looking at participation rates, we observe about 35% of the mothers and 30% of the fathers engaged in the reading activity under the eyes of their children in the sampled day, and the percentage of children that read is 30%. This low percentage is certainly affected by the fact that 24% of our children spent in the survey day more than 5 hours in school[9] and we excluded reading and studying activities done at school. The corresponding observed average times are very low, especially for the parents (about 12 minutes for mothers and 10 for fathers).

[6] We checked that the sample of households with at least one child in the 6-15 age range does not systematically differ from the sample we select for our analysis.
[7] The exclusion of the time parents spend helping other children with homework would reduce too much our sample size. Moreover, if we consider the perspective of the child under analysis, we argue that whenever her mother (or father) helps her siblings in doing homework, she is exposed to an example of engagement in reading and studying activity.
[8] For the children we consider the reading activity only when it is the primary activity, *i.e.* when the child declares she is doing it as principal activity. On the contrary, for the parents we also include the reading activity when it is a secondary one, since we want to consider also those realistic situations in which a parent is, for example, cooking (primary activity) while helping a child with her homework.
[9] Also, if children spend many hours at school they are less likely to see their parents reading.

Table 1

Reading and Studying activity

Time allocated – Minutes				
	Child	Mother*	Father*	Mother or father*
Mean	29,8	12,1	10,2	16,8
Sd	(56.90)	(27.41)	(23.92)	(29.84)
Median	0	0	0	0
Obs	1447	1447	1447	1447
Participation rates				
	Child	Mother*	Father*	Mother or father*
Mean	0,30	0,35	0,29	0,48
Sd	(0.46)	(0.48)	(0.45)	(0.50)
Median	0	0	0	0
Obs	1447	1447	1447	1447

* in the presence of one of their children

Descriptive statistics reveal the association between parents' and children use of time: Table 2, in fact, shows that children have a much higher probability of reading if at least one of the parents reads in their presence. This is true also when we disaggregate by birth order within the sample. The association seems stronger for mothers than for fathers.

Table 2

Child reading probability conditional on parental reading in their presence

	Mother		Father		Parent		
	Not reading	Reading	Not reading	Reading	Not reading	Reading	Total
Overall							
Child doesn't read	706	308	745	269	580	434	1014
%	75,0%	60,9%	72,3%	64,5%	76,9%	62,7%	70,1%
Child read	235	198	286	147	174	259	433
%	**25,0%**	**39,1%**	**27,7%**	**35,5%**	**23,1%**	**37,4%**	29,9%
Obs	941	506	1033	414	754	693	1447
First child							
Child doesn't read	305	120	316	109	253	172	425
%	68,5%	50,9%	65,3%	55,3%	70,9%	53,1%	62,4%
Child read	140	116	168	88	104	152	256
%	**31,5%**	**49,2%**	**34,7%**	**44,7%**	**29,1%**	**46,9%**	37,6%
Obs	445	236	484	197	357	324	681
Second child							
Child doesn't read	357	160	374	143	291	226	516
%	80,2%	67,8%	77,3%	72,6%	81,5%	69,8%	75,9%
Child read	88	76	110	54	66	98	164
%	**19,8%**	**32,2%**	**22,7%**	**27,4%**	**18,5%**	**30,3%**	24,1%
Obs	445	236	484	197	357	324	681

Table 3 shows parents' probability of reading by educational level. Education is certainly an important variable in explaining reading habits, and in fact our data show that more educated parents read more. Better educated parents are more likely to teach their children the importance of reading and studying and provide them with books. By inserting parents' education in our long run analysis we control for these associations.

Table 3

Parents' reading probability in the presence of children by education

Mother education	Father education	Obs	Mother reading	Father reading
Compulsory school	Compulsory school	640	28,9%	22,8%
	High school	145	29,0%	43,4%
	University	10	40,0%	20,0%
High school	Compulsory school	152	28,3%	22,4%
	High school	335	43,9%	28,4%
	University	64	46,9%	45,3%
University	Compulsory school	7	71,4%	28,6%
	High school	48	52,1%	54,2%
	University	46	54,3%	41,3%

In Appendix 1 the summary statistics of the variables used in the empirical analysis are showed. The 681 families considered have on average 4.56 members. In particular, we have 434 families with two children in the relevant age range and 247 families where three or more children in the relevant age range are present.
Only 8% of fathers and 7% of mothers have a college education, while 55% of both mothers and fathers have less that secondary education. 30% of mothers never worked, while only 23% has a full time job and 9% works part time. Almost all fathers work: 7% as white collars, and 10% as self employed. Only 6% of the fathers is unemployed. More than half of the sample lives in the Southern regions (56%) while 31% lives in the North and 14% in the Centre.

4. Empirical strategy

We chose as relevant measure of time use variable the participation to the reading and studying activity (in the presence of the children as far as parents are concerned). This is motivated by the large proportion of zero values highlighted in the previous section, which rules out any meaningful modeling of the amount dedicated to the reading and studying activity through either tobit or double hurdle specifications. In doing so, we also hope to mitigate measurement error problems that typically affect diary based time use information, since the observed participation decision is likely to be a more reliable measure of the underlying behavior, compared to the exact amount of time spent.

We follow two fundamental approaches to estimation: a "long run" model, consisting of OLS intergenerational type regressions for the reading habit, and a "short run" household fixed effect model,

where we aim at identifying the impact of the role model exerted by parents, exploiting different exposure of sibling to parents' example within the same household.

In the long run approach we are interested in regressing an indicator for the participation of the child *i* of household *j* into reading and studying activities, say $child\_rs_{ij}$ on a measure of reading habit at family level capturing whether the child is used or not to see her parents reading. Therefore, we take as crucial regressor a variable, say $parent\_rs_j$, indicating if one of the parents has been observed reading in the sampled day by any of the children of household *j*, arguing that this captures the family habit.

We look at parents jointly and also to mother and father role separately, and we estimate three specifications including: a) an aggregate measure of mother and father participation to the reading activity in the presence of their children, $(m+f)\_rs_{ij}$, which denotes participation of either the mother or the father; b) mother participation, m_rs_{ij}; c) father participation f_rs_{ij}.

In order to isolate the partial effect of parents' time allocation choice, we control for a number of exogenous characteristics of the child (Z_i), and of the household (X_j).

