



Working Paper Series  
Department of Economics  
University of Verona

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WP Number: 14

August 2016

ISSN: 2036-2919 (paper), 2036-4679 (online)

# DOES SAVING EDUCATION RECEIVED FROM PARENTS MAKE ADULTS MORE FUTURE-ORIENTED?

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This version: August 29 2016

## Abstract

In this paper, we use data from the DNB Household Survey (DHS), annually covering the period 1996-2015, to shed light on the relationship between informal saving education received when children or adolescents and two variables aimed to capture adult individuals' concerns for their future: planning horizon and future orientation. Our results indicate that informal saving correlates with general future orientation. In particular, having received teachings to save is strongly associated with an increase in the future orientation index. In contrast, other two methods such as allowance and control over money, when taken separately, show no significant correlation. Our findings also suggest that the future orientation index is rather stable over time (which is not trivial, especially because our dataset covers two full business cycles) and declines with age following the life-cycle.

**Keywords:** Future Orientation; Saving Education; Financial Literacy.

**JEL Classification:** D90; J13; D14.

**PsycINFO Classification:** 2840.

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## 1. Introduction

As human beings, we are often engaged in decision-making processes involving intertemporal choices, i.e. choices that have both short-term and long-term consequences. In many domains, this entails a trade-off between immediate gratification (e.g. smoking or eating) and long-run costs (e.g. risk of lung cancer or obesity), so that people seldom succeed in resisting temptations and exercising self-control<sup>1</sup>. A telling example of decision contexts in which a conflict between long-run “good” intentions and short-run “bad” behavior typically arises is *saving behavior*: as noted by Webley and Nyhus (2006), when planning for the long run, individuals often express intentions to save and have money to cover unforeseen emergencies, but, when asked about their *actual* saving, households often admit that they save less than originally planned. In the US, many people are doing little or no saving and get close to retirement with no wealth apart from their house, with the personal savings rate that has been holding steady at zero for many years dropping from a level of about 8 percent in the mid-1980s (Lusardi, 2009). The widespread lack of financial literacy (Lusardi and Mitchell, 2011) is likely to play an important role in accounting for this worrisome trend both in the US and in many other parts of the world.

As shown by psychology research, individuals significantly differ in their ability to use strategies that allow them to stick to their long-term plans. To help people make future-oriented choices and save more for their future, different roads might be taken. One classic solution is that governments provide well-designed subsidies and incentives. In the last years, in the US, a successful strategy, inspired by so called “asymmetric” or “libertarian” paternalism (Camerer et al., 2003), has been to nudge individuals to “tie their hands” (like Ulysses with the Sirens) and commit to plans that are costly in the short run but extremely beneficial in the long term: in its first implementation, the SMarT (Save More Tomorrow)

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<sup>1</sup> When individual choices involve a trade-off between immediate gratification and long-term costs, “impatience” may prevail. When the trade-off is between immediate costs and long-term benefits, instead, people often exhibit so called “procrastination”, delaying costly activities (e.g. studying) whose benefits (e.g. getting a well-paid job) will be enjoyed only in the medium-long run. A recent work by Reuben et al. (2015) finds that procrastination and impatience are to a significant extent two facets of the same phenomenon, showing that, in tasks where there are costs to delay, impatient individuals indeed procrastinate more.

program inspired by Benartzi and Thaler (2004) succeeded in boosting the average participant's 401(k) savings rate from 3.5% to 13.6% in only 3.5 years.

An alternative (and potentially complementary) strategy is having families themselves playing a key role in the process, with parents seeking to provide financial education to their children to encourage assets accumulation. In principle, this may come in different forms, from providing pocket money to teaching budgeting. However, our knowledge of the role that economic socialization channels can play in inducing young people to care more about their future is still limited and available empirical evidence is mixed. In particular, we know little about how parents socialize their children with respect to financial decisions and over the long-term effects generated by alternative parental practices, when children become adults.

In this paper, we use Dutch household survey data from the DNB Household Survey (DHS), annually covering the period 1996-2015, to address this issue by asking the following question: does informal saving education received in childhood and adolescence make individuals more future-oriented in later life? In particular, we aim to shed light on the relationship between informal saving education given by parents and two variables that aim to capture adult individuals' concerns for their future: *planning horizon* and *future orientation*. "Planning horizon" regards the time horizon considered by the household when deciding about planning economic decisions such as expenditures and saving. "Future orientation" (or "concern for future consequences") refers to a (broader scope) propensity toward future-oriented behavior, which calls for forward thinking and incurring planning costs in the short term for (potential) benefits that will be enjoyed in the long term.

The remainder of the paper is organized as follows. Section 2 summarizes the relevant literature on the topic. Section 3 describes the dataset and presents summary statistics. Section 4 presents the benchmark analysis and a sensitivity analysis. Section 5 concludes. A final appendix reports the wording of the key original questions and the definition of the variables we created.

## 2. Literature Review

Individuals' attitude towards their future has long been a core question in academic research. As noted by Chabris et al. (2008), descriptive discounting models capture the idea that most economic agents prefer current rewards to delayed rewards of similar magnitude and observe that such time preferences have been attributed to a combination of mortality effects, impatience effects and salience effects. Models of delay discounting include the classical exponential discounting model, which assumes a constant discount rate (Samuelson, 1937), and the time-inconsistent model of hyperbolic discounting, inspired by Ainslie (1975) and formalized within the behavioral economic literature<sup>2</sup>. However, as Marzilli Ericson et al. (2015) point out, a large body of research suggests that intertemporal choice is not well described by either exponential or hyperbolic discounted utility models. In their paper, they advance an alternative approach to intertemporal choice based on heuristics (i.e. shortcuts that afford simpler if not optimal solutions to a problem) that is consistent with a general preference for earlier rewards, without making any assumptions about the existence of an underlying discount function. Economic agents are often supposed to be forward looking (i.e. able to incorporate the consequences of future occurrences in their current decisions), both in strategic and non-strategic decision contexts. Modern macro models typically assume that decision makers are rational and forward looking (Lackner et al., 2015). Real-life environments where individuals typically seek to be forward-looking include workplace interactions, electoral competitions, multi-stage procurement tournaments.

