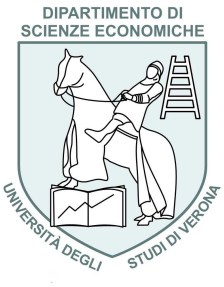

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TEACHING CHILDREN TO SAVE: WHAT IS THE BEST STRATEGY FOR LIFETIME SAVINGS?

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ABSTRACT

We study the effect of alternative parental teaching strategies on the propensity to save and the amount saved during adulthood. Using a panel dataset from the Dutch DNB Household Survey we find that parental teaching to save increases the likelihood that an adult will save by 16%, and the saving amount by about 30%. The best strategy involves a combination of different methods (giving pocket money, controlling money usage, and giving advice about saving and budgeting). The effect of parental financial socialization is persistent with age, but decays at elder age for the propensity to save.

Keywords: saving; teaching to save; children; pocket money; financial socialization.

PsycINFO classification: 2840; 3530; 3920.

JEL classification: J13; D12.

1. Introduction

Saving is important over the lifespan for retirement, to sustain stable consumption needs, to purchase a home or expensive goods, and to protect against unforeseen events such as unemployment spells or health problems. This notwithstanding, people frequently do not save or save too little. Household net saving accounts for 7.6% of household disposable income in the Euro area and for 4.4% in the U.S. (OECD, 2013). Lusardi (1999) reports that one-third of Americans aged 51-60 approach retirement with very small wealth holdings. Scholz et al. (2006) find from simulation studies that 20% of American households have less wealth than predicted from theoretical life-cycle models. Sub-optimal saving is not a local phenomenon, and it is observed worldwide (see, e.g., Lusardi and Mitchell, 2011; Dobrescu et al., 2012). The lack of saving has been related, among others, to cognitive deficits (Banks, 2010; Banks et al., 2010), procrastination (see, e.g., Loewenstein and Prelec, 1992; Frederick et al., 2002), the lack of financial literacy (Lusardi, 1999 and 2004; Van Rooij et al., 2011 and 2012) and access to financial products and institutions (Ssewamala and Sherraden, 2004; Schreiner and Sherraden, 2007; Han and Sherraden, 2009) as well as to the inability to exert self-control and delay immediate gratification (Thaler and Shefrin, 1981; Ameriks et al., 2007; Bucciol, 2012).

In this study, we investigate the extent to which parental financial socialization, in the form of teaching to save received in young age, helps to increase savings in adult age. The importance of saving – and the need to stimulate it – is widely accepted in the literature (among others Browning and Lusardi, 1996; Attanasio and Weber, 2010); however, our understanding of how to encourage people to save is still on an early stage. There is robust evidence that asset accumulation is positively correlated with education in general (for example see the review by Attanasio and Weber, 2010), and financial education in particular

(Lusardi and Mitchell, 2014). A large body of the psychology literature looks at the saving behavior in young age (for a recent review see Otto, 2013). A smaller strand of literature focuses on the financial education received in young age, either formally at school or informally through socialization within the family; for a review see Section 2.

Although there is consolidated evidence of continuities between economic behavior in adolescence and young adulthood (Ashby et al., 2011), as now it is not clear whether the effect of financial socialization experienced in young ages is generally *persistent* throughout adult age. In addition, there is no clear evidence on *what* informal teaching strategy is more effective. Knowing the strength of different teaching strategy alternatives, and whether their effect lasts over the lifetime of the individual is clearly important for policy analysis. A careful planning of individual savings makes government intervention to support basic consumption less likely, thus alleviating the society of a cost.

In this study, we investigate the educational role played by parents in teaching children to save. We answer three main research questions: (i) does teaching children to save increase their propensity to save and the amount saved in a given year when adults? If so, how large is the effect? (ii) What are the most effective parental teaching strategies? And finally, (iii) do these effects last over time? The study more closely related to ours is by Webley and Nyhus (2013), who consider the economic socialization of a cross-sectional sample of Dutch young adults aged 18-32. In this paper, we look at their same data source and the same key variables, but we extend their research in three important directions. First, we make a thorough comparison of alternative strategies, including giving pocket money, controlling how children spend their money, giving advice about saving and budgeting, and all their combinations. Second, we investigate whether these effects – if any – are persistent or rather evolve or decay over time, considering a wide age range. Last, but not least, we

perform our analysis on a large panel dataset including around 7,000 observations on about 1,300 individuals of different age groups and followed for up to 13 years. This dataset provides a large variability of information on several domains (such as income and macroeconomic background) that may also be related to saving behavior, and it allows us to conduct a robust analysis of the impact of parental teaching to save on saving behavior during adulthood including the retirement period.

To answer our research questions we indeed focus on household heads aged 18-80 interviewed in the panel DNB Household Survey (DHS) for the Netherlands from year 2000 to year 2012. Using a panel dataset allows us to detect age profiles and to reduce measurement errors in some key self-reported time-invariant variables, such as those regarding events arisen several years earlier. This survey indeed includes, in addition to basic socio-demographic questions, a specific set of retrospective questions on parental methods to stimulate saving received in young age.

We study the effect of all the possible strategies arising from the combination of the teaching methods. This allows us to answer questions such as: Are strategies implemented during adolescence more effective than strategies implemented during childhood? Shall parents allow their children to spend their money as they pleased or is it more effective that parents control how children spend their money? Do parental strategies crowd each other out? In other words, is a combination of strategies better than strategies implemented in isolation, e.g., is the effect larger if giving pocket money is bundled with advice on how important saving is or/and with control on children spending? Is the effect of parental teaching to budget constant over time, or does it fall with age?

We find that parental teaching to save generally has a large significant and positive effect on both the propensity to save and the amount saved when adults. When looking at

the different strategies, our results show that "the more, the better," since a combination of several methods generates larger effects. The strategy of giving pocket money at age 8-12 together with parental control on how to spend the money combined with giving advice on saving at age 12-16 seems the most effective strategy. However, although giving advice taken alone is sufficient to stimulate adult savings, giving pocket money looks ineffective. In addition, the distance between the propensity to save of those who received parental teaching and those who did not tends to reduce with age. Individuals who received no parental teaching seem to procrastinate their savings as long as they can. The same evidence does not emerge regarding the saving amount.

The remainder of the paper is organized as follows. Section 2 surveys the recent literature on financial socialization and financial education programs. Section 3 discusses the data and the methodology used in the analysis. Section 4 presents the results separately by research question, and performs a sensitivity analysis to test the consistency of the estimates. Section 5 concludes, and the Appendix explains in detail our key variables.

2. Background

There is wide heterogeneity in the actual distribution of household savings. For instance, in the U.S. in 2010, the 10% wealthiest households held on average nearly 4 million dollars each, whereas 25% of the households held none or negative net worth (Bricker et al., 2012). This inequality is wider now than in the past because the recent financial crisis hit the poorest households more than the richest ones.

There are several explanations for this heterogeneity. Among others, the knowledge of the financial system and the basic financial products plays an important role: people with

more financial literacy are more likely to save as they know how to allocate their money and/or they recognize the value of having a buffer stock of wealth. The issue is relevant because there is robust evidence showing that many individuals throughout the world lack basic financial knowledge (Lusardi and Mitchell, 2011; 2014). Lusardi et al. (2013) simulate a life-cycle model augmented with endogenous financial knowledge, showing that precisely financial knowledge is able to explain more than half of the wealth inequality observed in the U.S.. Their numerical finding is supported by empirical evidence from survey data such as in Lusardi and Mitchell (2007) for the U.S., and Van Rooij et al. (2011) for the Netherlands. In both cases the authors find that people who give the correct answer to basic financial literacy questions are more likely to accumulate wealth and adequately plan for retirement.

The lack of financial literacy is a severe problem and, due to its importance for wellbeing, programs meant to boost the level of financial literacy have been implementing. Some programs focus on adults, such as the Individual Development Accounts (IDA) in the U.S. (Han and Sherraden, 2009) or specific programs developed within firms (Bernheim and Garrett, 2003; Clark et al., 2012). Most programs, however, are targeted to adolescents and take place at school. The idea is that mandating financial education may permanently increase personal knowledge, and hopefully induce to adequately plan saving. For instance, Bernheim et al. (2001) find positive correlation between adult asset accumulation and exposure to school courses on financial decision-making.

The implementation of large-scale financial education programs, however, raises cost-benefit considerations. Willis (2011) explains that effective financial education may be extremely costly because, in particular, many individuals are far from having minimal financial literacy, and a strategy that may be effective for someone may not be effective for

someone else. Offering long-lasting, personalized courses could also have large opportunity costs – the time spent on financial education rather than doing more rewarding alternatives – so that financial education might eventually decrease wealth. Lusardi et al. (2013) learn from the numerical simulations of their life-cycle model that, since acquiring financial knowledge is costly, some individuals may find it optimal to avoid it.