The intergenerational regressions are estimated with a pooled linear probability model:

$$child\_rs_{ij} = \beta_0 + \beta_1 parent\_rs_j + \beta_2 Z_i + \beta_3 X_j + u_{ij}$$

On the right handside we control for child's age, inserted in Z_i through a dummy equal to one if the child attends middle or high school (*middle/high school*) since in terms of differences in time use and school habits the major change comes from the transition from primary school to middle school (and less from middle school to high school). We allow also the intergenerational coefficient β_1 to vary across child's age by interacting the parents' time variable with the child's age indicator. The gender dummy *girl* capture possible systematic differences in time use habits linked to the gender of the child. Moreover, we interact it with the parents' reading and studying time, in order to account for differences in the transmission of time use habits from parents to children related to the sex of the child (the literature emphasizes the relation between parents and same sex children). We also control for the child birth order (dummies *birth order: second* and *birth order: third*) and for the self-reported *general health* status of the child.[10]

Turning to characteristics at the household level X_j, they comprise *father* (*mother*) *age* (linear and quadratic term); and education, distinguished among 8 years of schooling (reference group), lower or upper secondary schooling (2 to 5 year of secondary education), *father* (*mother*) *high school*, some university degree (2 or more years), *father* (*mother*) *college*. A further set of dummies captures heterogeneity in preferences for work and possibly income across families, considering information about parents'

[10] The health status is a categorical variable that ranges from 1 (excellent health status) to 5 (very bad health status).

occupational status, profession and working histories. These are *mother always housewife,* that isolates the effect of living in a household where the mother never worked, neither when the children were younger, nor currently; *mother full time*; *father unemployed*, including both unemployed and out of the labour force; *father high professional position* and *father self-employed*. We also control for family size, given by the total *number of components* in the household, adults and children. Moreover, we control for systematic differences across different Italian regions, due to different unemployment rates, labour market conditions, childcare availability and living costs faced by households (dummies *Center, South*, while North is the reference group). We also control for the type of sampled day using two different dummies: *time diary completed during the week end,* that is child specific since siblings may compile the diary in different days, and *time diary completed during the summer* that is household specific (since the month of the interview is the same for the whole family). The introduction of this last variable has been motivated by the fact that during the summer children have no school and spend more time in outdoor activities. Therefore, it is likely that they read and study less and that they are less exposed to the reading example by their parents.

The core of our **short run** empirical strategy for identification is to exploit repeated observations on siblings to purge out unobserved heterogeneity at the household level. Therefore, the crucial regressor we rely on is a child-specific measure of parents' engagement into the reading activity that occurred in the presence of each child, say $parent\_rs_{ij}$. The latter measure is child-specific because siblings may have or have not seen their parents reading in the survey day. Since we want to measure the imitation effect, we only consider the child's reading episodes that occurred after having seen the parents reading. The dependent variable is a binary measure, say $child\_rs\_im_{ij}$ indicating whether the child participates to the reading activity **after** her parent. The useful cases for identification comes from families where parents are seen reading by at least one of their children (but not all of them). In these families, we restrict the observational period for all siblings from the first time when the parent has been seen reading by one child to the end of the day. Estimation is performed with a household fixed effect linear probability model:

$$child\_rs\_im_{ij} = \gamma_0 + \gamma_1 parent\_rs_{ij} + \gamma_2 Z_i + \mu_j + \varepsilon_{ij}$$

where all the observable regressors that are invariant within the family (X_j) are swept out, but the intergenerational parameter, γ_1 , captures the short run imitation effect (the parents' example), and it can be estimated net of the whole set of unobservable confounders at the family level (μ_j). These include unobserved environmental and genetic factors, that influence both the parents and children preference toward the reading activity, as well as the educational message towards the importance of the reading activity that parents transmit to their kids (the parents sermon).

It is well known that child specific unobserved heterogeneity is not eliminated through a family fixed effect approach and that can still be a source of bias for the parameter of interest. For our identification strategy to

be valid, the sibling variation in the exposure to parents' example must be exogenous, i.e. uncorrelated with siblings' differences in individual unobserved determinants of the reading behavior, such as preferences.[11] A first, informal argument in favor of our identification strategy resides in the typical fixed weekly schedule of children non-school engagements out of home in this age range within a given family. This makes siblings' differences in exposure to treatment (seeing a parent engaged in reading activities) in the survey day likely to be random. We also provide collateral evidence that sibling variation in the probability of being exposed to the treatment does not depend on difference in preferences across siblings. To this purpose, we investigate through an household fixed effect approach to what extent time spent at home by each child depends on her own preferences. To proxy for the latter we build three indicators of child's preferences over engaging in physical or mental activities and on spending time outdoors[12]. The results displayed in Appendix 2 show that there is no significant correlation between siblings' differences in time spent at home and siblings' differences in preferences, after controlling for child's and family characteristics. Moreover, the estimated sibling correlation in this regression is about 0.7, proving that most variation in time children spend at home arises from between family variation, rather than from differences between siblings within a given household. This corroborates the random nature of the within family variation observed in the day of the survey and supports our identification strategy.

As a final remark, we recall a further threat to the validity of an household fixed approach generally emphasized in the literature on child production function (see Todd and Wolpin, 2007, among others). In that framework, the interest lies in the effect of parental investment on child's outcome, and child specific unobserved ability is a potential source of bias since parents might choose to invest more on kids with lower (unobserved) ability in order to compensate for their disadvantage. In our framework this criticism is less likely to apply, since we look at the time allocation of parents into activity that are not directly targeted to children, and that, therefore, are not an input measure that is likely to react to unobserved child characteristics, as well as to previous children outcomes.[13]

In Table 4 we cross-tabulate the observed reading activity of the children by reading activity of parents, where the first group is composed by children who have observed the parent reading activity, while the second by children who have not observed the same activity. [14] The estimated probability that the child reads

[11] This is the analogous to the strict exogeneity assumption for panel data.
[12] The survey questionnaire asks to the children if they would like to engage more or less (or if they are satisfy with their engagement) in several typical child-activities. For each item we create a dummy equal to 1 if the child wants to spend more time in that activity. We then create three indicators that capture the preferences over mental and physical activities and over activities made outdoor by grouping and summing up the corresponding dummies.
[13] The time devoted to helping other children with homework - included in our treatment variable - represents an exception to the above argument. However, the direction of the possible bias brought by this inclusion is not clear. Parents', in fact, may spend more time with the less able child to help her or, oppositely, they can spend more time with the more able child that is more keen to allocate time to do homework.
[14] For families in which parents did not read at all in the presence of their children, we look in this table at the participation into reading activity by the child during the whole day. This implies that the observation window for the child is shorter for the children who observe one parent reading in the sampled day.

increases by about 50% (rising from 20% to 31%) for a kid who happens to observe either parent. The overall effect seems to be driven by the mother, while the father reading seems to have no effect.

