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is a good example the best sermon?

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THE INTERGENERATIONAL TRANSMISSION OF READING: IS A GOOD EXAMPLE THE BEST SERMON?

by Anna Laura Mancini*, Chiara Monfardini[§] and Silvia Pasqua[#]

Abstract

We use the last two waves of the Italian Time Use Survey to analyse the intergenerational transmission of reading habits. This can be explained by both cultural and educational transfers from parents to children and by imitative behaviour. Imitation is of particular interest, since it suggests the direct influence parents can have on a child's preference and habit formation, and opens the way for active policies promoting good parenting behaviour. We investigate the imitative behaviour of children using a household fixed-effects model, where we identify the impact of the parents' role by exploiting the different exposure of siblings to parents' example within the same household. We find robust evidence on the existence of an imitation effect: on the day of the survey children are more likely to read after seeing either the mother or the father reading.

JEL Classification: J13, J22, J24, C21.

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

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1. Introduction

Intergenerational transmission has been the object of extensive attention in the economic literature, mainly owing to its effect on mobility across generations. In fact, most research has focused on the intergenerational transmission of education and income¹ and, more recently, on the transmission of cognitive abilities.²

A new stream of literature studies 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's work and domestic tasks while Dohmen et al. (2011) show how parents transmit risk and trust attitudes to their children.

The recent development of time use data makes it possible to look at the transmission across generations of, for example, time use choices, a topic on which the existing research is scarce and mainly concentrated on labour supply decisions (Del Boca et al., 2000; Fernández et al., 2004; Kawaguchi and Miyazaki, 2009; Blau et al. 2013).

In this paper, we look at a particular channel of intergenerational transmission: the child's imitation of parents' reading activity. Reading is a crucial activity in the process of human capital accumulation and is important for its positive links with educational outcomes and subsequent earnings (Connolly et al., 1992). Cunningham and Stanovich (2001) show, in fact, that reading has accumulated effects over time with profound implications for the development of a wide range of cognitive abilities, verbal skills and declarative knowledge, while Stanovich (1986) emphasizes the role of reading for increasing the efficiency of the cognitive process. Therefore, stimulating young people to read is a concern for educators and policy makers, and parents may transmit preferences and habits to their children by acting as good role models in promoting reading (Mullan, 2010). While reading is clearly not the only human capital building activity, early acquisition of reading skills appears to help the development of a lifetime habit of reading (Cunningham and Stanovich, 1997), and therefore to have long-term and multiplying effects. As shown by research on habits formation (Neal *et al.*, 2006; Wood and Neal, 2007), much of everyday actions are characterised by habitual repetition. Therefore, when parents read in the presence of their children, imitation by the child might be a channel contributing to the formation of the child's reading habit.

¹ For a survey on the intergenerational transmission of education and earnings, see Black and Devereux (2010).

² Brown et al. (2010) and Anger and Heineck (2010).

Our analysis relies on the Italian Time Use Survey (2002-2003 and 2008-2009 pooled waves) conducted by ISTAT. While most time use surveys only consider one member of the household, and rarely children of primary school age, the Italian dataset conveys detailed information on the time devoted to reading by both parents and their children, including when, with whom, and in the presence of whom the activity is performed. This makes it possible to investigate if children are more likely to allocate time to reading when they observe their parents engaged in this activity on the same day. We are in fact able to look at the time children aged between 6 and 15 devote to reading on their own.

The intergenerational transmission of habitual reading presents several novel and interesting features. Indeed, it seems more important to study the transmission of a habit that produces human capital accumulation than to only look at the transmission of IQ, because behaviour is a matter of choice while intelligence is not. Even more so when one considers that, compared to the transmission of education, the intergenerational transmission of the habit to read is less affected by the economic status of the family, but is crucial for its consequences on the continuous investment in human capital throughout an individual's life. A further advantage of our analysis is the objective measure of behaviour we use (the time parents and children devote to reading) as opposed to research based on qualitative issues such as the willingness to take risks and to trust other people (Dohmen et al., 2011).

The intergenerational transmission of attitudes to reading can be explained by both cultural and educational transmission from parents to children and by imitative behaviour. Parents teach their children the importance of reading and provide them with books, but Teale and Sulzby (1986) recognise the importance of children observing adults' reading habits. Imitation is therefore a channel of transmission of particular interest, since it entails the direct influence parents can have on the formation of children's preferences by their being a role model, and it opens the way for active policies aimed at promoting good parenting behaviour.

In a recent study, Cardoso et al. (2010) document a positive association between parents' and children's time allocations in human capital building activities in France, Germany and Italy. In this paper, we extend their analysis by concentrating our attention on the imitation channel. Taking advantage of the presence of a large number of siblings in the data, we identify the imitation effect using a family fixed-effects approach. In so doing, we exploit the variation that occurs among siblings: different children, for exogenous reasons, may have been exposed differently to parents' reading activities on the survey day. This within-family variation allows us to isolate the causal effect of imitation from the effects of the household environment and education received from the

parents, which are common to the siblings. Our identification strategy is validated by a number of robustness checks which prove that the spotted relationship between reading and witnessing the parent reading is neither spurious nor mechanical.

We find new and clear-cut evidence on the existence of an imitation effect that confirms the saying “a good example is the best sermon”. On the day of the survey, the probability of children reading increases significantly after they have seen their parents reading. We look separately at mothers and fathers, since past research has shown that each parent can affect her or his children’s decisions and behaviour differently³. A mother’s imitation effect increases the probability that the child reads from about 4% to about 34%. The father’s imitation effect is similar, raising the probability from about 5% to about 36%.

This research can be useful for the analysis of intergenerational transmission and, in particular, the effects of parents’ role. Are parents able to influence their children’s preferences and choices through their behaviour? Do policies targeted at adults therefore also produce effects on individuals in the next generation and are they, for this reason, more productive? Our findings suggest that role modelling by parents is one channel through which parental time use may affect children’s behaviour and time allocation decisions, and, thereafter, future child outcomes.