Empirical work on individual attitude towards the future shows that higher discount rates are associated with cigarette smoking, heavy drinking, illicit drug use and gambling (Chabris et al., 2008). Next, more pronounced impatience is associated with lower cognitive ability (Dohmen et al., 2010). As highlighted by Lackner et al. (2015), there is little evidence on whether decision makers are indeed forward looking in dynamic strategic interactions, as it is typically assumed in theoretical models. In their empirical work, based on data from

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<sup>2</sup> As emphasized by O'Donoghue and Rabin (2015), even though present bias is an old idea (dating at least to the ancient Greeks), it is only following Laibson (1997) that this construct really took hold in economics. In the last 20 years, theoretical research on the topic has been significantly growing. Relatedly, empirical work on present bias has shown that this notion can help us understand economic behavior in several environments.

professional and semi-professional basketball tournaments, they offer field evidence that tournament participants are indeed forward looking.

A formal economic socialization channel that has been increasingly analyzed in recent years in the empirical literature is represented by financial education programs in school curricula, that aim at enhancing children's and young adults' awareness in the financial domain. Using US data on high school financial education mandates, Bernheim et al. (2001) ask whether exposure to a high school financial curriculum leads to higher saving as an adult and show that mandates in fact raise both exposure to financial curricula and subsequent asset accumulation once exposed students become adults. Cole et al. (2016) exploit exogenous variation in exposure to personal finance and math courses induced by changes in state-level high school curriculum requirements and focus on the causal impact of exposure to these courses on savings, investment and credit management outcomes. In contrast to Bernheim et al. (2001), they show that financial education via traditional finance courses is not effective, while additional mathematics training leads to greater financial market participation, investment income and better credit management.

In order to induce young people to be future-oriented and save more, a different but possibly complementary economic socialization channel is represented by (informal) socialization by parents. In this regard, a growing strand of literature has been focusing on the effects of alternative parental practices, from providing pocket money to teaching budgeting (see e.g. Abramovitch et al., 1991; Mortimer et al., 1994 and Lewis and Scott, 2000). However, the existing works on the theme leave important questions unanswered: what is the best education strategy, to encourage children's assets accumulation and, more generally, to increase their future orientation? To this aim, can different parental practices be effectively combined or is it better to use (some of) them separately?

In this regard, the papers that are closest to ours are Webley and Nyhus (2006; 2013). In their 2006 article, they consider our same variables but on a subset (about 300 observations) of the dataset that we use in this paper, and with a different focus, as they are interested in investigating the transmission of attitudes and preferences from parents to children. They find that parental behavior and parental orientations (conscientiousness, future orientation) have a weak impact on children's economic behavior and on their economic

behavior when adults. Children's future orientation is linked with less smoking and with higher accumulated bank savings, and is best predicted by their fathers' conscientiousness, their parents' future orientation and the quality of relationships within the family. However, in general the size of the effects is very small. In their 2013 paper, Webley and Nyhus use data from European young adults and teenagers and, in the first part of their study, they investigate the role of four different economic socialization methods using a sample of young adults who answered the questions in one specific year. Their univariate correlational study detects a positive relationship between parental encouragement and ability to control spending, saving preferences, future orientation, conscientiousness and saving. The aim of our study is similar to Webley and Nyhus (2013), but we consider a richer dataset covering the years 1996-2015 and the far broader age range 18-80 (rather than the year 2006 only and the 18-32 age range), which allows us to more thoroughly dig into the association between future orientation and financial teachings received when children. In addition, our multivariate analysis is able to isolate the net contribution of saving education on future orientation, after controlling for observed characteristics of the individuals.

### **3. Data**

The analysis presented in this paper is based on the waves 1996-2015 of the DNB Household Survey (DHS). DHS is a panel household survey, collected annually by CentERdata, on the main characteristics of a representative sample of Dutch households. The interview is performed over the Internet; participants without Internet access are provided with a device and technical support.

The questionnaire is organized to cover six broad areas: demographics, work, housing, health, assets, and psychological factors. Among the various topics, since year 2004 DHS asks questions about any type of *informal education towards saving* received when respondents were children or adolescents (age 8-16). This allows us to know (i) whether the respondent regularly received a money allowance from her parents, (ii) if she was free to spend money as pleased, and (iii) if she received any teaching on how to budget and were stimulated to save. The exact wording of the questions, and the definition of the variables in

the analysis, is reported in Appendix A1. Our three variables are built as dummies, and we label them “Allowance” (A), “Control over money” (C) and “Teaching” (T). As in Bucciol and Veronesi (2014), we consider all the eight possible combinations of informal education methods; their frequency is plotted in Figure 1. The most popular alternatives involve the combination of A+T or C+T, with more than 25% observations each; the absence of informal education is relatively infrequent as it involves just 5% of the respondents.

#### FIGURE 1 ABOUT HERE

From the original sample we imposed the following restrictions to generate a homogeneous sample of comparable individuals: we keep only households with three or more observations, whose head is in the economically relevant age range 18-80, and not belonging to the high-income panel that was surveyed in the waves before 2000. For each of these households we consider the head only. The final sample used in the analysis consists of 7,140 observations with complete information on 1,340 households.

On average we then have 5.33 observations per household, which helps us to get accurate estimates of the age and time effects, and to control for measurement error in time-invariant variables such as those on informal education received when children (see Appendix A1 for details). Regarding our key variables on informal saving education, as we mentioned earlier, they are available since 2004 only. We then attribute to previous years the prevailing answer reported since 2004.