In light of these concerns, researchers are exploring the effectiveness of alternative and cheaper ways of providing financial education. One of them is financial socialization, i.e., the process by which individuals learn and develop knowledge, norms, and behaviors that affect their financial practice (Rettig and Mortensen, 1986; Danes, 1994). Again, the focus is often on children and adolescents. The reason is that financial habits learnt during childhood seem to lead to adult lives with a better-managed financial situation (Metcalf and Atance, 2011; Friedline et al., 2013). There is empirical evidence of this link between childhood and adulthood, at least until young adulthood. For instance, Friedline et al. (2013) find that access to savings accounts as early as in adolescence is positively correlated with account ownership and saving amounts of young adults aged 18-22. In addition, Friedline and Elliott (2013) find that early access to savings accounts increases the likelihood to accumulate more savings and financial wealth.

Children's and adolescents' financial socialization may be affected by the media, schools, and peers (Beutler and Dickson, 2008), although its primary source is the family (Moschis, 1985; Retting and Mortenson, 1986; Danes, 1994). Shim et al. (2010) compare the effects of parents, work and high school financial education during adolescence in the financial practice of young adults. They find that all these dimensions predict financial behavior, although the role played by parents is substantially larger than the role played by work and high school education taken together.

Parental financial socialization is found to significantly affect financial behavior of adolescents (Kim et al., 2011) and young adults (Kim and Chatterjee, 2013; Shim et al., 2013). Parents' socialization may be explicit (e.g., open communication) or implicit (e.g., role modelling). Both approaches are relevant: for instance, parental mentoring of financial skills relates to low credit card debts in young adults (Norvilitis and MacLean, 2010), while the financial literacy of young adults is strongly associated with family holding of stocks and retirement assets (Lusardi et al., 2010) and, in general, children saving attitude is related to the saving attitude of their parents (Webley and Nyhus, 2006). However, Jorgensen and Savla (2010) find that explicit socialization is more effective to shape financial behavior but it is not more effective to improve financial knowledge. Similarly, Serido et al. (2010) find that explicit socialization helps to develop sound financial behavior more than parental social status.

Researchers typically study the effects of financial socialization among first-year college students because individuals at this stage of life face an important transition period, when they first leave home and have to pay their own bills and deal with financial issues autonomously. Two notable exceptions are Webley and Nyhus (2013) and Friedline and Nam (2014), who consider individuals in the 18-32 and 16-35 age ranges, respectively. However, the (still) short age range and the lack of panel data prevents them from making an accurate analysis on the relation between adult savings behavior and children financial socialization. As a result, so far it is unclear whether the financial socialization learnt in young ages is persistent or decays over time. The goal of this paper is therefore to examine whether different forms of parental financial socialization persistently influence the intertemporal saving decisions made in adult age.

3. Data and Methodology

We use panel data from the Dutch DNB Household Survey (henceforth DHS), which is a household survey managed by CentERdata on behalf of the Dutch National Bank. Every year since 1993 the survey collects information on a sample of about 2,000 households representative of the Dutch population with respect to common socio-demographic characteristics. All individuals aged 16 or older in each sampled household are entitled to fill in the questionnaire. The interview is performed over the Internet, at the convenience of the respondent and without the intervention of an interviewer; participants who do not have Internet access are provided with a device and technical support.

The survey is meant to primarily study psychological and economic aspects of financial behavior, and includes information about work and pensions, housing and mortgages, income, assets and debts, health, as well as demographic characteristics. Although available since 1993, not all the DHS waves are fully comparable. We choose to concentrate on the waves from 2000 to 2012 because they have similar questionnaires and the same sampling design (waves prior to year 2000 were over-sampling the richest households). This reduction of the time span also limits the problem of attrition, which may be relevant in panel datasets. Attrition does not affect our results according to the test suggested by Nijman and Verbeek (1992) and reported in Appendix Table A1 for the output with the most general specifications of our analysis.[1]

[1] Appendix Table A1 reports the most general regression analyses described in Sections 4.1 and 4.2 including in the specification one further "attrition" variable. This is a dummy variable equal to one if there is no observation in the subsequent wave for the respondent, and zero otherwise. In no case the variable is significant, which indicates that attrition is not an issue in our analysis.

The final sample used in the analysis consists of 6,962 observations with complete information on 1,298 households. This is obtained after imposing the following restrictions to the original dataset of individuals: we focus only on the head of the household in the economically relevant age range 18-80 who responded to at least two waves. We therefore exclude other household members, as well as observations without information on saving and teaching to save, and households who responded to just one wave. These restrictions generate a homogeneous sample of comparable individuals.

On average we have 5.36 observations per household, which helps us to obtain more precise estimates of the age effects and all the time-varying characteristics (based on repeated observations from the same individuals), and control for measurement errors in time-invariant variables. Concretely, we check for the consistency across waves of the answers given by each respondent on retrospective questions concerning education to save received in childhood. Whenever we find inconsistency, we replace the answer with the prevailing answer of the respondent over the waves. See the Appendix for details.

3.1. Econometric Model

Our purpose is to relate household saving behavior with parental teaching to save received by the household head in young age. Saving behavior is measured as (i) the propensity to put money aside in a given year, and (ii) the amount saved in a given year. Given the nature of these variables – a binary variable and a non-negative variable – suitable models for our analysis belong to the classes of probit and tobit models, respectively.

In particular, we examine the effect on household saving of different teaching strategies the household head received during childhood,[2] by estimating the following regression equation for household head *i* in year *t* (*t = 1, … ,T*):

$$Y_{i,t} = \beta_0 + \mathbf{D_i}\boldsymbol{\beta_1} + \mathbf{X_{i,t}}\boldsymbol{\beta_2} + \mathbf{Z_{i,t}}\boldsymbol{\beta_3} + \mathbf{F_{i,t}}\boldsymbol{\beta_4} + \varepsilon_{i,t} \quad (1)$$

where ε_{it} is the error term and $Y_{i,t}$ is a latent (unobserved) variable. In our analysis we replace the latent variable with two different dependent variables: a dummy variable equal to 1 if the household saved some money in year *t*, and 0 otherwise, and the logarithm of the amount saved in year *t* (truncated to a 0 lower bound). The specification includes a set of unknown parameters $\boldsymbol{\beta}$ to be estimated, and four groups of independent variables:

- *Parental teaching to save.* $\mathbf{D_i}$ is a vector of time-invariant dummy variables informing on parental teaching to save the household head received in young age. Depending on the specification we discuss, the composition of this vector may vary. For each individual we know whether she regularly received pocket money in age 8-12 (variable that we label "P" for "pocket money"), she was not free to use her money as pleased in age 8-12 ("C" for "control"), and she received advice on saving and budgeting in age 12-16 ("A" for "advice"). These different teaching methods may be taken in isolation or in combination. In the analysis, we consider each possible combination explicitly. We also study whether the household head experienced at least one teaching method (variable that we

[2] Household saving decisions might also depend on the teaching to save received by the partner (if any). Not always we have information on the partner. However, when we have it, we find high correlation in the parental teaching to save received by the household head and the partner. In 89.15% of the couples in our sample, both the household head and the partner either received at least some parental teaching to save, or they did not receive any.

label “APC”), she received teaching strategies only in age 8-12 (“PC”), only in age 12-16 (“A”) or in both periods (“A+PC”).

- *Socio-demographic characteristics.* $\mathbf{X_{i,t}}$ is a vector of characteristics of the household (number of members, presence of children, home ownership, and total net income) and the household head (age, gender, education, employment status, and marital status) observed at any time *t*.
- *Time horizon.* $\mathbf{Z_{i,t}}$ represents the time horizon preferences at time *t* of the household head regarding saving decisions. Considering this class of variables is important because short time horizons are likely associated with little willingness to delay gratification, and therefore low saving.
- *Area and year control variables*. $\mathbf{F_{i,t}}$ is a vector of control variables capturing heterogeneity over time (annual dummy variables) [3] and space (i.e., the geographical area where the household head lives: North, South, East, West excluding the three largest Dutch cities – all located in the West: Amsterdam, Rotterdam, and The Hague).