Table 4

Sample frequency of children's reading activity by observation of parents' reading activity

	Not reading	Reading	Obs
Parents			
Child doesn't read	731	365	1.096
%	79,6	69,0	75,7
Child read	187	164	351
%	20,4	31,0	24,3
Obs	918	529	1.447
Mother			
Child doesn't read	821	265	1.086
%	76,7	70,3	75,1
Child read	249	112	361
%	23,3	29,7	25,0
Obs	1.070	377	1.447
Father			
Child doesn't read	839	239	1.078
%	74,0	76,4	74,5
Child read	295	74	369
%	26,0	23,6	25,5
Obs	1.134	313	1.447

Tables 5 displays some evidence about the existence of within family variability on which we base our identification strategy for the short run model. In this table we report the number of cases (individuals) belonging to families in which we observe at least one sibling variation for the reading activity. More precisely, looking at the upper part of the table, we have 249 cases where we have within sibling variation in the exposure to reading example from the mother, 206 cases of variation in exposure to reading from father, and 321 from either parents. As far as children are concerned, we observe 361 cases where one of the siblings reads after the mother while the other sibling does not, 369 cases with sibling variation after the father and 351 after either parents. Notice that among the above mentioned cases of useful variations on the right hand side, we are left with variability on the left hand side as shown in the bottom part of Table 5, where we count the records corresponding to within family variation of both adult reading and child reading.

Table 5

Within family variability (individuals)

Adult reading			
	Mother	Father	Mother or father
Obs	249	206	321
%	17,2	14,2	22,2
Number of obs	1447	1447	1447
Child reading after			
	Mother	Father	Mother or father
Obs	361	369	351
%	24,9	25,5	24,3
Number of obs	1447	1447	1447
Adult reading and child reading after			
	Mother	Father	Mother or father
Obs	96	56	116
%	38,6	27,2	36,1
Number of obs	249	206	321

Finally, in Table 6 we present the same cross-tabulation of Table 4, restricted to the above mentioned subsamples of cases exhibiting within family variation. It is interesting to notice that the pattern for the mother is similar to that of Table 4, but the increase in the probability of the child reading if the mother reads is stronger. Despite based on few observations, the pattern emerges now also for the father, since the probability that the child reads more than doubles if she sees the father reading.

Table 6

Within family variability (individuals) in relevant subsamples

Parents			
	Not reading	Reading	Obs
Child doesn't read	150	108	258
%	91,5	68,8	82,0
Child read	14	49	63
%	8,5	31,2	19,6
Obs	164	157	321
Mother			
Child doesn't read	114	85	199
%	88,4	70,8	79,9
Child read	15	35	50
%	11,6	29,2	20,1
Obs	129	120	249
Father			
Child doesn't read	94	76	170
%	91,3	73,8	82,5
Child read	9	27	36
%	8,7	26,2	17,5
Obs	103	103	206

5. Results

We report in the following Tables 7 and 8 the estimated coefficients of main interest. Full estimation results are displayed in Appendix 2.

In Table 7 we display OLS estimation results for the long run model, where the intergenerational coefficient captures the association between parents' and children habit to read. We look at three separate specifications having as crucial regressor respectively a) an indicator for the parents' reading activity (i.e. either the father or the mother engages into the reading activity in the presence of any children), b) the mother reading activity only c) the father reading activity only. For each of these three specifications we start by estimating raw correlations without inserting any controls (first column), then we condition to child's characteristics X (second column) and, finally, we extend the specification to the whole set of child and family characteristics Z , the interactions of parental time with child gender and child age, and the type of sampled day dummies (third column).

Starting with the parents' results in the upper part of the table, in column 1 the "raw" intergenerational correlation reveals that the probability that the child reads -predicted to be around 23% for children who do not observe their parents reading- significantly increases of about 14 percentage points when the children

observe their parents to engage in the reading activity. In column 2 we added controls for child's characteristics. The intergenerational transmission variable has a small decrease but it remains significant. We also observe a strong positive age effect on the reading probability, with kids in middle or high school age displaying a reading probability which is twice as much the reading probability of kids in primary school age, regardless the parents' reading behavior. In the following column 3, the intergenerational coefficient is purged out from an extended set of controls at the family level, and it is cut down to about 10 percentage points. Notice that the intergenerational coefficient keeps statistically significant and sizeable, implying a relative increase in the probability that a child engages in the reading activity of over 50% (from about 17% to 27%). Finally, column 4 testifies that we do not have power to identify separate effects of parental influence according to the child's age and the child's gender, since both interacted intergenerational coefficients turn out to be not significant.

Looking at mother and father separately, in the central and lower part of Table 7 respectively, we observe that the intergenerational parameter for the mother is uniformly much higher than that of the father in the first three specifications. In column 3, the mother's coefficient is more than double with respect to the father's one (10 percentage points vs 5). The greater importance of mother's effect compared to father's effect is in line with recent finding in intergenerational transmission of IQ (Anger and Heineck, 2010) and confirms the results of Cardoso *et al.* (2010).

We performed a robustness check aimed at verifying if the observation of the reading activity of parents is not masking the effect of time spent at home by the kids. From these estimation results, contained in column 5 of Table A.1-A.3 in Appendix 3, it can be noticed that the intergenerational coefficient keeps unchanged with the inclusion of this further conditioning variable.

Overall, our long run results show that the intergenerational positive association in the reading habit, and in particular the transmission effect from mother to child, persists and keeps a relevant magnitude even after controlling for a set of observable child and family characteristics. Despite conditional on a large set of covariates, this positive association is likely not to capture the causal effect of the role model exerted by parents, and might be arising from unobserved factors including, beside others, the parents' sermons.

Within the short run identification strategy, we look at the child specific experience in the observation of the reading activity of parents, rather than at the reading habit of the latter, and at the child's behavior at the same time or after observing the parents (imitating behavior). The intergenerational coefficient captures now the effect of the parent's example and, within a family fixed effect approach, this is causal as far as unobservable differences between siblings are unrelated to their difference in exposure to parent's reading example.