The paper is organised as follows. Section 2 presents a review of the main literature. Section 3 describes the dataset used and the sample selection made for our empirical analysis. Section 4 presents the empirical strategy. The results and robustness checks are discussed in Section 5. Section 6 concludes.

2. Background literature

There is a vast literature on intergenerational transmission and research on the 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 those that consider the transmission of behavioural patterns, 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 “nurture”, i.e., better educated parents invest more in their children’s education (for a complete review, see Black and Devereux, 2010). Moreover, in households where parents are more highly

³ See for example Anger S. and Heineck G., 2010; Ermisch and Francesconi, 2001; Louriero et al., 2006; Bjorklund et al., 2006; Farré et al., 2009; Mullan, 2010 and Dohmen et al., 2011.

educated, a better family environment and a higher quality of child/parent relationships contribute to the persistence of education and income across generations.

The transmission of cognitive abilities from parents to children has been less investigated. Brown et al. (2011) for the U.K. and Anger and Heineck (2010) for Germany consider correlations in test scores, finding a strong transmission effect that is largely explained by the investments that parents make in their children. In particular, parents with better reading skills are better able to help their children in learning to read at home with positive effects on word fluency (see also Sénéchal and LeFevre, 2002). This is not true for the transmission of math abilities, which seems to be more the result of 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 behaviour: 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 behaviour, while Booth and Kee (2006) and Blau et al. (2013) consider the intergenerational cultural transmission of norms regarding fertility. Jackson et al. (1997) and Louriero et al. (2006) look at smoking habits and Lindbeck and Nyberg (2006) at the intergenerational transmission of norms related to hard work, 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 analyses, designed to understand how habits are transmitted across generations, and therefore which policies may be put into action to promote "good" habits and attitudes and to curb "bad" ones, find that parents influence their children's preferences through role modelling, educational choices and their behaviour.

The literature on the intergenerational transmission of time use preferences and time allocation is certainly more scant and, as already mentioned, focuses more on labour supply (Del Boca et al., 2000; Fernández et al., 2004; Kawaguchi and Miyazaki, 2009; Blau et al., 2013) 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. In particular, Mullan (2010), using a time use dataset for the U.K., found a positive correlation between the reading time of parents and children aged between 13 and 18 years. Cardoso et al. (2010) investigate the association between parents and children's time allocations in France, Germany and Italy. In their paper, they use the Multinational Time Use Study and focus on how adolescents in the 15-19 age bracket 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. Due to data limitation, none of these studies are able to identify the imitation effect. The social learning theory of Bandura (1977) states that behaviours is learned through a process of observation that seems to be the most essential form of learning through which a variety of behavioural patterns are acquired (Bandura and Walters, 1963). Consequently, parents act as an (unintentional) model for their children. Notten et al. (2012) analyse the intergenerational transmission of book reading and television watching behaviour, trying to distinguish between imitation, parents' guidance and cultural transmission channels. They find that parents set a specific reading or TV watching example that children tend to imitate and this socialisation effect remains influential for the rest of their children's lives. However, the Dutch data they use are not very suitable for identify the imitation effect since they are based on retrospective questions about childhood in-the home and present media experience of a sample of adult individuals.

By considering children between 6 and 15 years of age, we also extend Cardoso et al.'s (2010) analysis to younger children. This extension to young children is particularly important in the light of recent theories and results on the importance of early investment in children (Cunha and Heckman, 2007). The Italian dataset, in fact, is one of the few Time Use datasets that provides a time diary for children older than three. Furthermore, our dataset allows us to study which activities both parents and children engage in on the selected day, where they perform these activities and which family member is present. Compared to the harmonised dataset used by Cardoso et al. (2010), the Italian dataset contains a richer set of information and a large sample of siblings in the age range of interest, allowing us to identify a short run 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 that 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 Brown et al. (2011) use instrumental variables, Akee et al. (2008), Black et al., 2005 and Holmlund et al. (2008) use a difference-in-differences approach when changes and reforms occur. Other authors exploit datasets in which either twins or adopted children are present to use a fixed-effects approach. The presence in a dataset of individuals that share the same genetic traits but living in different families (for example, the children of twins, as in Behrman and Rosenzweig, 2002, and in Pronzato, 2012), 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 whom information is available for both natural and adoptive parents (as in Bjorklund

et al., 2006) allows disaggregation of the effects of genetic transmission from the effects of the family environment.

In our dataset, the number of twins is too small and we are unable to isolate nature from nurture. By exploiting the presence of a large number of siblings, however, we can disentangle the effect of imitation from the overall effect of nature and nurture, comparing the reading decisions of children who saw their parents reading with those of their siblings not exposed to the same parental example.

Our focus on reading activities is due to the proven positive effects that reading has on cognitive development. Reading, in fact, increases the efficiency of the learning process (Stranovich, 1986) and individuals that read habitually during childhood read more over the years and this helps them to compensate for modest levels of innate cognitive abilities (Cunningham and Stranovich, 2001).

According to Teale and Sulzby (1986) the home environment can be an important source of literacy experience through interaction between parents and children in reading situations, through children's own experience with books and through children's observation of adults' reading behaviour (e.g. reading the newspaper), while McKool (2007) shows how having parents that read for recreational purposes increases children's reading. In our dataset we only have information on a single day. However, we select our sample in order to exclude households that filled the diary on a non-standard day, and the literature on habits emphasises that most of the everyday actions are characterised by habitual repetition (Neal et al., 2006). We therefore believe that if a parent reads on the survey day, he or she is likely to read during the rest of the week too. Moreover, if they read where their children can see them during the survey day, they are likely to do the same also on the others days. If an imitation effect exists, the repetition of an imitated behaviour can produce a habit for the child.

3. Sample selection and definition of time use variables

Our analysis of the reading activities builds on two pooled waves (2002-2003 and 2008-2009) of the Time Use Survey conducted by ISTAT. The survey covers 39,325 households (21,075 in the 2002-2003 wave and 18,250 in the 2008-2009 wave) and reports information on each household member.