Tables 1 and 2 provide summary statistics on the dependent and independent variables we use in this study for the pooled sample and by parental teaching strategy, respectively. Monetary values are reported to 2012 prices using the consumer price index for all

[3] The cohort effect of the birth year is then identified as the difference between year and age. However, to make sure that our models correctly capture cohort effects, we also considered further specifications to capture any cohort effects. Specifically, we included a set of dummy variables equal to 1 on a range of 5 consecutive birth years. The significance and magnitude of the marginal effects do not change, and the cohort dummy variables are jointly insignificant (results available upon request).

items.[4] We refer to the Appendix for a detailed description of the key variables in the analysis. Table 1 shows that household saving is generally widespread (it involves 71.2% of the sample), for an average amount of 4,570 Euros per year that on average is about 14.46% of total household income. In addition, nearly half of the individuals (29.9+16.1=46%) have a medium-long time horizon for savings. The vast majority of the sample (95.3%) received some parental teaching to save in young age, mostly as a combination of advice and control (28%) or advice and pocket money (24.9%).[5] Advice is also the most frequent way of teaching (70.47% in the sample), followed by control (54.06%), and pocket money (48.38%).

TABLE 1 ABOUT HERE

Table 2 splits the summary statistics by parental teaching strategy. This simple comparison seems to indicate that the combination of all strategies might yield to the highest propensity to save followed by pocket money combined with control or advice, while the adoption of only pocket money seems to be the less effective strategy. A similar outcome emerges regarding the saving amount. The different saving behavior we found among groups is statistically significant according to an ANOVA test. In addition, the ANOVA test shows significant difference also in terms of all our independent variables with the exception of high school degree and the year of observation. For instance, household heads whose parents implemented all teaching strategies are younger, richer, more highly educated and more

[4] The source is OECD, http://stats.oecd.org.

[5] A 95% rate is high, but in line with other studies. For instance in the U.S., T.Rowe Price (2012) finds that only 6% of children in age 8-14 have almost never conversations with their parents about money issues.

frequently work as employees compared to heads who received no teaching from their parents.

TABLE 2 ABOUT HERE

We exploit the panel dimension of the data, and in the analysis we consider random-effect panel models: a random-effect probit model when focusing on the propensity to save, and a random-effect tobit model when looking at the saving amount. Both models assume that the error term ε_{it} is made of two normally distributed components, $\varepsilon_{it} = \nu_i + \eta_{it}$: the component ν_i is a household-specific error that remains unchanged within a household over time and is independent across individuals; the component η_{it} is an independent and identically distributed (i.i.d.) error across and within households. This implies that errors regarding different households are uncorrelated with each other, while errors regarding the same household are correlated with correlation ρ. In our analysis, we find that the ρ coefficient is always large (0.5 or higher) and significantly different from zero at the 1% statistical level, which suggests that estimators for panel data are more appropriate than applying OLS on the pooled sample.

In a random-effect model, the time-varying and time-invariant independent variables are assumed exogenous with respect to the error term. In particular, the model assumes that the teaching strategies implemented by parents when individual *i* was a child are exogenous to the saving behavior of individual *i* when adult. If, on the one hand, we can rely on the fact that during childhood individual *i* could not decide on the parental teaching strategies, on the other hand we cannot completely exclude an omitted variable bias. The family background, genetic components and parents' characteristics such as their education, risk

and time preferences could affect parents' decision to teach children to save and individuals' saving behavior when adults. This implies that the coefficients estimated by a random-effect model might be biased.

This omitted variable bias could be addressed by estimating fixed-effect regression models for panel data. However, in this case we cannot implement a fixed-effect model because our variables of interest related to parental teaching to save are constant over time, and so would be incorporated in the fixed effects. We therefore estimate random-effect models, and perform the Generalized Sensitivity Analysis proposed by Harada (2013) to investigate how sensitive our results are to potential omitted variable bias. This sensitivity analysis is discussed in Section 4.4.

4. Results

In this section, we first investigate whether any strategy of teaching children to save affects their saving behavior when adults (Section 4.1). We then study which parental teaching strategy is more effective in terms of stimulating adult saving (Section 4.2); finally, we analyze the long-term effects of teaching children to save on adult saving (Section 4.3). We conclude the section by performing a sensitivity analysis to check to what extent our results are affected by potential omitted variable bias (Section 4.4). In all the cases we split the analysis, making a distinction between the propensity to save and the saving amount. This approach allows the determinants of the propensity to save to be different from the determinants of the saving amount.

4.1. Parental Teaching to Save

Table 3 reports the average marginal effects of teaching children to save on the propensity to save during adulthood from the estimation of the random-effect probit model (Columns 1-3), and on the amount saved from the estimation of the random-effect tobit model (Columns 4-6). We estimate different specifications of Equation (1): Columns 1 and 4 present the simplest specification where adult saving behavior depends only on the treatment variable "any parental teaching to save" (and area and year effects); Columns 2 and 5 also control for socio-demographic characteristics while Columns 3 and 6 – while significant – show the richest specification including both socio-demographic and time horizon variables.

Our results are robust to the different specifications. The marginal effect of providing any teaching to save is positive and strongly statistically significant with p-values close to zero in all specifications. The inclusion of individual and household characteristics in Columns 2 and 5 slightly decreases the coefficient point estimates but it does not alter the statistical significance of the coefficients. In addition, the inclusion of individual *i*'s time preferences in Columns 3 and 6 has no effect on either the coefficient point estimate or the statistical significance.

TABLE 3 ABOUT HERE

Overall, our results indicate that teaching children to save has a strong and significant positive effect on saving behavior when adult (at the 1% statistical level): providing any teaching to save during childhood increases the likelihood that an individual will save when adult by 16%, and the saving amount by 29.6%. The effects are quantitatively large.

To illustrate, an unemployed individual that was taught about saving during childhood is as likely to save from household income as an employed person without saving education. In addition, the amount saved by an adult without a high school degree that received parental teaching on saving is similar to the amount saved by an adult with a college degree that received no saving education.

Other control variables are significantly different from zero and with the expected sign. Being a labor/pension income earner (i.e., employee, retired, or self-employed) as well as income, wealth, and education are positive determinants of saving behavior, as typically found in the literature (for a review see Attanasio and Weber, 2010). All the latter dimensions may be seen as proxy variables for higher financial education. In addition the squared polynomial on age is always significant at common levels[6], and its parameter estimates suggest limited propensity to save in young age and lower amounts saved in elder age, coherently with the standard life-cycle model. On the contrary, while there is no difference in the propensity to save between men and women, women seem to save a lower amount. Moreover, while longer time horizons correspond to higher amounts saved, an increase in the number of household members corresponds to smaller saving amounts.

We also find that area fixed effects are not significantly different from zero, which suggests homogeneity of behavior across Dutch regions. Interestingly, the year effects indicate that the propensity to save was higher in the years 2000-2003 than in year 2012, while the saving amount was higher in the years 2000-2009. In both cases the peak was reached in year 2001. The pattern clearly follows the dynamics of the business cycle, with the eco-

[6] The Chi square test on joint significance of the two coefficients on age is equal to 6.98 (p-value: 0.031) in Column (3) and 4.75 (p-value: 0.093) in Column (6) of Table3. Note that the age effect is jointly significant even though the two coefficients are separately insignificant.

nomic growth of the early 2000s and the financial crisis arisen in the late 2000s. Estimates on area and year fixed effects are available upon request and not presented for reasons of space.

4.2. Alternative Strategies to Teach Children to Save

The second goal of this study is to investigate the effect of different parental strategies on the propensity to save and on the saving amount. Are teaching strategies implemented during adolescence more effective than teaching strategies implemented during childhood? Which strategies lead to the highest propensity to save and saving amount? Is a combination of teaching methods better than methods implemented in isolation?

We answer these questions by estimating Equation (1), as described in the previous section, with the only difference that we now measure "parental teaching to save" with a set of dummy variables corresponding to each parental teaching strategy adopted. As in Table 3, Table 4 reports the average marginal effects from the estimation of the random-effect probit model on the propensity to save during adulthood (Columns 1-2), and from the estimation of the random-effect tobit model on the amount saved (Columns 3-4).

We consider two specifications in Table 4. Columns (1) and (3) include dummy variables denoting whether parents adopted some teaching strategies during individual *i*'s childhood only, i.e., pocket money and/or control at age 8-12 (PC), during adolescence only, i.e., advice at age 12-16 (A), or both (A+PC). The reference category is the situation in which the child is free to behave as pleased without any parental teaching. Columns (2) and (4) present a specification where the teaching strategies at age 8-12 are split into regularly giving pocket money (P), and controlling how children spend their money (C). Three teaching methods are then possible, and they can be implemented in isolation (e.g., only giving

advice) or in combination. For example, parents could choose to give pocket money at age 8-12 and emphasize the importance of saving at age 12-16 but still allow the child to spend money as pleased (A+P); or for instance, parents could choose to give pocket money, teach to save at age 12-16 *and* control the money of the child (A+P+C). Overall, the three teaching methods can be combined in seven different strategies which we treat separately. Again, the reference category is the one without any parental teaching.