Table 8 shows that the imitation effect is significant and of considerable magnitude for all three specifications considered. Let's take column 2 as the preferred specification, since again interactions of parent's time variable with child's age and gender prove not to be significant. Having observed either parent

reading (or both) makes a child about three times more likely to engage herself into the same activity either contemporaneously or afterword, leading the estimated reading probability from 11% to about 30%. The direct imitation of the mother alone leads to a probability that the child reads that is double (about 30%) with respect to child not observing her mother reading (14%). Very interestingly, the father's imitation effect turns out to be very similar to the mother's one, increasing the probability that his child from 15% to about 28%.[15]

In Tables A4 to A6 in Appendix 3 we report full estimation results. We also compare the family fixed effect coefficients with their OLS counterparts in the family FE sample (column 3). This comparison indicates that controlling for family unobserved heterogeneity attenuates the OLS estimated value of the coefficient of interest for all specification considered, although the OLS bias is not a major one.

[15] Notice that the effect of seeing either parent reading should not be interpreted as a cumulative effect. In particular, it has a larger magnitude since it increases the time window in which the reading activity of the child can be observed with respect to the specification for mother or father only.

Table 7

Estimated Intergenerational coefficients. Linear probability model, OLS results (long run)

Child variable: *child_rs* (=1 if child engages in reading or studying activity)
Parent variables: *parents_rs* (=1 if any parent observed reading by any children)
mother_rs (=1 if mother observed reading by any children)
father_rs (=1 if father observed reading by any children)

VARIABLES	(1) Raw corr	(2) Child	(3) Family	(4) Inter
Reference Prob(child_rs=1)	*0,23*	*0,157*	*0,174*	*0,183*
parents_rs	0.143***	0.130***	0.104***	0.079**
	(0.028)	(0.028)	(0.029)	(0.039)
Middle and high school		0.156***	0.148***	0.129***
		(0.028)	(0.030)	(0.034)
Girl		0.041*	0.042*	0.037
		(0.024)	(0.024)	(0.031)
parents_rs*middle/high school				0.040
				(0.045)
parents_rs*Girl				0.009
				(0.048)
Reference Prob(child_rs=1)	*0,25*	*0,174*	*0,19*	*0,197*
mother_rs	0.142***	0.132***	0.108***	0.049
	(0.030)	(0.030)	(0.031)	(0.043)
Middle and high school		0.156***	0.139***	0.125***
		(0.028)	(0.029)	(0.032)
Girl		0.039	0.038	0.009
		(0.024)	(0.024)	(0.029)
mother_rs*Middle/high school				0.039
				(0.050)
mother_rs*Girl				0.081
				(0.051)
Reference Prob(child_rs=1)	*0,277*	*0,2*	*0,208*	*0,21*
father_rs	0.076**	0.063**	0.043	0.056
	(0.031)	(0.031)	(0.032)	(0.046)
Middle and high school		0.158***	0.153***	0.149***
		(0.028)	(0.030)	(0.032)
Girl		0.044*	0.045*	0.060**
		(0.024)	(0.024)	(0.028)
father_rs*Middle/high school				0.018
				(0.053)
father_rs*Girl				-0.050
				(0.053)

*This is the sample average estimated probability for a young child conditional to *parents_rs*=0

Table 8

Estimated imitation effect. Linear probability model, family fixed effects (short run)

Child variable: *child_rs_im* (=1 if child engages in reading activity after observing the parent reading)
Child specific parent variables: *parents_rs* (=1 if any parent observed reading by the child)
mother_rs (=1 if mother observed reading by the child)
father_rs (=1 if father observed reading by the child)

VARIABLES	(1) Raw (FE)	(2) Child (FE)	(3) Inter (FE)
Reference Prob(child_rs_im=1)	*0,16*	*0,11*	*0,11*
parents_rs_im	0.224***	0.211***	0.212***
	(0.043)	(0.043)	(0.058)
Middle and high school		0.101***	0.105***
		(0.032)	(0.037)
Girl		0.009	0.004
		(0.025)	(0.032)
parents_rs_im*middle/high school			-0.014
			(0.049)
parents_rs_im*Girl			0.014
			(0.052)
Reference Prob(child_rs_im=1)	*0,21*	*0,14*	*0,13*
mother_rs_im	0.173***	0.157***	0.180***
	(0.001)	(0.050)	(0.069)
Middle and high school		0.124***	0.137***
		(0.035)	(0.037)
Girl		0.021	0.020
		(0.026)	(0.031)
mother_rs_im*middle/high school			-0.052
			(0.060)
mother_rs_im*Girl			0.011
			(0.059)
Reference Prob(child_rs_im=1)	*0,21*	*0,15*	*0,15*
father_rs_im	0.195***	0.183***	0.207***
	(0.049)	(0.050)	(0.063)
Middle and high school		0.126***	0.130***
		(0.033)	(0.037)
Girl		0.026	0.034
		(0.025)	(0.030)
father_rs_im*middle/high school			-0.013
			(0.053)
father_rs_im*Girl			-0.035
			(0.056)

*This is the sample average estimated probability for a young child conditional to *parents_rs_im*=0

Alternative strategy

In this subsection we present an alternative identification strategy for the imitation effect and a set of results we derived as a robustness check to corroborate our finding on the existence of the imitation effect.

In Table 9 we show the results of an alternative identification strategy for the short run effect, which is much more stringent that the one used to derive the main results. We fix here a point in time (4 pm) before which the parents can be observed by their children reading or not, while the behavior of children is observed after 3.30 pm (i.e. we allow activity overlapping for a 30 minutes span). Not surprisingly, the number of useful cases for estimation is now quite low, and therefore we cannot identify separate effects for the two parents. Thus we only estimate the first specification (the child saw at least one of the parents reading), spotting a significant imitation effect, doubling the probability that the child engages in the reading activity.

Table 9

Estimated imitation effect. Linear probability model, family fixed effects (short run, alternative strategy)

Child variable: *child_rs_im* (=1 if child engages in reading activity after 3.30 pm)
Child specific parent variables: *parents_rs* (=1 if any parent is observed reading by the child before 4 pm)

VARIABLES	(1) FE raw	(2) FE child	(3) FE Time at school
Reference Prob(child_rs_im=1)	*0,19*	*0,13*	*0,13*
parents_rs_im	0.100*	0.109**	0.108**
	(0.052)	(0.052)	(0.052)
Middle and high school		0.128***	0.130***
		(0.035)	(0.035)
Girl		0.017	0.017
		(0.027)	(0.027)

*This is the sample average estimated probability for a young child conditional to *parents_rs*=0

Robustness checks

The first robustness check consists in repeating our estimates using as dependent variable the fact that the child reads before seeing the parents reading. The aim of this check is to make sure that we isolate a short run imitation effect and not just habits. The results (Table 10) show that the main coefficients associated to the parents reading activities are always lower than the one we obtain in the upper part of column 2 of Table 8. These results confirm that we are capturing imitation.