Table 1 reports summary statistics on the variables used in the analysis. The control variables cover standard socio-demographic information (age, gender, marital status, education, household size), economic and financial information (occupation, income, financial assets, debt holding, home ownership) plus self-assessed health status and financial literacy. The average respondent is 55 years old, male, with a partner but no children living together, employee, with a high school degree, home-owner, with a household income of 34 thousand euros and financial assets worth 55 thousand euros<sup>3</sup>. In a robustness check we will replace the self-assessed financial literacy with two objective indicators (on basic and

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<sup>3</sup> Monetary values were converted to 2015 prices using the CPI index, all items (source: OECD).



advanced literacy) built as in Van Roojj et al. (2011): they originate from a special module added to the 2005 DHS survey. The two variables are obtained from two separate factor analyses from a set of five and eleven raw questions, respectively. For details see Van Roojj et al. (2011)<sup>4</sup>.

#### TABLE 1 ABOUT HERE

As anticipated above, the key variables for this study are on the *planning horizon* and *future orientation*; the DHS questions are listed in Appendix A2, together with the definition of the variables in the analysis. The planning horizon variable refers to the time horizon considered by the household when deciding about planning expenditures and saving; the future orientation variable captures the propensity towards distant versus immediate consequences of possible behaviors (not necessarily connected with saving)<sup>5</sup>. Both variables are higher when the time horizon is longer.

Table 2 reports the average of the variables on planning horizon and future orientation conditional on the type of informal education received when children or adolescent. The time horizon, according to both variables, is systematically shorter in the absence of education; in general for each variable, the average is significantly different conditional on the education strategy implemented (one-way ANOVA test; the null hypothesis is that the average is the same; p-value <0.01 for both variables).

#### TABLE 2 ABOUT HERE

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<sup>4</sup> Basic financial literacy refers to simple financial calculations, whereas advanced financial literacy refers to knowledge of financial assets, risk and return, and the stock market.

<sup>5</sup> Our measure of future orientation is clearly connected to the notion of discount rate. However, while economists' experimental measures of individuals' concern for the future assess discount rates focusing on material rewards (giving participants choices between smaller-sooner and larger-later rewards) and, therefore, capture a *domain-specific* individual attitude towards present vs. future economic outcomes, future orientation refers to a *general* attitude towards one's future.

## 4. Analysis

In this section we present the main results from our analysis, that is mainly devoted to the investigation of the “future orientation” variable. We start in Sub-section 4.1 with a discussion of planning horizon; we then move in Sub-section 4.2 to future orientation. Sub-section 4.3 concludes with a sensitivity analysis on our findings.

As regression models we employ a random-effect ordered probit model in Sub-section 4.1 and a random-effect GLS model in Sub-section 4.2; the distinction has to do with the different nature of the two variables. Notice that here we cannot implement fixed-effect models because they do not allow to estimate coefficients for our key (time-invariant) explanatory variables.

Panel data often suffer from attrition problems. In our case, however, attrition does not seem to bias the results according to the test suggested by Nijman and Verbeek (1992)<sup>6</sup>, whose results are available upon request.

### 4.1. Planning Horizon

Table 3 reports the output from a random-effect ordered probit model on the planning horizon. The panel-level variance component is always significant and quite high (around 0.66), and a test for panel effects in the ordered probit model always rejects the null hypothesis, concluding that it is advisable to use a model for panel data.

Column (1) includes all the control variables plus macro-area and year effects, and shows that the horizon is longer in the presence of a partner, with higher education, more assets and in the absence of debt. The horizon also tends to decrease with age (it increases up to age  $5.1 = 0.714 / 0.700 * 10 / 2$ , i.e., the age at which the marginal effect becomes null). Interestingly, we also find a strong positive effect of (self-reported) financial literacy.

In Column (2) we add to the specification the three possible methods of informal saving education. Here we learn that none of them is significant. In Column (3) we replace

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<sup>6</sup> The test runs the benchmark regression with the inclusion of one additional explanatory variable meant to capture attrition. The “attrition” variable is a dummy equal to 1 if there is no observation in the subsequent wave. The test finds no attrition when this variable is not significant. Applying this test to the models in Tables 3 and 4, we never find the attrition variable to be significant.

the dummies on saving education methods with dummies on the possible strategies; the excluded category is the absence of informal education. Still, we find that no strategy correlates with the planning horizon: having received informal saving education fails to foster long-term investment planning. The different strategies are not even jointly significant according to a Chi-squared test (null hypothesis: the strategies are not significant. P-value: 0.90).

Respondents can assess their financial literacy with error. As a final robustness check, Column (4) replaces self-assessed financial literacy with two objective indicators of financial literacy as in Van Rooij et al. (2011)<sup>7</sup>. The new regression is based on fewer observations, as we miss information on objective financial literacy for many households. However, our benchmark results are confirmed. In particular, we keep on finding the absence of significant effects of the saving education strategies.

Hence, it seems that informal education does not alter the time horizon chosen about savings. This does not mean that informal education does not affect adult saving *behavior*, though. In fact, a significant correlation between the two dimensions exists, according to the findings in Buccioli and Veronesi (2014) that we are able to replicate in our data (estimates available upon request). The analysis in this sub-section then suggests that informal saving education may promote saving, but with no distinction on the target time horizon for savings, which may consist of few months as well as many years. The time horizon has more to do with the allocation of savings in different assets, which does not seem to be affected by informal education.

### TABLE 3 ABOUT HERE

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<sup>7</sup> The questions behind the indicators were asked in 2005 only; we arbitrarily assume financial literacy is constant over time and assign to each observation of the individual her 2005 answer. We are aware that this is a strong assumption, as individuals may learn and improve their knowledge over time. However, we believe that most of the knowledge is acquired during the youth and young adult age (i.e., before entering the sample), and falls only in old age with the decay in memory and problem-solving skills (also see Finke et al., forthcoming). For this reason, we expect actual financial literacy not to differ much from the one observed in 2005.