An individual questionnaire containing socio-demographic information and a time diary were collected. All household members older than three completed the time diary on a selected day⁴. In each municipality covered by the survey, households were divided into three groups and each group

⁴ Parents completed the time diaries of very young children.

was asked to fill in the daily diary on a different day: a weekday, Saturday or Sunday.⁵ Our analysis is based on diaries completed both during weekdays and during weekend days. We selected a sample of children ranging in age from 6-15,⁶ with at least one sibling in the same age range and living in a household where both parents were present. We excluded households in which any of the members (children, siblings or parents) filled in the diary on a “special” day (for example a day on which they, their siblings or their parents were ill) and those for whom either a parent or any siblings in the relevant age bracket failed to complete the diary. We also excluded all children for whom one or more variables used in the econometric analysis of Section 4 were missing. Our final sample consists of 2,640 children (1,427 from the first wave and 1,213 from the second one) belonging to 1,261 households (681 from the 2002-2003 wave and 580 from the 2008-2009 wave)⁷.

The diary reports the time spent on a large number of tasks. Activities are coded by the respondent as main or secondary activities⁸. Information about where, when and with whom the activities were performed was crucial for defining the content of the reading activities for children and parents as follows:

- *For the child*: time spent reading on her or his own, with no adult taking part in the activity, declared as the primary activity;
- *For the parents*: time spent reading, or talking or reading⁹ to child’s siblings in the presence of the child, when the latter is not sleeping, declared either as a primary or secondary activity¹⁰.

Table 1 reports the basic descriptives of the allocation of time into reading activities in our sample. Looking at participation rates, on the sample day, we observe about 17% of the mothers and 14% of the fathers engaged in reading while their children observe them. Only about 8% of the children were reported as reading. A number of reasons explains these low values. First, the collection of time use information is such that only episodes lasting more than ten minutes are recorded. Second, we excluded homework and all reading activities done at school (23% of our children spent more than five hours at school on the survey day). Finally, we consider only the reading activities of parents in the presence of the child and therefore the time spent by family members in the same

⁵ The oversampling of weekend diaries was a deliberate choice of the data collector.

⁶ Given our focus on activities children can do on their own, we exclude very young children from our sample because it is highly likely that all their reading activities are done together with the parents.

⁷ We checked that the sample of households with at least two children in age from 6-15 does not systematically differ from the sample we select for our analysis.

⁸ 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.

⁹ Notice that “talking or reading to...” is a unique category in the dataset from which we cannot separate out the talking component.

¹⁰ Notice that for the children we consider the reading activity only when it is the primary activity. Instead, for parents, we also include the reading activity when it is declared as a secondary one, since we do not want to exclude those situations in which a parent is, for example, listening to music (primary activity) while reading.

place (typically home) is reduced by the number of hours the child stays at school. The corresponding observed unconditional average times (including the observations with reading time equal to zero) are also very low, especially for the parents: about six minutes for mothers and four for fathers and children. The figures increase considerably when evaluated on the subsamples of the few readers, with both parents dedicating to reading activities, on average, about half an hour and children about 50 minutes.

4. Empirical strategy

We identify the causal impact of the role model exerted by parents by means of a household fixed-effects model, exploiting sibling variations in the exposure to the treatment, represented by observing parental reading behaviour. Participation rather than time spent reading (duration) is chosen as the relevant time use variable. This choice is motivated by the large number of zero values highlighted in the previous section, which rules out any meaningful modelling of the amount of time devoted to reading activities through either tobit or double-hurdle specifications. Given the way time use is collected in our data, participation captures the event of “reading for at least ten minutes”, and also conveys some information on the duration of the activity. This definition of participation makes it an adequate measure for representing the example set by parents on the one hand, and behaviour compatible with the formation of children’s reading habits on the other.

Since we are interested in the imitation effect, we only consider the child’s reading episodes that occurred after having seen the parents reading. The dependent variable, say *child_reading_after_{ij}*, is a binary measure indicating whether child *i* in household *j* engages in reading **after** her or his parent. The treatment variable we rely on to prove the existence of an intergenerational transmission through imitation is a child-specific measure of parental reading activity that occurred **in the presence of each child**, say *parent_reading_{ij}*. The latter measure is child-specific because siblings may or may not have seen their parents reading on the survey day. The useful cases for identification come from families where parents are seen reading by at least one – but not all – of their children. In these families, we restrict the observation period for all siblings from the first moment the parent is seen reading by one child to the end of the day.

In Table 2 we cross-tabulate the observed reading activity of children after the reading activity of their parents for the sample of all children (*Full sample*)¹¹. The probability of the child reading increases sharply when exposed to the parental example, both for the mother and for the father.

Our identification strategy relies on within-family variability. In Table 3 we present the same cross-tabulation as Table 2, restricted to what we define the *Fixed Effects samples*. We have 353 children belonging to families there is within-siblings variation in exposure to parental reading only through the mother (*Mother Fixed Effects sample*) and 279 children belonging to families where variation in exposure occurs only through the father (*Father Fixed Effect sample*). It is interesting to note that the pattern for both parents is similar to that of Table 2, providing preliminary descriptive evidence of the existence of the imitation effect we want to estimate.

In order to account for unobserved heterogeneity at the household level, estimation is performed with a household fixed-effects linear model explaining the probability that a child engages in reading after observing her or his parent reading:

$$child_reading_after_{ij} = \gamma_0 + \gamma_1 parent_reading_{ij} + \gamma_2 Z_i + \mu_j + \varepsilon_{ij}$$

The intergenerational parameter γ_1 captures the short-run imitation effect (the parents' example), and can be estimated net of the whole set of unobservable confounders at the family level (μ_j). These include unobserved environmental and genetic factors, influencing both the parents' and children's preference for reading, parental attitudes, such as pressure to read put by parents on children, and the parents' educational message relative to the importance of reading (the parents' sermon). On the right hand side, we control for a number of exogenous child characteristics (Z_i).