Table 10

Estimated imitation effect. Linear probability model, family fixed effects (short run, controls for child characteristics)

Child variable: *child_rs_im* (=1 if child engages in reading activity before seeing the parents)

VARIABLES	FE child parents_rs_im	FE child mother_rs_im	FE child father_rs_im
Reference Prob(child_rs_im=1)	*0,12*	*0,14*	*0,15*
Parental time coeff	0.087**	0.070*	0.131***
	(0.036)	(0.038)	(0.045)

We also performed a second check to make sure that our sample selection requirement (both parents having filled the daily diary) does not produce a biased sample. For doing this, we construct two new samples. In the first one we included all child/mother pairs for which we have both the time diary and on this sample we tested the mother estimates. We did the same for the child/father pairs. Results remain the same, with only marginal changes in the coefficients.[16]

Finally, the estimation for parents has been done also by introducing separately mother and father time in the same regression. Due to the characteristics of our data, we cannot identify separately the effect of the parents. Therefore we prefer to rely on our estimation of the joint variable expressing parental reading activities.

Conclusions

We exploit the presence of households with more that one child in the Italian time use dataset to learn about intergenerational transmission of preferences for human capital building activities such as reading and studying between parents and their kids in the age range 6-15. In particular, we investigate if children are more likely to allocate time to studying and reading activities when they live in families where they observe their parents to read (long run effect) and when they observe their parents doing this activity in the day of the survey (short run or imitation effect). Indeed, with our empirical strategy, we aim at measuring both the general long run effect of education and transmission of attitudes and the imitation effect in the short run.

Overall, our long run results show that there is an intergenerational positive association in the reading habit, and in particular the transmission effect from mother to child, persists and keeps a relevant magnitude even after controlling for a set of observable child and family characteristics. Given a starting probability of about

[16] Full set of results available upon request.

20% that a child engages in the reading and studying activity, we estimate an increase of about 10 percentage points when either parent is used to read in the presence of their children, 10 percentage points when we look at the mother's habit alone and 4 percentage points when we look at the father.

Within the short run identification strategy, the estimated intergenerational coefficient captures the effect of the parent's example, and we find evidence of a short run imitation effect: in the day of the survey children are more likely to read after they saw their parents reading, with a probability that doubles in all our specifications. The imitation of the mother and of the father are found very similar to each other, increasing the probability that their child reads from about 15% to about 30%. The short run results rely on a family fixed effect approach and therefore disentangle the parents' example (experienced differently by the siblings of the same family in the survey day) from the parents' sermon (the unobserved parents' educational attitude shared by siblings).

Since children imitate the observed parents' behaviours, we corroborate the saying "a good example is the best sermon" and conclude that the role model played by parents is a channel through which parental time use may affect children behaviour and time allocation decisions, and thereafter future children outcomes.

Our results shed some new lights on the mechanisms of intergeneration transmission of preferences and attitudes that are essential for targeting human capital accumulation policies. The imitation mechanism might be particularly important for children with low educated parents that provide less stimula to the reading habits of their children, but that can act as an example when they read at home. Further research is need to study imitation of both "positive behaviour", like socializing, doing physical activities, diet habits[17] and for "negative behaviours" like smoking and drinking habits, watching TV and using violence.

If parents influence with their example children's actions, more attention should be put on adults' habits. Programs for parents may in fact contribute to improve children's life-course trajectories and to reduce health and development problems that are associated with costs for the government and for the society as a whole.

[17] Many researches found that parental obesity explain child's overweight (Whitaker *et al*, 1997)

References

Aklee R., Copeland W., Keeler G., Angold A. and Costello J. (2008), Parents' Incomes and Children's Outcomes: A Quasi-Experiment, IZA WP 3520

Alvarez B. and Miles D. (2008), Intergenerational Transmission of Gender Roles: An Empirical Analysis Through Housework, mimeo

Anger S. and Heineck G. (2010), Do Smart Parents Rise Smart Children? The Intergenerational Transmission of Cognitive Abilities?, *Journal of Population Economics*, vol. 23, n. 3, p. 1255-1282

Behrman J. R. and Rosenzweig M. R. (2002), Does Increasing Women's Schooling Raise the Schooling of the Next Generation?, *The American Economic Review*, Vol. 92, p. 323-334

Bjorklund A., Lindahl L. and Plug (2006), The Origins of Intergenerational Associations: Lessons from Swedish Adoption Data, *The Quarterly Journal of Economics*, vol. 121, n. 3, p. 999-1028

Black S. and Devereux P. (2010), Recent Development in Intergenerational Mobility, WP IZA 4866

Black S. E., Devereux P. J., and Salvanes K. G. (2005), Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital, *The American Economic Review*, 95: 437-449

Booth A. and Kee H. (2006), Intergenerational Transmission of Fertility Patterns in Britain", WP IZA 2437

Brown S., Mcintosh S. and Taylor K. (2010), Following in Your Parents' Footsteps? Empirical Analysis of Matched Parent-Offspring Test Scores, forthcoming *Oxford Bulletin of Economics and Statistics*

Cardoso, A. R., Fontainha, E. and Monfardini, C. (2010) "Children's and Parents' Time Use: Empirical Evidence on Investment in Human Capital in France, Italy and Germany", *Review of Economics of the Household.* vol. 8, no. 4, , 479-504.

Connolly S., Micklewright J. and Nickell S.(1992), The Occupational Success of Young Men Who Left School at Sixteen, *Oxford Economic Papers* New Series, Vol. 44 (3), pp. 460-479

Cunha F. and Heckman J. (2007), The Technology of Skill Formation, *The American Economic Review* Vol. 97(2), pp. 31-47

Currie J. and Moretti E. (2007), Biology or Destiny? Short- and Long-Run Determinants of Intergenerational Transmission of Birth Weight, *Journal of Labor Economics*, vol. 25, n. 2, p. 231-263

Del Boca D. Locatelli M. and Pasqua S. (2000), Employment Decisions of Married Women: Evidence and Explanations, *Labour*, vol. 14, n. 1, p. 35-52

Dohmen T., Falk A. and Sunde U. (2011), The Intergenerational Transmission of Risk and Trust Attitudes, forthcoming *Review of Economic Studies*

Ermisch J. and Francesconi M. (2001), Family structure and children's achievements, *Journal of Population Economics*, vol. 14, n. 2, p. 249-270