## 4.2. Future Orientation

Table 4 replicates the analysis of Table 3 using “future orientation” as dependent variable. Given the nature of the variable (discrete but with 61 possible outcomes), in this case we estimate the parameters with a random-effect GLS model. Around 65% of the residual variance is attributable to the panel component, and a formal Breusch-Pagan test always concludes that it is preferable to include panel effects and then to consider a model for panel data.

Column (1) includes only control variables plus macro-area and year effects in the specification. We learn that future orientation increases with education, wealth, financial literacy, poor health conditions, and decreases with age and among employees.

In Column (2) we add explanatory variables on the three education methods. We see that receiving both an allowance and teachings about saving when children significantly increases adult future orientation, with the increase being in the order of 2 points out of 100: the effect of an allowance is roughly the same as that of having a high school degree (+1.6), while the effect of teaching is about half the effect of having a college degree (+2.3). However, the allowance and teaching methods show coefficients that are not significantly different from each other according to a Chi-squared test (null hypothesis: the coefficients are the same. P-value: 0.53), while they are both more important for future orientation than control over money (whose coefficient is not significant).

In Column (3) we finally consider the eight possible strategies. We see that some strategies provide significant correlations with future orientation. The key method seems “teaching” (T), as almost all the significant strategies involve T; the only exception is the combination of “allowance” and “control over money” (A+C). Each of these strategies increases the future orientation index by about 5 points in a 0-100 scale. In contrast, taking “allowance” and “control” separately does not have an impact on future orientation: it is only their combination that has implications comparable to those of teaching.

While we obtain a negative result on the role that allowances can play in making individuals more future-oriented, Abramovitch et al. (1991) show that children who get allowances are more sophisticated about money than those who do not and Lewis and Scott (2000) find that children who received pocket money regularly were economically more

competent some years later. In contrast, Mortimer et al. (1994) find that allowances are not effective in raising children's savings.

As for saving education, the table ends with a robustness check (see Column (4)) where self-assessed financial literacy is replaced by two objective indicators of financial literacy. Over the two variables, basic financial literacy does not seem to discriminate between different levels of future orientation, while advanced financial literacy turns out to be more relevant. Our previous results are generally preserved, with the exception of A+C that now is no longer significant. Hence, only the "teaching" method, alone or in combination with other methods, seems to matter.

#### TABLE 4 ABOUT HERE

We conclude the sub-section with a graphical representation of the regression output. First, Figure 2 plots the average time pattern of future orientation for an average individual. We are interested in comparing the situation of individuals who received teachings about saving (i.e., "T", which seems the most relevant method) with the rest of the population. To this end predictions are based on the model in Column (2) of Table 4, extended to include the interaction between the year dummies and the dummy variable for teaching. From the figure we see that the time profile is rather flat<sup>8</sup>, although the period under investigation covered markedly different economic conditions (the country experienced two full economic cycles of growth and recession). In addition, future orientation for those who received teachings to save is systematically above future orientation for the others, apart from one year (2000).

#### FIGURE 2 ABOUT HERE

Figure 3 plots the average age profile of future orientation for an average individual. In this case, predictions are based on the model in Column (2) augmented with the interaction between the polynomial on age and the dummy for teaching. A clear declining trend is

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<sup>8</sup> The large confidence interval for 2012 depends on the scant number of observations retained in the regression for that year.

observable, coherent with the life-cycle; also here, future orientation of those who received teachings is constantly above that of the other individuals.

FIGURE 3 ABOUT HERE

### 4.3. Generalized Sensitivity Analysis

The analysis presented so far could be flawed by the absence in the specification of variables such as saving education received after childhood. Unfortunately such variables are not available<sup>9</sup>, and we cannot exclude that future orientation and informal education to save are both influenced by unobservable characteristics of the parents (such as their preferences).

As a robustness check, in this sub-section we perform the “Generalized Sensitivity Analysis” (GSA) developed by Harada (2013), which improves the original “Sensitivity Analysis” of Imbens (2003). GSA tests under which conditions the significant estimate of one coefficient (the treatment variable) would be no longer significant. In our case we focus on the estimate of the “teaching” dummy variable, which seems the most relevant dimension of saving education. After identifying the treatment variable in the regression, GSA generates a sequence of pseudo-random variables that, once added to the specification, make the treatment coefficient insignificantly different from 0. The lines in Figure 4 plot the correlation between the pseudo-random variables, the assignment and the outcome variable (in our case, future orientation).

To help us understand whether the correlation is small or large, the figure also plots the correlation involving few explanatory variables already included in the specification. The unobservable variables should be correlated much more than the observable variables in order to make the effect of teaching insignificant. In particular, since it is difficult to believe that our analysis omits unobservable variables more highly correlated with future orientation than education and wealth, we conclude that our findings are robust to potential unobserved confounders.

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<sup>9</sup> The objective financial literacy indicators proxy for it, but they are available for one year only and we keep them constant over the sample period for the same individual.

FIGURE 4 ABOUT HERE

## 5. Conclusions

Our empirical analysis indicates that informal saving education, which previous literature (see Bucciol and Veronesi, 2014) shows to promote saving, does not have an impact on the time horizon taken into account when choosing about expenditures and savings. In contrast, informal education is significantly associated with a measure of (general) future orientation, namely the consideration of distant rather than immediate consequences of possible behaviors. On the whole, then, our findings on the link between informal saving education and our two variables of interest (future orientation and planning horizon) suggest that while informal saving education seems to favor an individual's inclination to think about the future in general (i.e. also in other domains than the financial one), it does not necessarily promotes decisions involving a long time horizon more than decisions involving a short time horizon. Our results also suggest that the future orientation index is rather stable over time (which is not trivial, especially because our dataset covers two full business cycles) and declines with age following the life-cycle.