The child's age is proxied 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 at the transition from primary to middle school (and less at middle to high school). We allow the imitation effect to vary according to the school level by interacting this dummy and the parents' reading time. The gender dummy *Girl* captures possible systematic differences in time use habits linked to the gender of the child. This dummy is interacted with parents' reading time to account for differences in the transmission of time use habits from parents to children related to the gender of the child. We also control for child's birth order (dummies *Birth order: second* and *Birth order:*

¹¹ For families in which parents did not read at all in the presence of their children, we look at the participation into reading activity by the child during the whole day. This implies that the observational period for children in families where one of the parent was observed reading in the sampled day is shorter.

third or more), for the time spent at school by the child (dummy *More than 5 hours at school*) and for the self-reported *General health status* of the child¹².

In Appendix 1 we present the summary statistics of the regressors used in the empirical analysis splitting the sample in “treated” and “untreated” children, where the former are those exposed to the mother/father example. In most cases, the averages do not statistically differ by treatment status. This is not true for gender, school level and some birth order indicators, confirming the importance of including these variables as controls. It is worth to note that child’s preferences are also not statistically different for treated and not treated children: we build in fact two indicators of child’s preferences for non-physical activities, typically performed at home, and for spending time outdoors¹³, that we will use to perform a robustness check of our main specification. The marginal significance of the variable measuring “Time spent at home” calls for a particular attention. Since this is a choice variable, we do not insert it in our main specification, but we will check that the estimated imitation effect is robust to its inclusion.

5. Results

5.1 Estimated imitation effects

We report in Table 4 the estimated intergenerational coefficients capturing the causal effect of the parent’s example¹⁴, which are found to be significant and of considerable magnitude. In the next section, we corroborate this finding with several robustness.

We look at three separate specifications including as regressors: a) an indicator for the mother’s reading activity (upper part of the table); b) an indicator for the father’s reading activity (central part of the table); c) two separate indicators for the reading activities of mother and father (lower part of the table). For each of these three specifications we start by inserting no further control than the intergenerational transmission variables (first column), then we condition to the child’s

¹² In our data the health status is a categorical variable that ranges from 1 (excellent health status) to 5 (very bad health status).

¹³ The survey questionnaire asks the children if they would like to engage more or less (or if they are satisfied 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 on that activity. We then create two indicators that capture the preferences over non-physical activities and over outdoor activities by grouping and summing up the corresponding dummies. The activities included in 2002 and 2008 are coded differently and in 2008 a residual category “other” was also introduced. In 2002 for non-physical activities we consider homework, computer courses, language courses and theater, dance or music, assuming that for physical activities children have to spend time outdoor and to play outdoors (opposed to playing inside). In 2008 for non-physical activities we consider homework and general cultural activities (like theater, dance, music and so on), while for physical activities we have only “preferring to play outdoor” (opposed to playing inside).

¹⁴ In the longer version of the paper (Mancini *et al.*, 2011) we estimate the intergenerational association in the reading habit without distinguishing between “sermon” and “example” (“long run” model). We find a positive association between parents’ and children’s reading habits that is stronger for the mother. This association persists and remains sizable even after controlling for a set of observable child’s and family characteristics. Despite the conditioning on a large set of covariates, this positive association is not likely to capture the causal effect of the role model played by parents.

characteristics X (second column) and, finally, we extend the specification to the interactions of parental time with child gender and the school level dummy (third column).

We take column 2 as the preferred specification, since interactions of mother time variable with the child's school level turns out to be not significant. Having observed the mother reading raises the estimated reading probability from about 4% (reference probability) to about 34%. Direct imitation of the father alone leads to a similar increase in the probability that a child will read: from about 5% if the child does not observe the father reading, to about 36% if the child does. In the bottom part of Table 4 we show that the imitation effect remains significant and large when we disentangle the effect of each parent, and evaluate the effect of imitating the mother (father) while controlling for the possible imitation of the father (mother). The mother's imitation effect, net of the exposure to the father's example, makes the probability of the child reading increases from about 5% to about 29%, i.e. the probability is almost six times bigger. The father's imitation effect turns out to be very similar: the probability of the child reading following the father's example increases from about 6% to about 28%. In Tables A2.1 to A2.3 in Appendix 2 we report the full estimation results.

5.2 Robustness exercises

In this sub-section we provide evidence supporting our identification strategy and validating our findings on the existence of an imitation effect. The detailed outputs are contained in Appendix 3.

We start by including in our preferred specification (column 2 of Table 4) two indicators of child's preferences for physical and outdoors activities. In fact, sibling variation in exposure to the parents' example could be correlated to individual unobserved determinants of the reading patterns, such as preferences. By controlling for these, we reduce the risk of overestimating the imitation effect. In Table A3.1 we report the results showing that child's preferences variables are not significant both for the mother and for the father.

Next, we show that the spotted relationship between reading and witnessing the parent reading is not spurious. It is worth remembering that, despite the fact that we record reading activity wherever it occurs, most of it takes place at home for both parents and children. Under the circumstance that the presence at home of a child explains both her or his reading activity and her or his witnessing the parent's reading, our estimated imitation effect could just be capturing some "presence at home" factors. In Table A3.2 we control for both the time spent at school (as in the main regression) and the time spent at home by the child. We do not observe a decreased imitation coefficient, as we would expect in case of spurious correlation induced by presence at home.

We also perform some sensitivity on the sample selection criteria. We run the estimation on two new samples to ensure that our sample selection requirement (both parents having filled the daily diary) does not produce biased results. In the first sample, we include all child/mother pairs for which we have both the time diaries, and in this sample, we test the mother's estimates. In the second sample, we do the same for the child/father pairs. The results remain the same, with only marginal changes in the coefficients (see Table A3.3).