Farré L., Klein R. and Vella F. (2009), Does Increasing Parents' Schooling Raise the Schooling of the Next Generation? Evidence Based on Conditional Second Moments, WP IZA n. 3967

Fernández R., Fogli A. and Olivetti C. (2004), Mothers and Sons: Preference Formation and Female Labor Force Dynamics, *The Quarterly Journal of Economics*, vol. 119, n. 4, p. 1249-1299

Holmlund H., Lindahl M., and Plug E. (2008), *Estimating Intergenerational Schooling Effect: A Comparison of Methods*, IZA Discussion Paper, No. 3630

Kawaguchi D. and Miyazaki J. (2010), Working Mothers and Sons' Preferences Regarding Female Labor Supply: Direct Evidence from Stated Preferences, forthcoming *Journal of Population Economics*

Jackson C., Henriksen L., Dickinson D. and Levine D. (1997), The Early Use of Alcohol and Tobacco: Its Relation to Children's Competence and Parents' Behavior, *American Journal of Publice Health*, Vol. 87(3), pp. 359-364

Laibowitz A. (1974), Home Investment in Children, *the Journal of Political Economy*, vol. 82, n. 2, p. S111-S131

Lindbeck A. and Nyberg S. (2006), Raising Children to Work Hard: Altruism, Work Norms, and Social Insurance, *The Quarterly Journal of Economics*, vol. 121, n. 4, p.1473-1503

Loureiro M., Sanz-de-Galdeano A. and Vuri D. (2006), Smoking Habits : Like Father, Like Son, Like Mother, Like Daughter, *Oxford Bulletin of Economics and Statistics*, Vol. 72, n. 69, p. 717–743

Mullan K. (2010), Familes That Read: A Time-Diary Analysis of Young People's and Parents' Reading, *Journal of Research in Reading*, vol. 33(4), p. 414-430

Plug E. (2004), Estimating the Effect of Mother's Schooling on Children's Education Using a Sample of Adoptees, *The American Economic Review*, Vol. 94, p. 358-368

Pollak R. (1976), Interdependent Preferences, *The American Economic Review*, Vol. 66 (3), pp. 309-320

Pronzato C. (2011), An Examination of Paternal and Maternal Intergenerational Transmission of Schooling, forthcoming *Journal of Population Economics*

Sénéchal M. and LeFevre J.A. (2002), Parental Involvement in the Development of Children's Reading Skill: A Five-Year Longitudinal Study, *Child Development*, vol. 73, n. 2, p. 445-460

Taveras EM, Rifas-Shiman SL, Berkey CS *et al*. (2005), Family Dinner and Adolescent Overweight, *Obesity Research*, vol. 13, p. 900–906

Todd, P.E. and K.I. Wolpin. 2007. The production of cognitive achievement in children: home, school, and racial test score gaps. *Journal of Human Capital*, 113(485):3–33.

Waldkirch A., Ng S. and Cox D. (2004), Intergenerational Linkages in Consumption Behavior, *The Journal of Human Resources*, vol. 39, n. 2, p. 355-381

Whitaker R., Wright J., Pepe M., Seidel K. and Dietz W. (1997), Predicting Obesity in Young Adulthood from Childhood and Parental Obesity, *The New England Journal of Medicine*, Vol. 337, n. 13, p. 869-73

Wilhelm M., Brown E., Rooney P. and Steinberg R. (2008), The Intergenerational Transmission of Generosity, *Journal of Public Economics*, Vol. 92, n. 10-11, p. 2146-2156

Appendix 1

Summary statistics

Variables	Mean	SD
Child reading and studying	0,30	0,46
Mother reading and studying	0,35	0,48
Father reading and studying	0,29	0,45
Middle and high school	0,52	0,50
Girl	0,47	0,50
Birth order: first	0,41	0,49
Birth order: second	0,46	0,50
Birth order: third or more	0,14	0,34
Child's general health status	1,54	0,58
Time diary compiled in the summer	0,21	0,41
Child's time at home (hours)	7,68	2,53
Time diary compiled in the weekend	0,61	0,49
More than 5 hours at school	0,24	0,43
Mother age	38,73	4,46
Mother compulsory school	0,55	0,50
Mother high school	0,38	0,49
Mother college	0,07	0,25
Mother always housewife	0,30	0,46
Mother full time	0,23	0,42
Father age	42,57	5,05
Father compulsory school	0,55	0,50
Father high school	0,36	0,48
Father college	0,08	0,28
Father unemployed	0,06	0,24
Father blue collar	0,34	0,47
Father white collar	0,07	0,26
Father self employed	0,10	0,30
Number of family components	4,56	0,90
North	0,31	0,46
Center	0,14	0,34
South	0,56	0,50
Number of observations	1447	
Number of families	681	

Appendix 2

Time at home

VARIABLES	(0) rho	(1) FE raw	(2) FE child
mental activities		35.175	35.743
		(26.745)	(26.929)
outdoor		-30.386	-41.398
		(44.286)	(43.656)
sport		0.883	5.801
		(40.914)	(35.838)
Middle and high school			16.789*
			(9.549)
Girl			25.613***
			(7.295)
Birth order: second			8.301
			(7.016)
Birth order: third or more			24.759*
			(14.200)
General health			-4.769
			(8.712)
Time diary compiled in the weekend			26.452
			(53.856)
More than 5 hours at school			-66.733***
			(11.543)
Constant	461.002***	461.567***	441.034***
	(2.433)	(0.781)	(35.246)
Rho	0,688	0,691	0,688
Observations	1447	1439	1439
R-squared	0.000	0.003	0.066
Number of famID	681	681	681