As to the effectiveness of different parental practices, we find that among the three methods of saving education taken into account in our analysis (i.e. allowance, control over money, teachings about saving) only having received teachings to save is strongly associated with an increase in the future orientation index. The evidence holds both when parental teachings were implemented alone and in combination with other education methods. In contrast, when taken separately, the other two practices (allowance and control over money) do not seem to effectively make individuals more future-oriented later in life.

Financial teachings received during childhood and adolescence arguably succeed in increasing individuals' ability to delay gratification and exercise self-control later in life, so that they are better able to care about their long-run well-being. We claim that our findings contribute to the strand of literature focusing on the relative effectiveness of alternative informal socialization channels, that so far has been providing mixed evidence on the role that different parental practices can play in inducing individuals to save and making them

economically more competent (see Section 4.2 on this). In particular, our results indicate that teachings about saving are key to make the usage of allowance effective: it is plausible to believe that the reason why the two methods have to be combined to be effective is that regularly receiving money when children or adolescents (i.e. getting an allowance) generates positive long-run effects on individuals' concerns for their future only insofar as they manage to truly give importance to money and *internalize* the underlying principle ("budgeting and saving are important"): the latter step seems to crucially pass through parental teachings.

Available evidence interestingly indicates that future-oriented individuals smoke and drink less than others, are less likely to report using drugs and are more environmentally concerned (Strathman et al., 1994; Keough et al., 1999, and Webley and Nyhus, 2006). Using a novel representative international data set on time preferences, Dohmen et al. (2015) document that patience and economic development are significantly related with regard to both contemporary income as well as medium- and long-run growth rates, with patience accounting for a large fraction of cross-country development differences. Next, Figlio et al.'s (2016) empirical analysis reveals that students from countries with long-term oriented attitudes have better educational performances than students from cultures in which delaying gratification is not very important. Also based on this evidence, it is plausible to argue that differences in future orientation across individuals have relevant implications in terms of income, wealth, education and, therefore, in terms of social mobility and economic inequality for societies.

In the next years, it will be important to shed further light on the sources of heterogeneity in individual future orientation. In particular, it will be interesting to discover whether not only families but also other socializing agents (e.g., schools, peers and media) can play a relevant role in making adult individuals more future-oriented. Does formal socialization (e.g. by means of financial education in school curricula) enhance individual future orientation? Is socialization by parents or teachers more effective when it occurs through the transfer of cognitive knowledge or, as suggested by Beutler and Dickson (2008), through the transfer of values? Is the influence of peers (e.g. in the workplace) relevant for individuals' concerns for their future? We leave these open questions as interesting opportunities for future research on the theme.



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## **Appendix. Key Variables**

### **A.1. Variables on Informal Saving Education Received when Children**

[DHS variable name: JEUGD1]

Question: “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.”

Possible answers: “Yes”; “Yes, but it was sometimes forgotten”; “Occasionally”; “No”.

[DHS variable name: JEUGD3]

Question: “When you were between 8 and 12 years of age, could you spend your money as you pleased?”

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”; “I could decide on all my expenditures”.

[DHS variable name: JEUGD5]

Question: “Did your (grand)parents try to teach you how to budget when you were between 12 and 16 years of age?”

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”; “No”.

[DHS variable name: JEUGD6]

Question: “Did your (grand)parents stimulate you to save money between the age of 12 and 16?”

Possible answers: “Yes, they emphasized the necessity of saving”; “Yes, they told me how important saving is”; “Yes, but to a certain extent”; “No, not at all”.

The questionnaire includes two further related questions, on doing little chores or jobs for which some money was received, that we exclude as Bucciol and Veronesi (2014) for two

reasons: because they do not relate to parents' behavior (they do not describe informal education from parents), and because they involve active search from the respondent (they may then be endogenous). The remaining four questions give rise to the three dummy variables that we consider in the analysis. The variables are generated as in Buccioli and Veronesi (2014):

- "*Allowance*" (A): equal to 1 if the answer to JEUGD1 is "Yes" or "Yes, but it was sometimes forgotten"; equal to 0 otherwise.
- "*Control*" (C): equal to 1 if the answer to JEUGD3 is "My parents decided on how I spent all my money" or "My parents decided on how I spent most of my money"; equal to 0 otherwise.
- "*Teaching*" (T): equal to 1 if the answer to JEUGD5 is "Yes, they gave me advice and practical help" or "Yes, they gave me some advice and practical help", or if the answer to JEUGD6 is "Yes, they emphasized the necessity of saving" or "Yes, they told me how important saving is"; equal to 0 otherwise.

The last variable combines the information on questions JEUGD5 and JEUGD6, that are similar and indeed get similar answers in the dataset: in 73% of the observations the answer to the two questions is the same.

We also exploited the panel nature of the dataset to check for the consistency across waves of the variables. As in Webley and Nyhus (2006) and Buccioli and Veronesi (2014), we frequently observe small inconsistency in the answer of the same respondent in different waves. Whenever we find this inconsistency, we replace the answer with the prevailing answer of the respondent over the waves.

## **A.2. Variables on Time Horizon**

[DHS variable name: PERIODE1]

Question: "People use different time-horizons when they decide about what part of the income to spend, and what part to save. Which of the time-horizons mentioned below is in your household most important with regard to planning expenditures and savings?"

Possible answers: “The next couple of months”; “The next year”; “The next couple of years”; “The next 5 to 10 years”; “More than 10 years from now”.

From the answer to this question we generate a discrete variable called “*planning horizon*” ranging in the 0-4 interval and taking the following values: 0 if “The next couple of months”; 1 if “The next year”; 2 if “The next couple of years”; 3 if “The next 5 to 10 years”; 4 if “More than 10 years from now”.