TABLE 4 ABOUT HERE

Columns (1) and (3) of Table 4 show that the most effective strategy is teaching to save during childhood *and* adolescence (A+PC): it increases the propensity to save by 18.3% and the saving amount by 32.5% (significant at the 1% level) with respect to the baseline situation where the individual is free to behave as pleased without any parental teaching. In addition, implementing some teaching strategies *only* during childhood without following-up with advice during adolescence seems to have a weak effect on the propensity to save when adults (statistically significant at the 10% level).

Columns (2) and (4) of Table 4 shed more light on the different teaching strategies. We find that pocket money does not increase the likelihood to save, neither alone nor combined with money control. In contrast, pocket money positively affects the saving amount. All the other strategies are significant at least at the 5% level. As before, the largest effects are found when the three teaching methods are combined (A+P+C); the second largest effects are found when advice is combined with money control (A+C). It is interesting to compare the effects of the different strategies found in the Columns (3) and (6) of Table 4; this is done by means of statistical Chi-squared tests reported in Table 5. The table shows

that advice and control alone are sufficient to stimulate savings, while pocket money is not (its effect is frequently significantly lower than the effect of other strategies). Advice and control can be seen as substitute methods (their combination, A+C, is not significantly different from each method taken separately), although they seem weakened when combined with pocket money (the effects of A+P and P+C are lower than the combined effect of A+P+C). This evidence is consistent with previous literature showing that giving pocket money helps promote financial literacy (Lewis and Scott, 2000; Pliner et al., 1996) but not savings (Mortimer et al., 1994).

TABLE 5 ABOUT HERE

4.3. Long-term Effects of Teaching Children to Save

The last goal of this study is to analyze the long-term effects of teaching children to save on saving behavior when adults. Is this effect persistent with age? For example, once the individual has retired, do we still find a significant difference between individuals that were taught to save during childhood and those that were free to behave as they liked? We exploit the panel dimension of the DHS data to answer this question.

An advantage of using panel data rather than cross-sectional data is indeed that they allow for an accurate representation of age profiles, because they collected information on how the same individual acted at different ages. In our framework this means that we can estimate the age-specific effect of teaching children to save, and in particular, whether this effect is persistent over time or not. We answer this question by estimating the same probit and tobit models of the previous sections, with an extended specification of Equation (1). This specification includes the interaction terms between the squared polynomial on age

and our teaching strategies. Figure 1 plots the age-saving profiles predicted from the estimated models in the two cases (full estimate tables are available upon request): the left-hand side panels present the long-term effects on the propensity to save while the right-hand side panels present the long-term effects on the saving amounts. We consider three cases separately: any parental teaching to save (panels (a) and (b)), the strategies already considered in Table 4, making a distinction between teaching during childhood and adolescence (panels (c) and (d)), and between advice, pocket money and control (panels (e) and (f)). In all the cases we report predictions for the extreme cases (no teaching and full teaching) as well as each teaching strategy considered separately. Figure 1 is completed with a 95% confidence interval for the full teaching case.

FIGURE 1 ABOUT HERE

We find that for all the age span the propensity to save of those that received parental teaching to save is always larger than the propensity of those that received no teaching. However, the propensity to save falls with age for those who received parental teaching to save, while it rises for those who received no teaching (panel a). This may suggest that the latter group procrastinates savings as long as it can. The argument is supported by the evidence that those who received no teaching to save perform significantly worse on a psychological scale drawn from Strathman et al. (1994) and measuring "future orientation."[7] It

[7] The indicator takes values between 7 (low orientation) and 70 (high orientation), and it is the sum of the answers (each on a 1-7 scale) to ten questions on the extent to which people consider distant versus immediate consequences of their behavior. In our sample, those who received no teaching to save show an indicator with

thus seems that parental education to save fosters the attitude to perform future-oriented financial decisions, that in turn affects saving as found in Shim et al. (2012). As a consequence of the different future orientation, the propensity to save gets closer between the two groups as the individual becomes older. Interestingly, a different pattern emerges when looking at the saving amount (panel b): in both groups the amount falls with age.

Similar conclusions can be drawn from the remaining panels of the figure (the confidence intervals become larger as they are based on fewer observations), where in addition we learn that most teaching strategies provide similar declining effects; the main exception is giving pocket money only, whose effect is not statistically different from a linear pattern. To matter is primarily receiving *some* parental teaching. In addition, the strategy of combining all the teaching methods (A+P+C) seems more effective than other strategies on the propensity to save only in the first part of adult age, up to roughly age 50 (see panel (e)). In older ages, the effect of A+P+C is approximately equivalent to that of A and C taken separately.

4.4. Generalized Sensitivity Analysis

In the analyses performed so far, we have found that our results are robust to the inclusion of a rich set of variables. However, we have no information on financial socialization after childhood and, importantly, we cannot completely exclude that some unobservable factors may have affected both parental teaching to save in childhood and saving behavior in adulthood. Our teaching methods have not been randomly assigned to individuals during

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an average value of 39.50, while those who received at least some teaching show an average value of 42.03. The two averages are statistically different according to a t-test (statistic: 4.93, p-value <0.01).

childhood, as it would be in an ideal experiment.[8] The different saving behavior we observe among individuals may be caused, for example, by unobservable characteristics of parents, such as their education, risk and time preferences, which are correlated with parental teaching to save. For instance, Carneiro et al. (2013) find on US survey data substantial intergenerational returns to education, and in particular, that more educated mothers are more likely to invest in their children's education through, e.g., books, musical instruments, or computers. If this applied to our environment as well, it would imply that the effects we attribute to parental teaching are actually biased. Unfortunately, we do not have information on parents, nor we know where parents grew up,[9] which would allow us to construct geographical instrumental variables for parents' education such as in Carneiro et al. (2013).

In this section, we perform the "Generalized Sensitivity Analysis" (henceforth GSA) developed by Harada (2013), which is a refinement of the original "Sensitivity Analysis" algorithm by Imbens (2003),[10] to test whether our estimates of one regression coefficient (any teaching to save) in Columns (3) and (6) of Table 3 are robust to unobserved confounders. The algorithm can be applied to the estimates in Table 4 as well, although it requires to focus on one variable of interest (the "treatment" or "assignment" variable) per time. Since in Table 4 we have several coefficients of interest (one for each teaching strategy), we should apply GSA separately for each of them. For sake of brevity here we discuss

[8] Such experiment would be almost impossible to implement, as it would require to follow-up people for all their life.

[9] The geographical background of the parents, however, is already captured by our area fixed effects under the assumption that the individuals in our sample now live in the same area where their parents grew up.

[10] The algorithm is a refinement because it can be applied to any type of treatment and outcome variables, and it estimates the correlations of the pseudo-random variables more precisely. We use the "gsa" Stata module developed by Harada (2013).

only the case of Table 3, where there is just one treatment variable (any teaching to save); conclusions based on GSA applied to the regression estimates of Table 4 are identical and available upon request.

In a nutshell, after identifying the treatment variable in the regression equation, GSA generates a sequence of pseudo-random variables that, once added to the regression equation, make the coefficient of interest insignificantly different from zero. The lines in Figure 2 plot the correlation between these pseudo-random variables and the assignment (on the x-axis) and the outcome variable (on the y-axis) in our context, which is either the propensity to save (panel (a)) or the saving amount (panel (b)) in the regression of Columns (3) and (6) of Table 3. For comparability purpose, Figure 2 also plots the corresponding correlation involving the most significant observable variables included in the specification. The figure shows that the unobservable variables should have correlations much stronger than the observable variables to make insignificant the effect of teaching children to save. In particular, since it is difficult to believe that our analysis omits unobservable variables more highly correlated with the saving amount than income, we conclude that our findings are robust to potential unobserved confounders.

FIGURE 2 ABOUT HERE

5. Discussion and Conclusions

We analyzed panel DNB Household Survey data for the Netherlands from year 2000 to year 2012 to study (i) whether parental teaching to save positively affects children savings when adults; (ii) what are the most effective strategies of teaching children to save on their propensity to save and the amount saved during adulthood; and (iii) the long-term effects of

teaching children to save. We found that parental teaching to save increases the likelihood that an individual will save when adult by 16%, and the saving amount by about 30%. Receiving parental teaching to save stimulates saving attitude to a large extent: the effect is so large that an unemployed household head who received parental teaching to save has the same propensity to save as an employed household head but without parental teaching. In addition, a household head with parental teaching but without high school degree saves the same amount of money as a college graduate without parental teaching to save.