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 3

Table A1. Linear probability model, OLS results (long run). Parents

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Raw corr	Child	Family	Inter	Time at home
Starting child reading probability	*0,23*	*0,157*	*0,174*	*0,183*	*0,19*
parents_rs	0.143***	0.130***	0.104***	0.079**	0.070*
	(0.028)	(0.028)	(0.029)	(0.039)	(0.039)
Middle and high school		0.156***	0.148***	0.129***	0.126***
		(0.028)	(0.030)	(0.034)	(0.033)
Girl		0.041*	0.042*	0.037	0.034
		(0.024)	(0.024)	(0.031)	(0.031)
Birth order: second		-0.011	-0.018	-0.017	-0.017
		(0.026)	(0.026)	(0.026)	(0.026)
Birth order: third or more		-0.077*	-0.107**	-0.105**	-0.106**
		(0.039)	(0.045)	(0.045)	(0.045)
General health		-0.006	-0.009	-0.009	-0.012
		(0.022)	(0.022)	(0.022)	(0.022)
Time diary compiled in the summer		-0.057*	-0.051	-0.051	-0.053
		(0.034)	(0.033)	(0.033)	(0.033)
Time diary compiled in the weekend		-0.013	-0.021	-0.020	-0.020
		(0.030)	(0.029)	(0.029)	(0.029)
More than 5 hours at school		-0.001	-0.002	-0.002	0.031
		(0.033)	(0.033)	(0.033)	(0.035)
Mother age			0.054*	0.055*	0.048
			(0.031)	(0.031)	(0.032)
Mother age squared			-0.001	-0.001	-0.001
			(0.000)	(0.000)	(0.000)
Mother high school			-0.033	-0.033	-0.033
			(0.036)	(0.036)	(0.036)
Mother college			-0.000	0.001	0.003
			(0.066)	(0.066)	(0.065)
Mother always housewife			-0.102***	-0.102***	-0.104***
			(0.034)	(0.034)	(0.034)
Mother full time			-0.089**	-0.088**	-0.082**
			(0.036)	(0.036)	(0.036)
Father age			0.070***	0.070***	0.075***
			(0.027)	(0.027)	(0.027)
Father age squared			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Father high school			0.033	0.033	0.035
			(0.036)	(0.036)	(0.035)
Father college			0.053	0.052	0.049
			(0.065)	(0.065)	(0.065)
Father unemployed			-0.048	-0.049	-0.054

			(0.059)	(0.059)	(0.060)
Father white collar			0.096	0.096	0.098*
			(0.060)	(0.060)	(0.059)
Father self employed			0.029	0.029	0.027
			(0.050)	(0.050)	(0.050)
Number of family components			0.014	0.014	0.008
			(0.015)	(0.015)	(0.015)
Center			-0.027	-0.027	-0.021
			(0.043)	(0.043)	(0.043)
South			0.020	0.020	0.025
			(0.033)	(0.033)	(0.033)
parents_rs*middle/high school				0.040	0.039
				(0.045)	(0.045)
parents_rs*Girl				0.009	-0.001
				(0.048)	(0.047)
Child's time at home					0.000***
					(0.000)
Constant	0.231***	0.181***	-2.548***	-2.552***	-2.646***
	(0.018)	(0.053)	(0.693)	(0.691)	(0.707)
Observations	1447	1447	1447	1447	1447
R-squared	0.024	0.066	0.101	0.101	0.112

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2. Linear probability model, OLS results (long run). Mother

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Raw corr	Child	Family	Inter	Time at home
Starting child reading probability	*0,25*	*0,174*	*0,19*	*0,197*	*0,201*
mother_rs	0.142***	0.132***	0.108***	0.049	0.046
	(0.030)	(0.030)	(0.031)	(0.043)	(0.043)
Middle and high school		0.156***	0.139***	0.125***	0.122***
		(0.028)	(0.029)	(0.032)	(0.032)
Girl		0.039	0.038	0.009	0.004
		(0.024)	(0.024)	(0.029)	(0.028)
Birth order: second		-0.012	-0.024	-0.024	-0.024
		(0.026)	(0.026)	(0.026)	(0.026)
Birth order: third or more		-0.083**	-0.120***	-0.120***	-0.120***
		(0.039)	(0.044)	(0.044)	(0.044)
General health		-0.005	-0.006	-0.007	-0.010
		(0.022)	(0.022)	(0.022)	(0.022)
Time diary compiled in the summer		-0.062*	-0.058*	-0.059*	-0.061*
		(0.034)	(0.033)	(0.033)	(0.033)
Time diary compiled in the weekend		-0.015	-0.022	-0.021	-0.020
		(0.030)	(0.029)	(0.030)	(0.030)
More than 5 hours at school		0.003	-0.002	-0.003	0.030
		(0.033)	(0.034)	(0.034)	(0.035)
Mother age			0.091***	0.092***	0.087***
			(0.029)	(0.029)	(0.029)
Mother age squared			-0.001***	0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Mother high school			-0.002	0.001	0.001
			(0.031)	(0.031)	(0.031)
Mother college			0.050	0.054	0.055
			(0.061)	(0.061)	(0.061)
Mother always housewife			-0.097***	0.096***	-0.097***
			(0.034)	(0.034)	(0.034)
Mother full time			-0.083**	-0.084**	-0.078**
			(0.037)	(0.037)	(0.036)
Number of family components			0.012	0.012	0.006
			(0.015)	(0.015)	(0.015)
Center			-0.031	-0.029	-0.022
			(0.043)	(0.043)	(0.043)
South			0.018	0.018	0.023
			(0.033)	(0.033)	(0.033)
mother_rs*Middle/high school				0.039	0.039
				(0.050)	(0.050)
mother_rs*Girl				0.081	0.070

				(0.051)	(0.051)
Child's time at home					0.000***
					(0.000)
Constant	0.250***	0.200***	-1.738***	-1.735***	-1.767***
	(0.017)	(0.052)	(0.583)	(0.583)	(0.593)
Observations	1447	1447	1447	1447	1447
R-squared	0.022	0.065	0.088	0.090	0.102

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3. Linear probability model, OLS results (long run). Father

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Raw corr	Child	Family	Inter	Time at home
Starting child reading probability	*0,277*	*0,2*	*0,208*	*0,21*	*0,215*
father_rs	0.076**	0.063**	0.043	0.056	0.047
	(0.031)	(0.031)	(0.032)	(0.046)	(0.046)
Middle and high school		0.158***	0.153***	0.149***	0.146***
		(0.028)	(0.030)	(0.032)	(0.031)
Girl		0.044*	0.045*	0.060**	0.051*
		(0.024)	(0.024)	(0.028)	(0.028)
Birth order: second		-0.011	-0.015	-0.013	-0.014
		(0.026)	(0.026)	(0.026)	(0.026)
Birth order: third or more		-0.075*	-0.101**	-0.099**	-0.100**
		(0.039)	(0.045)	(0.045)	(0.044)
General health		-0.002	-0.007	-0.008	-0.011
		(0.022)	(0.022)	(0.022)	(0.022)
Time diary compiled in the summer		-0.071**	-0.064*	-0.064*	-0.066**
		(0.034)	(0.033)	(0.034)	(0.034)
Time diary compiled in the weekend		-0.018	-0.021	-0.021	-0.020
		(0.030)	(0.030)	(0.030)	(0.030)
More than 5 hours at school		0.003	0.002	0.001	0.039
		(0.033)	(0.033)	(0.033)	(0.034)
Father age			0.096***	0.096***	0.099***
			(0.026)	(0.026)	(0.027)
Father age squared			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
Father high school			0.031	0.030	0.033
			(0.032)	(0.032)	(0.032)
Father college			0.072	0.071	0.068
			(0.063)	(0.063)	(0.063)
Father unemployed			-0.052	-0.055	-0.057
			(0.058)	(0.059)	(0.059)
Father white collar			0.099	0.101	0.103*
			(0.062)	(0.062)	(0.061)
Father self employed			0.036	0.036	0.035
			(0.050)	(0.050)	(0.049)
Number of family components			0.017	0.017	0.009
			(0.015)	(0.015)	(0.015)
Center			-0.017	-0.017	-0.013
			(0.044)	(0.044)	(0.043)
South			-0.012	-0.011	-0.006
			(0.031)	(0.031)	(0.031)
father_rs*middle/high school				0.018	0.013
				(0.053)	(0.053)