[DHS variable name: TOEK]

Question: “Now we present you some statements about the future. Please indicate for each statement to what extent you agree or disagree.

1. I think about how things can change in the future, and try to influence those things in my everyday life.
2. I often work on things that will only pay off in a couple of years.
3. I am only concerned about the present, because I trust that things will work themselves out in the future.
4. With everything I do, I am only concerned about the immediate consequences (say a period of a couple of days or weeks).
5. I am ready to sacrifice my well-being in the present to achieve certain results in the future.
6. I think it is important to take warnings about negative consequences of my acts seriously, even if these negative consequences would only occur in the distant future.
7. I think it is more important to work on things that have important consequences in the future, than to work on things that have immediate but less important consequences.
8. In general, I ignore warnings about future problems because I think these problems will be solved before they get critical.
9. I think there is no need to sacrifice things now for problems that lie in the future, because it will always be possible to solve these future problems later.
10. I only respond to urgent problems, trusting that problems that come up later can be solved at a later stage.

Possible answers: respondents indicate the extent to which they agreed or disagreed with each statement, in a scale from 1 (the statement is “extremely uncharacteristic”) to 7 (“extremely characteristic”).

The statements belong to the “Consideration of Future consequences” scale developed by Strathman et al. (1994). This is a measure of the extent to which people consider distant versus immediate consequences of possible behaviors. The DHS version has 10 items (rather than the 12 of the original) and a different response format, and was already used in several works (for instance Webley and Nyhus, 2006). From this list of statements we construct a variable called “*future orientation*” by adding the answers to the 10 questions (questions 3, 4, 8, 9 and 10 were reversed). The resulting variable can then take values from 10 to 70. To simplify the interpretation, we rescale the variable to take values in the 0-100 interval.

**Table 1.** Summary statistics (7,140 observations)

Variable	Mean	Standard deviation	Minimum	Maximum
Planning horizon	1.384	1.143	0	4
Future orientation	53.731	13.807	1.667	96.667
A	0.474	0.499	0	1
C	0.526	0.499	0	1
T	0.695	0.461	0	1
A only	0.093	0.290	0	1
C only	0.126	0.332	0	1
T only	0.074	0.262	0	1
A +C only	0.034	0.180	0	1
A +T only	0.254	0.435	0	1
C +T only	0.274	0.446	0	1
A +C +T	0.093	0.291	0	1
Age	54.773	13.570	21	80
Female	0.212	0.409	0	1
With partner	0.668	0.471	0	1
Household size	1.209	1.188	0	1
If children	0.267	0.442	0	1
Employee	0.611	0.487	0	1
Self-employed	0.022	0.148	0	1
Retired	0.227	0.419	0	1
High school	0.608	0.488	0	1
College	0.152	0.359	0	1
Income (k EUR)	33.785	23.224	0	746.609
Fin. assets (k EUR)	55.145	107.730	0	2,028.398
If debt	0.211	0.408	0	1
Home-owner	0.666	0.472	0	1
Poor health (self)	0.210	0.407	0	1
Fin. literate (self)	0.279	0.449	0	1
Fin. literate (basic)	0	1	-5.339	0.437
Poor health (advanced)	0	1	-2.649	1.096

Note: the last two variables are available on 4,788 observations only.

**Table 2.** Average orientation by informal education strategy

Informal education	Observations	Planning horizon	Future orientation
No education	379	1.211	38.340
A only	662	1.351	41.400
C only	898	1.306	40.783
T only	529	1.493	42.722
A +C only	240	1.488	43.342
A +T only	1,814	1.434	43.556
C +T only	1,953	1.376	41.905
A +C +T	665	1.377	43.923



**Table 3. Planning horizon**

	(1)	(2)	(3)	(4)
A		0.034 (0.068)		
C		-0.000 (0.065)		
T		0.072		
A only			0.081 (0.153)	0.078 (0.206)
C only			0.064 (0.148)	0.049 (0.197)
T only			0.195 (0.163)	0.200 (0.212)
A +C only			0.194 (0.208)	0.283 (0.280)
A +T only			0.160 (0.138)	0.144 (0.184)
C +T only			0.118 (0.136)	0.099 (0.181)
A +C +T			0.153 (0.153)	0.108 (0.199)
Age/10	0.714*** (0.123)	0.723*** (0.123)	0.722*** (0.123)	0.719*** (0.157)
(Age/10) <sup>2</sup>	-0.070*** (0.012)	-0.070*** (0.012)	-0.070*** (0.012)	-0.072*** (0.015)
Female	0.020 (0.072)	0.021 (0.072)	0.024 (0.072)	0.013 (0.096)
With partner	0.171** (0.068)	0.171** (0.068)	0.172** (0.068)	0.090 (0.085)
Household size	-0.007 (0.041)	-0.005 (0.041)	-0.006 (0.041)	-0.020 (0.052)
If children	-0.105 (0.088)	-0.107 (0.088)	-0.105 (0.088)	-0.051 (0.112)
Employee	-0.052 (0.074)	-0.052 (0.074)	-0.053 (0.074)	-0.064 (0.092)
Self-employed	0.277* (0.157)	0.285* (0.157)	0.287* (0.157)	0.252 (0.194)
Retired	-0.054 (0.082)	-0.051 (0.082)	-0.053 (0.082)	-0.060 (0.104)
High school	0.168*** (0.058)	0.168*** (0.058)	0.168*** (0.058)	0.228*** (0.077)
College	0.305*** (0.086)	0.298*** (0.087)	0.298*** (0.087)	0.325*** (0.113)
Ln(income)	-0.005 (0.021)	-0.005 (0.021)	-0.005 (0.021)	0.008 (0.026)