Parental teaching is more effective especially when different teaching methods are combined. The most effective strategy is teaching to save during childhood *and* adolescence. Among the different strategies, only giving pocket money seems ineffective. The lack of a significant effect of receiving an allowance on saving behavior confirms previous evidence from Webley and Nyhus (2006), Kim et al. (2011), and Kim and Chatterjee (2013). A possible explanation is that allowances are effective only when contingent upon chores or other responsibilities (Ashby et al., 2011).

In addition, we find that the distance in the propensity to save between those who received parental teaching and those who did not reduces with age. Individuals who did not experience parental teaching seem to procrastinate their savings as long as they can. We also found that a combination of all the teaching methods is the most effective strategy only in the first part of adult age, up to roughly age 50. Interestingly, this evidence does not emerge when focusing on the saving amount.

Our results are robust to different specifications and to the inclusion of different explanatory variables. However, they cannot be interpreted as causal effects. Our treatment variables measuring “teaching children to save” are not exogenous as in an ideal experimental setting. Our estimates could suffer from omitted variable bias due to the fact that

there may be some unobservable characteristics – such as parents' education, and preferences – correlated with the teaching strategy implemented during childhood and the saving behavior when adults. In addition, information on the financial socialization after childhood is missing in the dataset. We therefore implemented a Generalized Sensitivity Analysis (see Imbens, 2003 and Harada, 2013) to assess the extent of the omitted variable bias. The analysis shows that our results are not sensitive to unobservable heterogeneity, and therefore they are robust to omitted variable bias concerns.

Our analysis therefore suggests that saving education received during childhood is important to stimulate saving behavior during adulthood. Parents should be informed about the lessons that their own financial behavior can impart. Moreover it is important that not only children, but also parents are included in financial education programs. Indeed, studies on financial literacy show that many parents do not have the skills themselves. For instance, TIIA-CREF Institute (2001) found on a U.S. survey that parents overestimate their knowledge about finances and underestimate the role they can play in teaching children about money management. Financial educators should then take into account the option of offering formal seminars and workshops on financial decision-making to teach both financial literacy and how parents can improve their ability to discuss about money and budgeting to their children. Whether then informal parental teaching is more effective than formal teaching at school is an interesting empirical question that we leave for future research.

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Appendix. Variables Construction and Definition

We base our analysis on two questions on saving derived from the DHS survey:

- PROPENSITY TO SAVE. The question is "Did your household put any money aside in the past 12 months?" with possible answers "yes" and "no." In our analysis we use this variable to understand whether the household saved in the last year.
- SAVING AMOUNT. The question is "About how much money has your household put aside in the past 12 months?." The answer to this question is reported on a discrete scale with seven tiers between 0 and more than 75,000 Euros, that varied only between 2001 and 2002 (with the transition from the Dutch guilder to the euro currency) and between 2003 and 2004 (for a small inflation adjustment). Nearly half of the answers are in the second tier (between 1,500 and 5,000, 49.88%); other frequent answers are in the first and the third tiers (less than 1,500 Euros, 17.84%; between 5,000 and 12,500, 25.16%). In our analysis we create a continuous variable equal to the central value of each range; for the extreme ranges we set the variable equal to the threshold. Values are then corrected for inflation, using the consumer price index for all items (source: OECD) to report savings to 2012 prices.

We also generate variables on time horizon from the following original variable:

- TIME HORIZON. The question is "People use different time horizons when they decide about what part of income to spend and what part to save. Which of the following time horizons is most important with regard to planning expenditures and savings?" with possible answers "The next couple of months," "The next year," "The next couple of

years," "The next 5-10 years," and "More than 10 years from now." The variables we use describe medium horizons (a dummy equal to 1 if the answer is "The next couple of years") and long horizons (a dummy equal to 1 if the answer is either "The next 5-10 years" or "More than 10 years from now").

Our analysis relates adult savings with parental teaching to save received in young age. For this purpose we look at four variables comprised in a set of six questions related to childhood, and available since wave 2004. The preamble to the questions is "The next 6 questions are about your childhood. Please think back to the time you were a child and try to answer the following questions as best as possible." In order of appearance the six questions are:

- POCKET MONEY. The question is "When you were between 8 and 12 years of age, did you receive an allowance from your parents then? By allowance we mean a fixed amount received on a regular basis." with possible answers "Yes," "Yes, but it was sometimes forgotten," "Occasionally," and "No."
- CHORES. The question is "When you were between 8 and 12 years of age, did you do little household chores (like washing the car) for which you received some money from your parents?" with possible answers "Often," "Sometimes," "Occasionally," "Hardly ever," and "Never."
- CONTROL. The question is "When you were between 8 and 12 years of age, could you spend your money as you pleased?" with possible answers "My parents decided on how I spent all my money," "My parents decided on how I spent most of my money," "Part

of my expenditure was decided by me, the rest was decided by my parents," "Mostly, I could decide on how I spent my money," and "I could decide on all my expenditures."

- JOB. The question is "Did you have a job on the side (like a newspaper round, a job on Saturday etc.) when you were between 12 and 16 years of age?" with possible answers "Yes, I had many jobs on the side at that time," "Yes, I had a few jobs on the side at that time," "Yes, I had one job on the side at that time," "and "No, I did not have a job on the side at that time."
- BUDGET. The question is "Did your (grand)parents try to teach you how to budget when you were between 12 and 16 years of age?" with possible answers "Yes, they gave me advice and practical help," "Yes, they gave me some advice and practical help," "Yes, but to a certain extent," and "No."
- ENCOURAGEMENT. The question is "Did your (grand)parents stimulate you to save money between the age of 12 and 16?" with possible answers "Yes, they emphasized the necessity of saving," "Yes, they told me how important saving is," "Yes, but to a certain extent," and "No, not at all."

We neglect from the analysis the two questions on "chores" and "jobs." These questions differ from those we consider in our study because they are related to neither saving nor parents' behavior, but in contrast they involve active search from the respondent. Therefore, they are not informing on parental teaching and are endogenous.

We therefore focus on three teaching methods: "pocket money," "control," and "advice," with the latter method resulting from the combination of "budget" and "encouragement." We merged the two questions because the statements in "budget" and "encouragement" may be easily confounded and overlapped by the respondents. Indeed, in the sample

72.25% of the answers to the two questions coincide. In principle, these variables on teaching methods should be time-invariant. However, as Webley and Nyhus (2006) find, we frequently observe inconsistency in the answer of the same respondent in different waves.[11]

Individuals may find it difficult to recall what happened in young age, especially when they are elderly. To reduce this measurement error, we set the answer to coincide with the prevailing one over the waves. This means that we changed about 40% of the answers to these questions. We also impute the answers of individuals who were not asked these questions before 2004 with the prevailing answer they reported in 2004 or subsequent waves.

In our analysis we condensate the information contained in these variables with several dummy variables. Specifically, we create dummy variables equal to one if the respondent agrees at least in part with the statement (either of the first two possible options), and zero otherwise.[12] We also combine the variables in different ways, to consider alternative strategies of parental teaching. Specifically, we consider the following cases:

- ANY TEACHING TO SAVE (APC). It informs on whether the individual received at least one strategy among "advice," "pocket money," and "control."
- TEACHING IN AGE 8-12 (PC) ONLY. It informs on whether the individual received at least one strategy between "pocket money" and "control," but no "advice."

[11] Usually the inconsistency is qualitatively minimal, as we rarely observe for the same respondent both extreme alternative answers (e.g., always and never) in two waves.

[12] In the case of "advice" the dummy is equal to 1 if the respondent agrees at least in part with one or both the "budget" and "encouragement" statements.

- TEACHING IN AGE 12-16 /ADVICE (A) ONLY. It informs on whether the individual received "advice," but neither "pocket money" nor "control."
- TEACHING IN AGE 8-16 (A+PC). It informs on whether the individual received at least one strategy between "pocket money" and "control," plus "advice."
- POCKET MONEY (P) ONLY. It informs on whether the individual received "pocket money" only, and therefore received neither "advice" nor "control."
- CONTROL (C) ONLY. It informs on whether the individual received "control" only, and therefore received neither "advice" nor "pocket money."
- ADVICE AND POCKET MONEY (A+P) ONLY. It informs on whether the individual received "advice" and "pocket money," but did not receive "control."
- ADVICE AND CONTROL (A+C) ONLY. It informs on whether the individual received "advice" and "control," but did not receive "pocket money."
- POCKET MONEY AND CONTROL (P+C) ONLY. It informs on whether the individual received "pocket money" and "control," but did not receive "advice."
- ADVICE, POCKET MONEY AND CONTROL (A+P+C). It informs on whether the individual received "advice," "pocket money," and "control."