Next, we repeat our estimation controlling for the fact that the child reads *before* having seen either parents reading. The aim of this exercise is to make sure that we are isolating a short-run imitation effect and not just capturing habits or other mechanisms. Table A3.4 shows that the main coefficients associated with the parents' reading activities keep sizeable and significant, despite diminished with respect to the corresponding figures obtained above, confirming that a substantial component of our estimated effect is indeed imitation.

In Table A3.5 we show that our results are not driven by the miscellaneous "Reading and talking to the children" category included in the definition of the reading activity of parents. While excluding this category is certainly diminishing the number of useful cases for identification, the imitation effect is substantially confirmed.

Finally, we address the fact that the observation window for the child varies with the reading activity of the parent, and it is equal to the whole day if the parent did not read. Since the observation period is larger for children not observing the reading activity of the parent, this makes it more likely to observe the reading activity of children who do not imitate their parents. This implies that the estimated imitation coefficient is attenuated. Nevertheless, in Table A3.6 we display the results of an alternative identification strategy, based on the same observation windows for all children. Here we fix different points in time (4.30 p.m., 5.30 p.m., 6.30 p.m.) before which the parents can be observed by their children reading or not, while the behaviour of children is observed after that point in time (we allow activity to overlap for a 30 minute span). This strategy is much more stringent than the one used to derive the main results presented above. Interestingly, we still spot significant imitation effects, with magnitude varying across the considered cases.

6. Conclusions

We exploit the presence of households with more than one child in the Italian time use dataset to learn about the intergenerational transmission of preferences for human capital building activities, such as reading, between parents and their children aged 6-15. In particular, we investigate whether

children are more likely to read when they observe their parents engaged in the same activity on the day of the survey (short run imitation effect).

With our identification strategy, the estimated intergenerational coefficient captures the causal effect of the parents' example. We find new evidence of a short-run imitation effect: children are much more likely to read after seeing their parents reading. The imitation of the mother increases the probability of the child reading from about 4% to about 34%. The imitation of the father is very similar, raising the probability that the child will read from about 5% to about 36%.

These results rely on a family fixed-effects approach and, therefore, disentangle what the parents teach by their example (experienced differently by the siblings of the same family on the survey day) from what they tell their children to do (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 parental role model is a channel through which parents' time use may affect children's behaviour and time allocation decisions, and thereafter future outcomes for children.

Our results shed new light on the mechanisms of intergenerational transmission of preferences and attitudes that are essential for targeting human capital accumulation policies. The imitation mechanism would be particularly important for children with low-educated parents, who provide less stimuli to the reading habits of their children, but who might act as an example when they engage in reading at home. Further research is needed to study the imitation of both "positive" behaviour, like socializing, engaging in physical activities, diet habits¹⁵ and "negative" behaviour, like smoking and alcohol consumption, watching TV and being violent.

If it is true that parents influence children's actions by example, more attention should be paid to adults' habits. Programs for parents may in fact contribute to improving children's life-course trajectories and to reducing health and developmental problems that are associated with higher costs for the government and for the society as a whole.

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¹⁵ Many researches have found that parental obesity explains children's being overweight (Whitaker *et al*, 1997)

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Tables

Table 1

**Reading activity of
children and of parents in the presence of their children**

Participation rates			
	<i>Child</i>	<i>Mother*</i>	<i>Father*</i>
Mean	8.30	16.94	13.58
Sd	27.58	37.53	34.28
Median	0	0	0
Obs	2,640	1,251	1,251
Reading time – Unconditional			
	<i>Child</i>	<i>Mother*</i>	<i>Father*</i>
Mean	4.43	5.63	4.09
Sd	19.42	22.58	16.72
Median	0	0	0
Obs	2,640	1,251	1,251
Reading time – Conditional on reading			
	<i>Child</i>	<i>Mother*</i>	<i>Father*</i>
Mean	53.42	33.24	30.12
Sd	44.01	45.81	35.78
Median	40	15	20
Obs	219	212	170

* in the presence of one of their children
Selected sample. Source: Time Use 2002-2008, Istat

Table 2

**Sample distribution of child's reading activity
after having observed parental reading activity – Full sample**

Mother			
	<i>Not reading</i>	<i>Reading</i>	<i>Obs</i>
Child does not read after	2,273	179	2,452
%	96.1%	65.1%	92.9%
Child reads after	92	96	188
%	3.9%	34.9%	7.1%
Obs (number of children)	2,365	275	2,640
%	100%	100%	100%
Father			
	<i>Not reading</i>	<i>Reading</i>	<i>Obs</i>
Child does not read after	2,297	152	2,449
%	94.8%	70.0%	92.8%
Child reads after	126	65	191
%	5.2%	30.0%	7.2%
Obs (number of children)	2,423	217	2,640
%	100%	100%	100%

Source: Time Use 2002-2008, Istat

Table 3

**Sample distribution of child's reading activity
after having observed parental reading activity – Fixed Effects Samples**

Mother			
	<i>Not reading</i>	<i>Reading</i>	<i>Obs</i>
Child does not read	171	105	276
%	93.4%	61.8%	78.2%
Child reads	12	65	77
%	6.6%	38.2%	21.8%
Obs	183	170	353
Father			
	<i>Not reading</i>	<i>Reading</i>	<i>Obs</i>
Child does not read	139	94	233
%	96.5%	69.6%	83.5%
Child reads	5	41	46
%	3.5%	30.4%	16.5%
Obs	144	135	279

Source: Time Use 2002-2008, Istat

Table 4

Estimated imitation effect. Linear probability model, family fixed effects

Dependent variable:
child_reading_after (= 1 if child reads after observing the parent reading)
 Treatment variables:
mother_reading (= 1 if mother observed reading by the child)
father_reading (= 1 if father observed reading by the child)