*(continues in the next page)*

**Table 3. (Continued)**

	(1)	(2)	(3)	(4)
Ln(fin. assets)	0.091*** (0.013)	0.091*** (0.013)	0.090*** (0.013)	0.097*** (0.017)
If debt	-0.126*** (0.044)	-0.124*** (0.044)	-0.124*** (0.044)	-0.123** (0.054)
Home-owner	0.104** (0.048)	0.101** (0.048)	0.101** (0.048)	0.137** (0.061)
Poor health (self)	0.022 (0.046)	0.022 (0.046)	0.021 (0.046)	0.065 (0.056)
Fin. literate (self)	0.159*** (0.042)	0.159*** (0.042)	0.160*** (0.042)	
Fin. literate (basic)				0.072* (0.038)
Poor health (advanced)				0.089** (0.042)
Cut point 1	1.679*** (0.378)	1.789*** (0.389)	1.841*** (0.400)	1.835*** (0.527)
Cut point 2	2.520*** (0.378)	2.630*** (0.390)	2.683*** (0.400)	2.627*** (0.528)
Cut point 3	3.732*** (0.380)	3.842*** (0.391)	3.895*** (0.402)	3.866*** (0.529)
Cut point 4	4.854*** (0.381)	4.964*** (0.393)	5.017*** (0.403)	5.008*** (0.531)
Macro-area FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel-level var. comp.	0.665*** (0.044)	0.665*** (0.044)	0.664*** (0.044)	0.644*** (0.054)
Log-likelihood	-9,274.090	-9,273.217	-9,272.679	-6,150.134
Test panel effects	1,476.570 [0.000]	1,474.250 [0.000]	1,470.030 [0.000]	1003.060 [0.000]
Observations	7,140	7,140	7,140	4,788
Households	1,340	1,340	1,340	700

Note: we estimate the parameters with a random-effect ordered probit model. Standard errors in round parentheses; p-values in squared parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4. Future orientation**

	(1)	(2)	(3)	(4)
A		1.635** (0.790)		
C		0.995 (0.743)		
T		2.332*** (0.708)		
A only			2.457 (1.746)	1.618 (2.318)
C only			2.523 (1.694)	3.864* (2.218)
T only			5.378*** (1.873)	5.630** (2.404)
A +C only			6.175** (2.425)	5.308 (3.242)
A +T only			5.110*** (1.573)	6.454*** (2.072)
C +T only			4.120*** (1.557)	4.225** (2.040)
A +C +T			6.211*** (1.739)	6.539*** (2.249)
Age/10	1.146 (1.039)	1.424 (1.040)	1.405 (1.041)	3.170** (1.301)
(Age/10) <sup>2</sup>	-0.222** (0.099)	-0.228** (0.099)	-0.224** (0.099)	-0.387*** (0.119)
Female	-0.378 (0.796)	-0.344 (0.794)	-0.302 (0.797)	1.128 (1.059)
With partner	0.974* (0.576)	0.958* (0.576)	0.990* (0.576)	1.275* (0.691)
Household size	-0.150 (0.340)	-0.108 (0.340)	-0.116 (0.340)	-0.421 (0.416)
If children	1.127 (0.702)	1.086 (0.701)	1.104 (0.701)	1.237 (0.870)
Employee	-1.438** (0.660)	-1.470** (0.659)	-1.493** (0.660)	-0.872 (0.809)
Self-employed	-0.946 (1.440)	-0.696 (1.439)	-0.696 (1.440)	-0.445 (1.717)
Retired	-1.052 (0.668)	-1.041 (0.668)	-1.069 (0.668)	-1.127 (0.823)
High school	1.539*** (0.531)	1.497*** (0.531)	1.492*** (0.532)	1.850*** (0.696)
College	5.068*** (0.881)	4.805*** (0.884)	4.804*** (0.884)	2.905*** (1.127)
Ln(income)	0.111 (0.156)	0.107 (0.156)	0.105 (0.156)	0.036 (0.187)

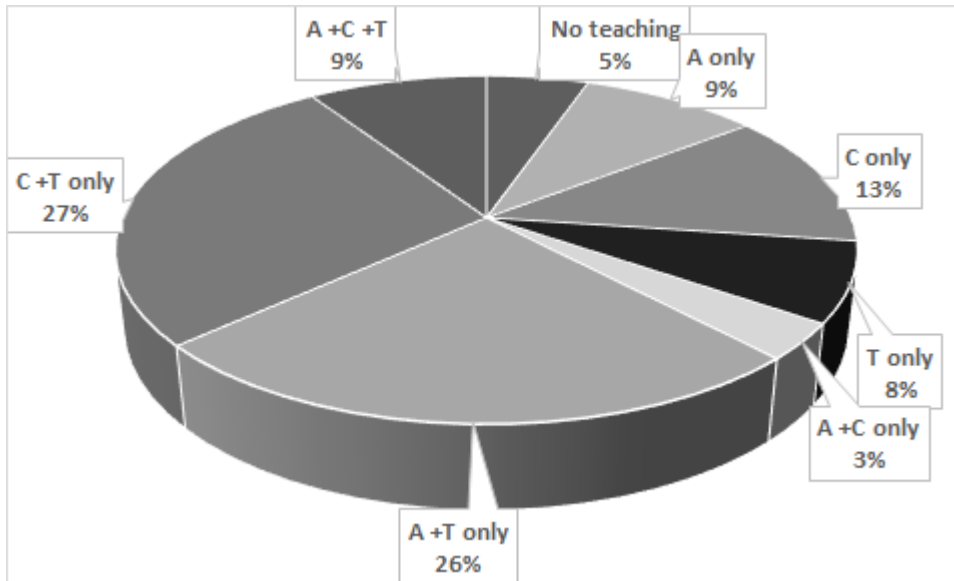
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**Table 4. (Continued)**