Table 1. Summary statistics – Pooled sample

	Mean	Std. dev.	Min.	Max.
Current saving				
Propensity to save	0.712	0.453	0	1
Saving amount (in k Euros)	4.570	7.438	0	87.283
Parental teaching strategies to save				
Any teaching (APC)	0.953	0.211	0	1
Teaching in age 8-12 (PC) only	0.249	0.432	0	1
Advice (A) only	0.068	0.251	0	1
A + PC	0.637	0.481	0	1
Pocket money (P) only	0.096	0.295	0	1
Control (C) only	0.123	0.328	0	1
A + P only	0.249	0.433	0	1
A + C only	0.280	0.449	0	1
P + C only	0.030	0.171	0	1
A + P + C	0.108	0.311	0	1
Socio-demographic characteristics				
Age	54.581	13.497	21	80
Household income (in k Euros)	31.599	22.155	0	704.452
Home-owner	0.660	0.474	0	1
Female	0.211	0.408	0	1
With partner	0.671	0.470	0	1
Household size -1	1.243	1.223	0	7
With kids	0.276	0.447	0	1
High school degree	0.596	0.491	0	1
College degree	0.153	0.360	0	1
Employee	0.610	0.488	0	1
Self-employed	0.026	0.158	0	1
Retired	0.224	0.417	0	1
Time horizon				
Time-horizon: next couple of years	0.299	0.458	0	1
Time-horizon: next five or more years	0.161	0.368	0	1
Area and year control variables				
Area: North	0.107	0.309	0	1
Area: South	0.255	0.436	0	1
Area: East	0.185	0.388	0	1
Area: West (apart from 3 largest cities)	0.276	0.447	0	1
Year	2006.007	3.375	2000	2012

Note: The final sample includes 1,298 individuals interviewed between 2000 and 2012 (6,962 observations).

Table 2. Summary statistics by parental teaching strategy

	None	A	P	C	A+P	A+C	P+C	A+P+C	ANOVA test
Current saving									
Propensity to save	0.559	0.692	0.609	0.686	0.744	0.664	0.737	0.785	***
Saving amount (in k Euros)	2.720	3.852	4.110	4.402	4.770	5.944	4.695	5.249	***
Socio-demographic characteristics									
Age	55.593	54.556	51.698	61.375	47.726	55.464	60.324	49.733	***
Household income (in k Euros)	26.930	30.536	31.094	29.190	33.536	40.177	30.425	33.617	***
Home-owner	0.571	0.696	0.564	0.590	0.679	0.763	0.720	0.614	***
Female	0.201	0.219	0.266	0.227	0.260	0.028	0.151	0.239	***
With partner	0.636	0.620	0.563	0.706	0.638	0.749	0.761	0.601	***
Household size -1	1.352	1.406	1.057	1.239	1.276	1.156	1.224	1.267	***
With kids	0.299	0.314	0.259	0.240	0.330	0.223	0.223	0.329	***
High school degree	0.512	0.584	0.728	0.574	0.591	0.512	0.598	0.577	n.s.
College degree	0.111	0.098	0.141	0.088	0.195	0.242	0.124	0.240	***
Employee	0.515	0.599	0.669	0.422	0.773	0.635	0.493	0.733	***
Self-employed	0.096	0.062	0.051	0.012	0.022	0.000	0.007	0.029	***
Retired	0.225	0.172	0.141	0.419	0.050	0.265	0.355	0.158	***
Time horizon									
Time-horizon: next couple of years	0.231	0.280	0.228	0.315	0.310	0.280	0.319	0.320	**
Time-horizon: next five or more years	0.185	0.204	0.174	0.125	0.160	0.218	0.151	0.170	***
Area and year control variables									
Area: North	0.077	0.149	0.039	0.161	0.092	0.000	0.137	0.082	***
Area: South	0.358	0.189	0.251	0.232	0.236	0.213	0.275	0.288	***
Area: East	0.145	0.227	0.121	0.188	0.172	0.303	0.195	0.196	***
Area: West (apart from 3 largest cities)	0.281	0.346	0.289	0.253	0.281	0.360	0.252	0.269	**
Year	2006.1	2006.2	2005.7	2006.1	2006.1	2006.6	2005.9	2006.0	n.s.
N. observations	324	471	668	853	1,735	211	1,946	754	

Note: A = Advice; P = Pocket money; C = Control. The last column reports the significance levels of ANOVA tests on the final sample, which includes 1,298 individuals (6,962 observations) interviewed between 2000 and 2012. n.s. = not significant; *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Teaching to save – Average marginal effects

	Propensity to save			Saving amount		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Any teaching (APC)	0.192***	0.160***	0.160***	0.329***	0.295***	0.296***
	(0.057)	(0.053)	(0.052)	(0.078)	(0.074)	(0.074)
Age		-0.003	-0.005		0.004	0.001
		(0.006)	(0.006)		(0.007)	(0.007)
Age^2		0.000	0.002		-0.007	-0.004
		(0.005)	(0.005)		(0.007)	(0.007)
Ln(1+income)		0.021***	0.022***		0.081***	0.083***
		(0.007)	(0.007)		(0.011)	(0.011)
Home-owner		0.051***	0.048**		0.080***	0.078***
		(0.019)	(0.019)		(0.024)	(0.024)
Female		0.007	0.007		-0.076*	-0.075**
		(0.030)	(0.029)		(0.039)	(0.038)
With partner		0.113***	0.112***		0.201***	0.199***
		(0.028)	(0.028)		(0.035)	(0.035)
Household size -1		-0.030*	-0.030*		-0.050**	-0.050**
		(0.017)	(0.017)		(0.021)	(0.021)
With kids		-0.039	-0.037		-0.049	-0.046
		(0.038)	(0.038)		(0.045)	(0.045)
High school degree		0.018	0.012		0.076**	0.070**
		(0.025)	(0.025)		(0.032)	(0.032)
College degree		0.014	0.005		0.259***	0.247***
		(0.036)	(0.036)		(0.047)	(0.046)
Employee		0.178***	0.178***		0.214***	0.216***
		(0.031)	(0.030)		(0.041)	(0.041)
Self-employed		0.132**	0.125**		0.301***	0.292***
		(0.061)	(0.061)		(0.084)	(0.084)
Retired		0.113***	0.111***		0.119***	0.117***
		(0.033)	(0.033)		(0.042)	(0.042)
Time horizon:			0.054***			0.084***
Next couple of years			(0.014)			(0.016)
Time horizon:			0.076***			0.123***
Next five or more years			(0.019)			(0.022)
Area fixed effects	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Rho (ρ)	0.688	0.659	0.651	0.567	0.512	0.502
	(0.018)	(0.020)	(0.020)	(0.014)	(0.015)	(0.015)
Log-likelihood	-3,186.465	-3,134.458	-3,122.469	-8,612.927	-8,488.964	-8,467.954
N. observations	6,962	6,962	6,962	6,962	6,962	6,962
N. individuals	1,298	1,298	1,298	1,298	1,298	1,298

Note: We report the average marginal effects from a random-effect probit model on the propensity to save (Columns 1-3), and from a random-effect tobit model on the logarithm of the saving amount (Columns 4-6). Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 4. Alternative parental teaching strategies to save – Average marginal effects