VARIABLES	(1)	(2)	(3)
	Raw (FE)	Child (FE)	Inter (FE)
<i>Reference</i>			
<i>Prob(child_reading_after=1)</i> [§]	0.040	0.039	0.038
Mother_reading	0.302*** (0.055)	0.301*** (0.055)	0.316*** (0.080)
Mother_reading *Wave 2008	0.021 (0.084)	0.018 (0.084)	0.016 (0.085)
Middle / High school		0.006 (0.017)	0.007 (0.016)
Girl		-0.002 (0.013)	-0.000 (0.012)
Mother_reading*middle/high school			-0.011 (0.067)
Mother_reading*Girl			-0.014 (0.067)
<i>Reference</i>			
<i>Prob(child_reading_after=1)</i> [#]	0,047	0,048	0,047
Father_reading	0.314*** (0.056)	0.310*** (0.055)	0.303*** (0.071)
Father_reading*Wave 2008	-0.086 (0.084)	-0.088 (0.084)	-0.092 (0.085)
Middle / High school		-0.001 (0.017)	0.001 (0.017)
Girl		0.020 (0.013)	0.016 (0.013)
Father_reading*Middle/High school			-0.023 (0.063)
Father_reading*Girl			0.044 (0.065)

[§] Sample average estimated probability for a young child conditional to *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional to *father_reading* = 0.

Columns 2 and 3 include as controls: birth order, child health, time spent at school. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4 (cont'd)

Estimated imitation effect. Linear probability model, family fixed effects

Dependent variable:

child_reading_after (= 1 if child reads after observing the parent reading)

Treatment variables:

mother_reading (= 1 if mother observed reading by the child)

father_reading (= 1 if father observed reading by the child)

VARIABLES	(1)	(2)	(3)
	Raw (FE)	Child (FE)	Inter (FE)
<i>Reference</i>			
<i>Prob(child_reading_after=1)[§]</i>	0.047	0.050	0.049
<i>Reference Prob(child_reading_after = 1)[#]</i>	0.054	0.057	0.056
Mother_reading	0.239*** (0.065)	0.240*** (0.065)	0.242*** (0.090)
Mother_reading*Wave 2008	0.078 (0.098)	0.075 (0.098)	0.072 (0.099)
Father_reading	0.220*** (0.069)	0.217*** (0.068)	0.241*** (0.089)
Father_reading*Wave 2008	-0.095 (0.101)	-0.094 (0.101)	-0.096 (0.101)
Middle / High school		-0.001 (0.016)	0.003 (0.016)
Girl		0.003 (0.012)	0.001 (0.012)
Mother_reading*Middle/High school			-0.028 (0.081)
Mother_reading*Girl			0.023 (0.085)
Father_reading*Middle/High school			-0.028 (0.087)
Father_reading*Girl			-0.008 (0.087)

[§] Sample average estimated probability for a young child conditional to *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional to *father_reading* = 0.

Columns 2 and 3 include as controls: birth order, child health, time spent at school.

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

Appendix 1

Table A1.1

**Summary statistics by treatment status
in the full sample and in the mother and father fixed-effects samples.
Treated = having observed the mother/father reading (*parent_reading=1*)**

Variables	Full	Mother FE sample		Father FE sample	
	sample	Non treated	Treated	Non treated	Treated
Middle / High school	0.476 (0.500)	0.448 (0.499)	0.547* (0.499)	0.458 (0.500)	0.607*** (0.490)
Girl	0.478 (0.500)	0.459 (0.500)	0.582** (0.495)	0.451 (0.499)	0.526 (0.501)
Birth order: first	0.412 (0.492)	0.377 (0.486)	0.441 (0.498)	0.361 (0.482)	0.481** (0.502)
Birth order: second	0.460 (0.499)	0.432 (0.497)	0.435 (0.497)	0.479 (0.501)	0.400 (0.492)
Birth order: third or more	0.128 (0.334)	0.191 (0.394)	0.124* (0.330)	0.160 (0.368)	0.119 (0.324)
General health status	1.502 (0.569)	1.519 (0.563)	1.518 (0.655)	1.521 (0.554)	1.496 (0.645)
Child's time at home (hours)	7.580 (2.627)	7.697 (2.510)	8.230* (2.645)	8.012 (2.756)	8.432 (2.718)
More than 5 hours at school	0.228 (0.419)	0.224 (0.418)	0.200 (0.401)	0.208 (0.408)	0.178 (0.384)
Non-physical activities	0.574 (0.900)	0.601 (0.858)	0.559 (0.835)	0.597 (0.895)	0.481 (0.771)
Outdoor	0.462 (0.499)	0.514 (0.501)	0.429 (0.496)	0.472 (0.501)	0.407 (0.493)
Wave 2008	0.459 (0.498)	0.415 (0.494)	0.447 (0.499)	0.444 (0.499)	0.452 (0.500)
Number of observations	2,640	183	170	144	135

*, **, ***: t-test for the difference of means across treated and untreated groups significant at 10%, 5%, 1% level.

Appendix 2

Table A2.1

Family fixed effects results. Mother

VARIABLES	(1)	(2)	(3)	(4)
	FE raw	FE child	OLS FE sample	FE inter
<i>Reference</i>				
<i>Prob(child_reading_after =1)[§]</i>	0.04	0.039	0.103	0.038
Mother_reading	0.302*** (0.055)	0.301*** (0.055)	0.285*** (0.057)	0.316*** (0.080)
Mother_reading*Wave 2008	0.021 (0.084)	0.018 (0.084)	0.060 (0.081)	0.016 (0.085)
Middle / High school		0.006 (0.017)	-0.041 (0.051)	0.007 (0.016)
Girl		-0.002 (0.013)	0.008 (0.038)	-0.000 (0.012)
Birth order: second		-0.020 (0.013)	-0.082 (0.052)	-0.020 (0.013)
Birth order: third or more		-0.035 (0.027)	-0.090 (0.061)	-0.035 (0.027)
General health status		0.003 (0.018)	-0.019 (0.032)	0.003 (0.018)
More than 5 hours at school		0.018 (0.020)	-0.016 (0.048)	0.018 (0.020)
Mother_reading*Middle/High school				-0.011 (0.067)
Mother_reading*Girl				-0.014 (0.067)
Constant	0.039*** (0.004)	0.042 (0.034)	0.167** (0.068)	0.041 (0.035)
Observations	2,640	2,640	353	2,640
R-squared	0.107	0.114	0.158	0.114
Number of families	1,251	1,251		1,251