father_rs*Girl				-0.050	-0.054
				(0.053)	(0.052)
Child's time at home					0.000***
					(0.000)
Constant	0.277***	0.221***	-2.034***	-2.044***	-2.245***
	(0.017)	(0.053)	(0.592)	(0.593)	(0.602)
Observations	1447	1447	1447	1447	1447
R-squared	0.006	0.050	0.073	0.074	0.088

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4. Family fixed effects results (short run). Parents

VARIABLES	(1) FE raw	(2) FE child	(3) OLS FE sample
Reference Prob(child_rs_im=1)	*0,16*	*0,11*	*0,09*
parents_rs_im	0.224***	0.211***	0.208***
	(0.043)	(0.043)	(0.066)
Middle and high school		0.101***	-0.018
		(0.032)	(0.058)
Girl		0.009	-0.016
		(0.025)	(0.043)
Birth order: second		-0.039	-0.105*
		(0.024)	(0.057)
Birth order: third or more		-0.135***	-0.076
		(0.050)	(0.069)
General health		-0.043	-0.097***
		(0.031)	(0.033)
Time diary compiled in the weekend		0.058	0.072
		(0.122)	(0.046)
More than 5 hours at school		0.008	0.024
		(0.046)	(0.052)
parents_rs_im*middle/high school			0.111
			(0.085)
parents_rs_im*Girl			-0.066
			(0.092)
Constant	0.161***	0.175*	0.254***
	(0.016)	(0.094)	(0.089)
Observations	1447	1447	321
R-squared	0.043	0.115	0.132
Number of famID	681	681	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5. Family fixed effects results (short run). Mother

VARIABLES	(1) FE raw	(2) FE child	(3) OLS FE sample
Reference Prob(child_rs_im=1)	*0,21*	*0,14*	*0,07*
mother_rs_im	0.173	0.157***	0.199**
	(0.001)	(0.050)	(0.076)
Middle and high school		0.124***	0.094
		(0.035)	(0.062)
Girl		0.021	0.017
		(0.026)	(0.055)
Birth order: second		-0.030	-0.099
		(0.026)	(0.060)
Birth order: third or more		-0.122**	-0.079
		(0.053)	(0.072)
General health		-0.059*	-0.096***
		(0.032)	(0.036)
Time diary compiled in the weekend		0.110	0.040
		(0.145)	(0.051)
More than 5 hours at school		-0.011	-0.040
		(0.050)	(0.060)
mother_rs_im*middle/high school			-0.031
			(0.097)
mother_rs_im*Girl			-0.027
			(0.110)
Constant	0.204	0.191*	0.253***
	(0.000)	(0.107)	(0.090)
Observations	1447	1447	249
R-squared	0.018	0.094	0.104
Number of famID	681	681	

*** p<0.01, ** p<0.05, * p<0.1

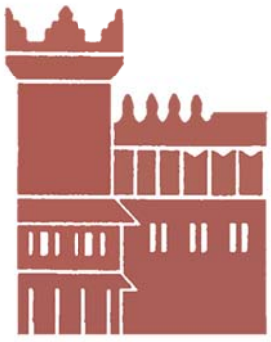
Table A6. Family fixed effects results (short run). Father

VARIABLES	(1)	(2)	(3)
	FE raw	FE child	OLS FE sample
Reference Prob(child_rs_im=1)	*0,21*	*0,15*	*0,14*
father_rs_im	0.195***	0.183***	0.103
	(0.049)	(0.050)	(0.088)
Middle and high school		0.126***	-0.137
		(0.033)	(0.099)
Girl		0.026	-0.030
		(0.025)	(0.053)
Birth order: second		-0.032	-0.153*
		(0.026)	(0.078)
Birth order: third or more		-0.126**	-0.183*
		(0.050)	(0.100)
General health		-0.037	-0.057
		(0.032)	(0.043)
Time diary compiled in the weekend		-0.055	0.142**
		(0.169)	(0.063)
More than 5 hours at school		0.019	0.157**
		(0.050)	(0.074)
father_rs_im*middle/high school			0.184
			(0.123)
father_rs_im*Girl			0.002
			(0.109)
Constant	0.213***	0.256**	0.209
	(0.011)	(0.118)	(0.130)
Observations	1447	1447	206
R-squared	0.021	0.109	0.138
Number of famID	681	681	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A7. Family fixed effects results (short run, alternative strategy). Parents

VARIABLES	(1) FE raw	(2) FE child	(3) FE Time at school
Reference Prob(child_rs_im=1)	*0,19*	*0,13*	*0,13*
parents_rs_im	0.100*	0.109**	0.108**
	(0.052)	(0.052)	(0.052)
Middle and high school		0.128***	0.130***
		(0.035)	(0.035)
Girl		0.017	0.017
		(0.027)	(0.027)
Birth order: second		-0.047*	-0.046*
		(0.027)	(0.027)
Birth order: third or more		-0.116**	-0.115**
		(0.054)	(0.054)
General health		-0.041	-0.040
		(0.034)	(0.034)
Time diary compiled in the weekend		-0.050	-0.052
		(0.178)	(0.180)
More than 5 hours at school			-0.016
			(0.056)
Constant	0.192***	0.246**	0.249**
	(0.011)	(0.123)	(0.125)
Observations	1447	1447	1447
R-squared	0.006	0.090	0.090
Number of famID	681	681	681



Alma Mater Studiorum - Università di Bologna
DEPARTMENT OF ECONOMICS

Strada Maggiore 45
40125 Bologna - Italy
Tel. +39 051 2092604
Fax +39 051 2092664
http://www.dse.unibo.it