	Propensity to save		Saving amount	
	(1)	(2)	(3)	(4)
Teaching in age 8-12 (PC) only	0.108*		0.242***	
	(0.056)		(0.078)	
Advice (A) only	0.142**	0.141**	0.236**	0.235**
	(0.067)	(0.067)	(0.092)	(0.092)
A + PC	0.183***		0.325***	
	(0.053)		(0.074)	
Pocket money (P) only		0.064		0.173**
		(0.062)		(0.086)
Control (C) only		0.152**		0.306***
		(0.060)		(0.084)
A + P only		0.154***		0.276***
		(0.056)		(0.078)
A + C only		0.180***		0.336***
		(0.055)		(0.078)
P + C only		0.076		0.215*
		(0.085)		(0.117)
A + P + C		0.247***		0.391***
		(0.062)		(0.084)
Age	-0.004	-0.004	0.002	0.002
	(0.006)	(0.005)	(0.007)	(0.007)
Age^2	0.001	0.001	-0.005	-0.005
	(0.005)	(0.005)	(0.007)	(0.007)
Ln(1+income)	0.022***	0.022***	0.082***	0.082***
	(0.007)	(0.007)	(0.011)	(0.011)
Home-owner	0.046**	0.047**	0.076***	0.078***
	(0.019)	(0.019)	(0.024)	(0.024)
Female	0.009	0.006	-0.074*	-0.076**
	(0.029)	(0.029)	(0.038)	(0.038)
With partner	0.110***	0.113***	0.196***	0.199***
	(0.028)	(0.028)	(0.035)	(0.035)
Household size -1	-0.029*	-0.032*	-0.049**	-0.052**
	(0.017)	(0.017)	(0.021)	(0.021)
With kids	-0.039	-0.036	-0.049	-0.046
	(0.037)	(0.037)	(0.045)	(0.045)
High school degree	0.013	0.014	0.070**	0.073**
	(0.025)	(0.025)	(0.032)	(0.032)
College degree	0.002	0.005	0.244***	0.249***
	(0.036)	(0.036)	(0.046)	(0.046)
Employee	0.175***	0.175***	0.215***	0.216***
	(0.030)	(0.030)	(0.041)	(0.041)
Self-employed	0.131**	0.130**	0.302***	0.304***
	(0.061)	(0.061)	(0.084)	(0.084)
Retired	0.114***	0.109***	0.119***	0.115***
	(0.033)	(0.033)	(0.042)	(0.042)
Time horizon:	0.054***	0.053***	0.084***	0.084***
Next couple of years	(0.014)	(0.014)	(0.016)	(0.016)
Time horizon:	0.075***	0.075***	0.122***	0.123***
Next five or more years	(0.019)	(0.019)	(0.022)	(0.022)
Area fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Rho (ρ)	0.649	0.647	0.500	0.498
	(0.020)	(0.020)	(0.015)	(0.015)
Log-likelihood	-3,118.543	-3,114.320	-8,464.687	-8,460.111
N. observations	6,962	6,962	6,962	6,962
N. individuals	1,298	1,298	1,298	1,298

Note: We report the average marginal effects from a random-effect probit model on the propensity to save (Columns 1-2), and from a random-effect tobit model on the logarithm of the saving amount (Columns 3-4). Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5. Alternative parental teaching strategies - Significance tests

	None	**A**	**P**	**C**	**A+P**	**A+C**	**P+C**	**A+P+C**
None	×	*6.55***	*4.07***	*13.35****	*12.47****	*18.79****	*3.39**	*21.69****
Advice (A) only	4.41**	×	*0.69*	*0.94*	*0.38*	*2.36*	*0.03*	*4.59***
Pocket money (P) only	1.07	1.87	×	*4.15***	*3.44**	*8.20****	*0.16*	*11.68****
Control (C) only	6.27**	0.04	3.24*	×	*0.29*	*0.33*	*0.78*	*1.83*
A + P only	7.43***	0.07	4.64**	0.00	×	*1.81*	*0.39*	*4.92***
A + C only	10.35***	0.62	7.40***	0.53	0.59	×	*1.54*	*1.05*
P + C only	0.81	0.64	0.03	0.99	1.17	2.08	×	*2.99**
A + P + C	15.66***	3.53*	13.63***	3.77*	5.01**	2.43	4.95**	×

Note: The table reports the values of the comparison tests of the marginal effects associated with the different strategies, based on Columns (2) and (4) of Table 3. Results based on Column (4) are in italics. The tests follow a Chi-squared distribution with 1 degree of freedom; *** p<0.01, ** p<0.05, * p<0.1.

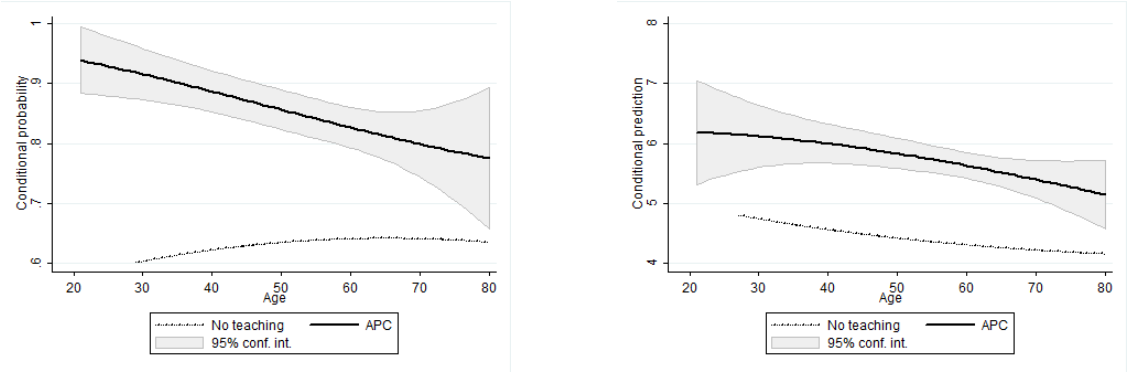
Appendix Table A1. Test for attrition – Average marginal effects

	Propensity to save			Saving amount		
	(1)	(2)	(3)	(4)	(5)	(6)
Attrition	0.026	0.027	0.027	0.047	0.047	0.048
	(0.032)	(0.032)	(0.032)	(0.039)	(0.039)	(0.039)
Any teaching (APC)	0.160***			0.296***		
	(0.052)			(0.073)		
Teaching in age 8-12 (PC) only		0.109*			0.243***	
		(0.056)			(0.078)	
Teaching in age 12-16 (A) only		0.142**	0.141**		0.237**	0.236**
		(0.067)	(0.067)		(0.092)	(0.092)
A + PC		0.184***			0.325***	
		(0.053)			(0.074)	
Pocket money (P) only			0.064			0.173**
			(0.062)			(0.086)
Control (C) only			0.152**			0.307***
			(0.060)			(0.084)
A + P only			0.154***			0.276***
			(0.056)			(0.078)
A + C only			0.181***			0.337***
			(0.055)			(0.078)
P + C only			0.077			0.215*
			(0.085)			(0.117)
A + P + C			0.247***			0.391***
			(0.062)			(0.084)
Age	-0.005	-0.004	-0.004	0.001	0.002	0.002
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Age^2	0.002	0.001	0.001	-0.004	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)
Ln(1+income)	0.022***	0.022***	0.022***	0.082***	0.082***	0.082***
	(0.007)	(0.007)	(0.007)	(0.011)	(0.011)	(0.011)
Home-owner	0.049***	0.046**	0.048**	0.079***	0.077***	0.080***
	(0.019)	(0.019)	(0.019)	(0.024)	(0.024)	(0.024)
Female	0.007	0.009	0.006	-0.075**	-0.074*	-0.076**
	(0.029)	(0.029)	(0.029)	(0.038)	(0.038)	(0.038)
With partner	0.111***	0.109***	0.113***	0.198***	0.195***	0.198***
	(0.028)	(0.028)	(0.028)	(0.035)	(0.035)	(0.035)
Household size -1	-0.030*	-0.029*	-0.032*	-0.050**	-0.049**	-0.052**
	(0.017)	(0.017)	(0.017)	(0.021)	(0.021)	(0.021)
With kids	-0.038	-0.039	-0.037	-0.047	-0.049	-0.047
	(0.038)	(0.037)	(0.037)	(0.045)	(0.045)	(0.045)
High school degree	0.012	0.013	0.014	0.069**	0.070**	0.072**
	(0.025)	(0.025)	(0.025)	(0.032)	(0.032)	(0.032)
College degree	0.005	0.002	0.004	0.247***	0.243***	0.248***
	(0.036)	(0.036)	(0.036)	(0.046)	(0.046)	(0.046)
Employee	0.178***	0.176***	0.176***	0.217***	0.216***	0.217***
	(0.031)	(0.030)	(0.030)	(0.041)	(0.041)	(0.041)
Self-employed	0.126**	0.132**	0.131**	0.293***	0.303***	0.305***
	(0.061)	(0.061)	(0.061)	(0.084)	(0.084)	(0.084)
Retired	0.112***	0.114***	0.109***	0.117***	0.119***	0.115***
	(0.033)	(0.033)	(0.033)	(0.042)	(0.042)	(0.042)
Time horizon:	0.055***	0.054***	0.054***	0.085***	0.084***	0.084***
Next couple of years	(0.014)	(0.014)	(0.014)	(0.016)	(0.016)	(0.016)
Time horizon:	0.076***	0.075***	0.075***	0.122***	0.122***	0.123***
Next five or more years	(0.019)	(0.019)	(0.019)	(0.022)	(0.022)	(0.022)
Area fixed effects	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Rho (ρ)	0.651	0.649	0.647	0.502	0.501	0.498
	(0.020)	(0.020)	(0.020)	(0.015)	(0.015)	(0.015)
Log-likelihood	-3,122.129	-3,118.187	-3,113.950	-8,467.246	-8,463.982	-8,459.378
N. observations	6,962	6,962	6,962	6,962	6,962	6,962
N. individuals	1,298	1,298	1,298	1,298	1,298	1,298