[§] Sample average estimated probability for a young child conditional to *mother_reading =0*

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

Table A2.2

Family fixed effects results. Father

VARIABLES	(1)	(2)	(3)	(4)
	FE raw	FE child	OLS FE sample	FE inter
<i>Reference</i>				
<i>Prob(child_reading_after=1)[#]</i>	0.047	0.048	0.046	0.047
Father_reading	0.314*** (0.056)	0.310*** (0.055)	0.276*** (0.055)	0.303*** (0.071)
Father_reading*Wave 2008	-0.086 (0.084)	-0.088 (0.084)	-0.020 (0.081)	-0.092 (0.085)
Middle / High school		-0.001 (0.017)	-0.023 (0.052)	0.001 (0.017)
Girl		0.020 (0.013)	0.008 (0.041)	0.016 (0.013)
Birth order: second		-0.024* (0.013)	-0.047 (0.056)	-0.025* (0.013)
Birth order: third or more		-0.061** (0.025)	-0.056 (0.076)	-0.062** (0.025)
General health status		-0.012 (0.019)	0.014 (0.037)	-0.012 (0.019)
More than 5 hours at school		0.014 (0.020)	0.066 (0.054)	0.014 (0.020)
Father_reading*Middle/High school				-0.023 (0.063)
Father_reading*Girl				0.044 (0.065)
Constant	0.050*** (0.003)	0.076** (0.035)	0.039 (0.082)	0.076** (0.035)
Observations	2,640	2,640	279	2,640
R-squared	0.071	0.081	0.139	0.082
Number of families	1,251	1,251		1,251

[#] Sample average estimated probability for a young child conditional to *father_reading = 0*

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

Table A2.3

Family fixed effects results. Mother and Father

VARIABLES	(1)	(2)	(3)	(4)
	FE raw	FE child	OLS FE sample	FE inter
<i>Reference Prob(child_reading=1)</i> [§]	0.047	0.05	0.13	0.049
<i>Reference Prob(child_reading=1)</i> [#]	0.054	0.057	0.188	0.056
Mother_reading	0.239*** (0.065)	0.240*** (0.065)	0.261*** (0.064)	0.242*** (0.090)
Mother_reading*Wave 2008	0.078 (0.098)	0.075 (0.098)	0.076 (0.094)	0.072 (0.099)
Father_reading	0.220*** (0.069)	0.217*** (0.068)	0.127* (0.068)	0.241*** (0.089)
Father_reading*Wave 2008	-0.095 (0.101)	-0.094 (0.101)	0.016 (0.100)	-0.096 (0.101)
Middle / High school		-0.001 (0.016)	-0.025 (0.045)	0.003 (0.016)
Girl		0.003 (0.012)	-0.007 (0.034)	0.001 (0.012)
Birth order: second		-0.019 (0.012)	-0.031 (0.047)	-0.019 (0.012)
Birth order: third or more		-0.046* (0.026)	-0.017 (0.058)	-0.046* (0.026)
General health status		-0.004 (0.018)	0.006 (0.031)	-0.003 (0.018)
More than 5 hours at school		0.013 (0.019)	0.016 (0.043)	0.011 (0.019)
Mother_reading*Middle/High school				-0.028 (0.081)
Mother_reading*Girl				0.023 (0.085)
Father_reading*Middle/High school				-0.028 (0.087)
Father_reading*Girl				-0.008 (0.087)
Constant	0.029*** (0.005)	0.046 (0.034)	0.083 (0.065)	0.043 (0.034)
Observations	2,640	2,640	460	2,640
R-squared	0.157	0.162	0.172	0.163
Number of families	1,251	1,251		1,251

[§] Sample average estimated probability for a young child conditional to *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional to *father_reading* = 0.

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

Appendix 3

Table A3.1

Robustness check: child's preferences. Family FE.

VARIABLES	FE child	
	Mother	Father
<i>Reference</i>		
<i>Prob(child_reading_after = 1)</i>	0.036 [§]	0.046 [#]
Parent_reading	0.301*** (0.055)	0.310*** (0.055)
Parent_reading*Wave 2008	0.018 (0.085)	-0.089 (0.084)
Middle / High school	0.008 (0.017)	0.001 (0.017)
Girl	-0.001 (0.013)	0.022* (0.013)
Birth order: second	-0.019 (0.013)	-0.024* (0.013)
Birth order: third or more	-0.033 (0.027)	-0.061** (0.025)
General health	0.003 (0.018)	-0.011 (0.019)
More than 5 hours at school	0.018 (0.020)	0.015 (0.020)
Physical activities	-0.010 (0.009)	-0.014 (0.009)
Outdoor activities	0.003 (0.017)	0.016 (0.017)
Constant	0.044 (0.035)	0.073** (0.036)
Observations	2,640	2,640
R-squared	0.115	0.083
Number of families	1,251	1,251

[§] Sample average estimated probability for a young child conditional to *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional to *father_reading* = 0.

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

Table A3.2

Robustness check: control for time spent at home by the child. Family FE.

VARIABLES	FE child	
	Mother	Father
<i>Reference</i>		
<i>Prob(child_reading_after=1)</i>	0.039 [§]	0.048 [#]
Parent_reading	0.299*** (0.055)	0.306*** (0.055)
Parent_reading*Wave 2008	0.019 (0.084)	-0.086 (0.085)
Middle / High school	0.002 (0.017)	-0.003 (0.017)
Girl	-0.003 (0.013)	0.018 (0.013)
Birth order: second	-0.023* (0.013)	-0.026** (0.013)
Birth order: third or more	-0.045* (0.027)	-0.064** (0.025)
General health status	0.003 (0.018)	-0.012 (0.019)
More than 5 hours at school	0.021 (0.020)	0.020 (0.020)
Child's time at home	0.003 (0.004)	0.006 (0.004)
Constant	0.021 (0.046)	0.033 (0.047)
Observations	2,640	2,640
R-squared	0.115	0.083
Number of families	1,251	1,251

[§] Sample average estimated probability for a young child conditional on *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional on *father_reading* = 0.