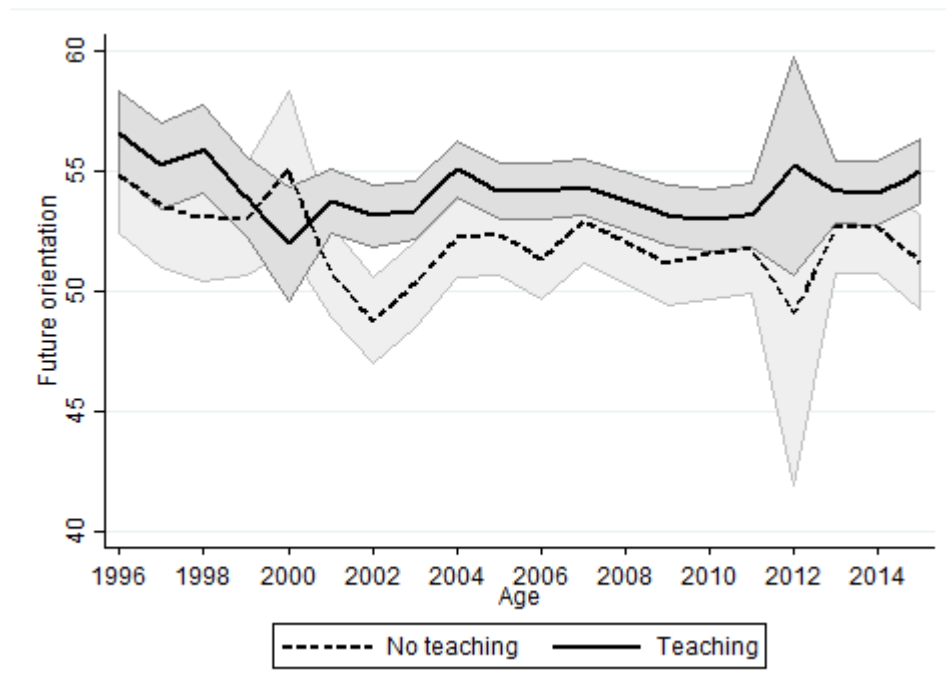
	(1)	(2)	(3)	(4)
Ln(fin. assets)	0.476*** (0.102)	0.457*** (0.102)	0.449*** (0.102)	0.379*** (0.133)
If debt	0.103 (0.338)	0.137 (0.338)	0.139 (0.338)	0.410 (0.405)
Home-owner	0.831** (0.399)	0.790** (0.399)	0.790** (0.399)	0.792 (0.502)
Poor health (self)	0.817** (0.356)	0.823** (0.356)	0.817** (0.356)	1.124*** (0.436)
Fin. literate (self)	0.784** (0.335)	0.788** (0.335)	0.795** (0.335)	
Fin. literate (basic)				0.734* (0.418)
Fin. literate (advanced)				2.030*** (0.464)
Constant	48.801*** (3.235)	44.612*** (3.406)	43.408*** (3.565)	39.211*** (4.686)
Macro-area FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Var. fraction due to panel	0.655	0.653	0.653	0.627
Test panel effects	9,901.550 [0.000]	9,634.010 [0.000]	9,518.350 [0.000]	6,709.330 [0.000]
Observations	7,140	7,140	7,140	4,788
Number of id	1,340	1,340	1,340	700

Note: we estimate the parameters with a random-effect GLS model. Standard errors in round parentheses; p-values in squared parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 1.** Frequency of informal education methods

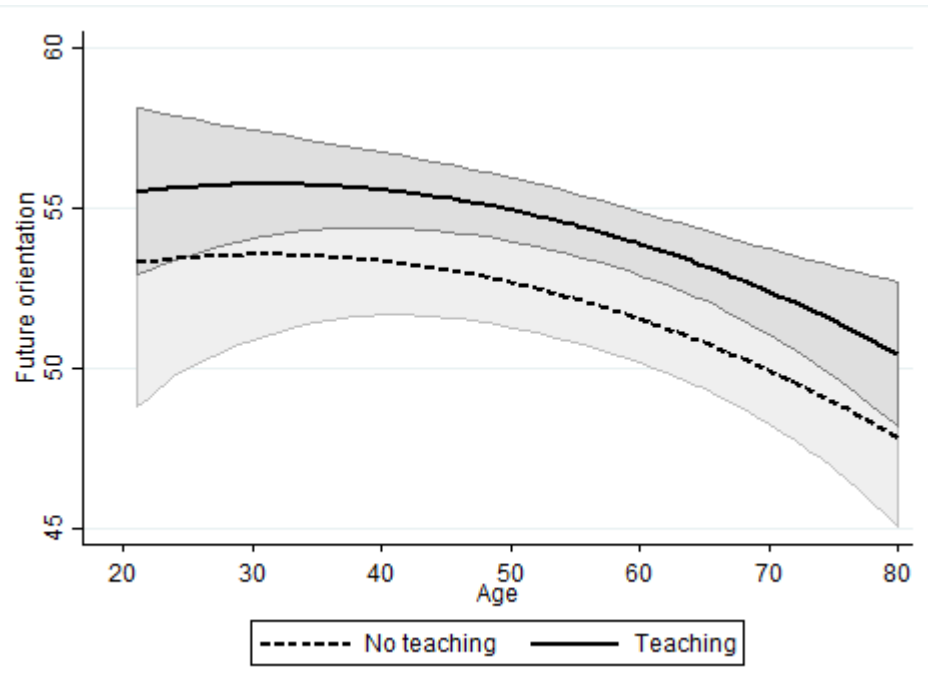


**Figure 2.** Predicted future orientation over time



Note: 95% confidence interval in the colored areas.

**Figure 3.** Predicted future orientation by age



Note: 95% confidence interval in the colored areas.

**Figure 4.** GSA on the benchmark equation