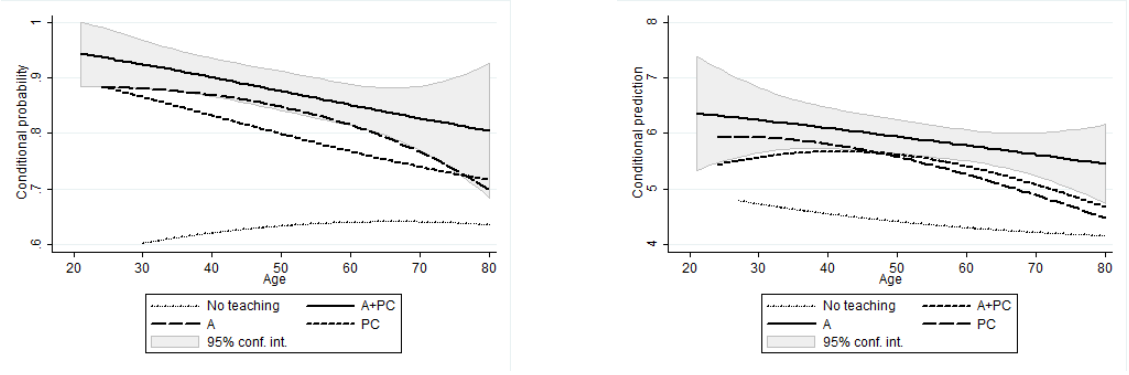
Note: We report the average marginal effects, from a random-effect probit model on the propensity to save (Columns 1-3), and from a random-effect tobit model, on the logarithm of the saving amount (Columns 4-6). Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Figure 1. Long-term effects of teaching to save - Model predictions

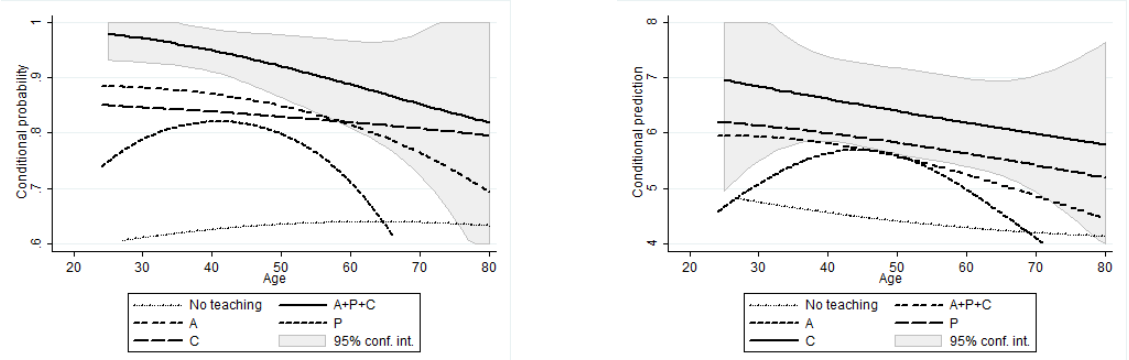
a) Propensity to save b) Saving amount (in k Euros)
Specification in Columns (3) and (6) of Table 2



c) Propensity to save d) Saving amount (in k Euros)
Specification in Columns (1) and (3) of Table 3



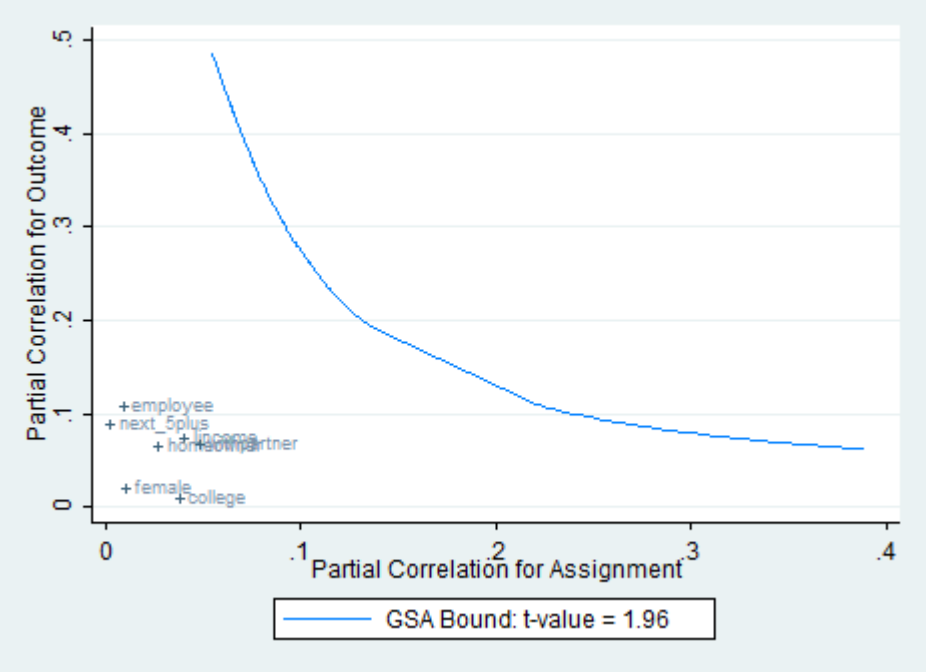
e) Propensity to save f) Saving amount (in k Euros)
Specification in Columns (2) and (4) of Table 3



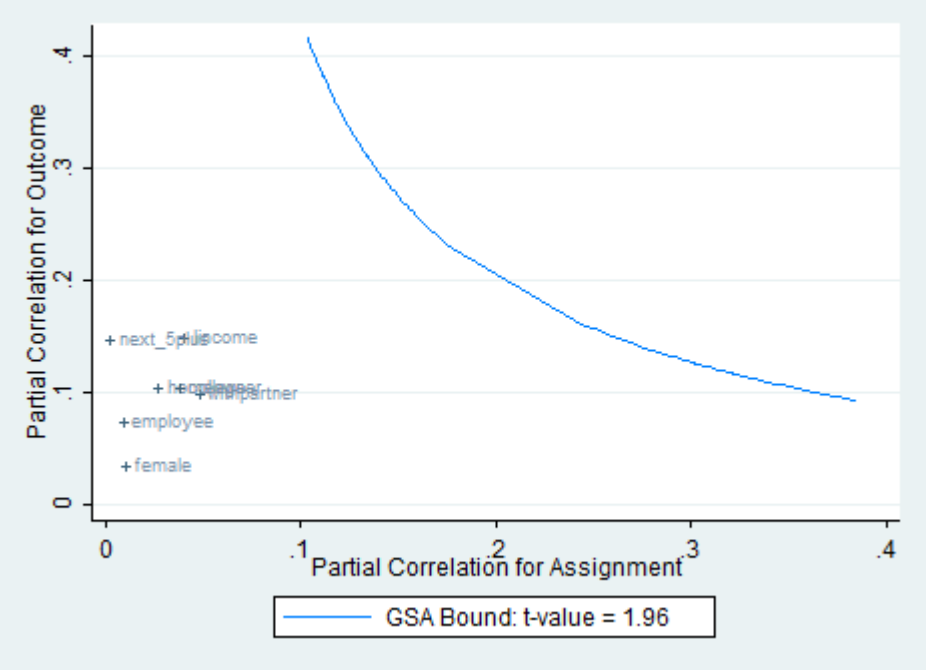
Note: The figure reports the age-prediction of the propensity to save (left-hand side panels) and the saving amount in k Euros (right-hand side panels). Predictions are based on models equivalent to those in Tables 3 and 4; specifically, we extend the models in Columns (3) and (6) of Table 3, and the models in Table 4 by including the interaction of the age polynomial with all the variables related to "parental teaching to save." Predictions take the average of all the explanatory variables included in the specification, except for those involving age and parental teaching to save.

Figure 2. Generalized sensitivity analysis

a) Propensity to save



b) Saving amount



Note: Generalized sensitivity analysis is performed on the model equations of Columns (3) and (6) of Table 3, for panels a) and b) of Table 4 respectively. The outcome variable is the propensity to save (panel a) or the saving amount (panel b); in both cases the assignment variable is any teaching to save.