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

Table A3.3

Robustness check: sample selected on all mother/child pairs and father/child pairs with no missing. Family FE.

VARIABLES	FE child	
	Mother	Father
<i>Reference</i>		
<i>Prob(child_reading_after=1)</i>	0.06 [§]	0.10 [#]
Parent_reading	0.249*** (0.075)	0.298*** (0.053)
Parent_reading * Wave 2009	0.034 (0.122)	-0.076 (0.095)
Middle / High school	0.000 (0.017)	-0.005 (0.017)
Girl	0.007 (0.012)	0.024* (0.013)
Birth order: second	-0.026** (0.013)	-0.030** (0.013)
Birth order: third or more	-0.051* (0.026)	-0.073*** (0.026)
General health status	-0.005 (0.019)	-0.013 (0.019)
More than 5 hours at school	0.006 (0.021)	0.012 (0.020)
Constant	0.081** (0.034)	0.088** (0.035)
Observations	2,804	2,728
R-squared	0.042	0.071
Number of families	1,327	1,294

[§] Sample average estimated probability for a young child conditional on *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional on *father_reading* = 0.

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

Table A3.4

Robustness check: child's previous reading activities. Family FE.

VARIABLES	FE child	
	Mother	Father
<i>Reference</i>		
<i>Prob(child_reading_after = 1)</i>	0.047 [§]	0.054 [#]
Parent_reading	0.237*** (0.057)	0.249*** (0.067)
Parent_reading*Wave 2008	-0.048 (0.094)	-0.167 (0.105)
Middle / High school	-0.000 (0.013)	-0.005 (0.013)
Girl	-0.003 (0.010)	0.015* (0.009)
Birth order: second	-0.014 (0.010)	-0.016 (0.009)
Birth order: third or more	-0.022 (0.022)	-0.032 (0.020)
General health status	0.005 (0.017)	-0.014 (0.015)
More than 5 hours at school	0.016 (0.014)	0.011 (0.015)
Previous reading activity	0.688*** (0.052)	0.747*** (0.044)
Constant	0.017 (0.028)	0.041 (0.027)
Observations	2,640	2,640
R-squared	0.433	0.544
Number of families	1,251	1,251

[§] Sample average estimated probability for a young child conditional on *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional on *father_reading* = 0.

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

Table A3.5

**Robustness check: parental reading without the category
“Talking and reading to the child”. Family FE.**

VARIABLES	FE child	
	Mother	Father
<i>Reference</i>		
<i>Prob(child_reading_after = 1)</i>	0.060 [§]	0.095 [#]
Parent_reading	0.238*** (0.076)	0.256*** (0.064)
Parent reading* Wave 2008	0.045 (0.123)	-0.038 (0.105)
Middle / High school	-0.003 (0.017)	-0.009 (0.018)
Girl	0.006 (0.013)	0.023* (0.013)
Birth order: second	-0.026* (0.013)	-0.029** (0.014)
Birth order: third or more	-0.054** (0.027)	-0.074*** (0.027)
General health status	-0.000 (0.019)	-0.009 (0.020)
More than 5 hours at school	0.012 (0.022)	0.017 (0.020)
Constant	0.075** (0.035)	0.078** (0.035)
Observations	2,640	2,640
R-squared	0.040	0.081
Number of families	1,251	1,251

[§] Sample average estimated probability for a young child conditional on *mother_reading* = 0.

[#] Sample average estimated probability for a young child conditional on *father_reading* = 0.

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

Table A3.6

Alternative estimation strategy: same observation period for all children.

Estimated imitation effect. Linear probability model. family FE.

Dependent variable:

child_reading_after (= 1 if child reads after 4 (5) (6))

Treatment variables:

mother_reading (= 1 if mother observed reading by the child before 4.30 (5.30)

(6.30))

father_reading (= 1 if father observed reading by the child before 4.30 (5.30)

(6.30))

VARIABLES	4 -4.30 pm		5 -5.30 pm		6 – 6.30 pm	
	FE raw	FE child	FE raw	FE child	FE raw	FE child
<i>Reference</i> <i>Prob(child_reading_after=1)</i> §	0.055	0.051	0.044	0.044	0.033	0.029
Mother_reading	0.150** (0.061)	0.153** (0.061)	0.135** (0.055)	0.135** (0.055)	0.173** * (0.053)	0.175** * (0.053)
Mother_reading*Wave 2008	0.210** (0.096)	0.208** (0.095)	0.144 (0.091)	0.145 (0.090)	0.017 (0.087)	0.017 (0.087)
Middle / High school		0.006 (0.016)		0.000 (0.015)		0.007 (0.014)
Girl		0.002 (0.012)		0.002 (0.012)		0.008 (0.011)
<i>Reference</i> <i>Prob(child_reading_after=1)</i> #	0.051	0.048	0.041	0.04	0.037	0.034
Father_reading	0.292** * (0.066)	0.289*** (0.065)	0.263** * (0.063)	0.260** * (0.062)	0.183** * (0.053)	0.181** * (0.053)
Father_reading*Wave 2008	-0.188* (0.104)	-0.186* (0.104)	-0.168* (0.097)	-0.168* (0.096)	-0.076 (0.088)	-0.074 (0.088)
Middle / High school		0.009 (0.016)		0.003 (0.015)		0.007 (0.014)
Girl		0.006 (0.012)		0.005 (0.012)		0.012 (0.011)

§ Sample average estimated probability for a young child conditional on *mother_reading* = 0.

Sample average estimated probability for a young child conditional on *father_reading* = 0.

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

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