SAVING BEHAVIOR:

FINANCIAL SOCIALIZATION AND SELF-CONTROL

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Abstract

This study examines the linkages between financial socialization and self-control in explaining saving behavior. Using novel household survey data from the United States, we decompose the effect of financial socialization in its direct and indirect components, mediated through self-control. In addition, we analyze the relationship between these two dimensions and the ownership of different financial products, as well as the decision to save through alternative saving strategies. Our results show that financial socialization received early in life is positively associated with general saving habits. Furthermore, we find that parents' financial socialization influences the development of children's self-control skills. However, their contribution differs depending on the type of financial product being analyzed.

JEL Classification: D14; D81; D91.

Keywords: Financial socialization; Self-control; Saving behavior.

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1. INTRODUCTION

Many individuals do not save or save sub-optimally, reaching the retirement age with virtually no personal financial assets and limited resources to meet unforeseen expenses (Poterba *et al.*, 1996). This issue is of special relevance in the US, where Social Security benefits are low compared with other advanced countries. The change toward defined-contribution plans has shifted the responsibility of saving onto private individuals, who must be able to accumulate an adequate level of income for retirement (Thaler and Benartzi, 2004). According to the Northwestern Mutual's 2018 Planning and Progress Study, 78 percent of American people state they are worried about not having enough money to cover expenses at retirement age. In fact, 10 percent of the people declare they own less than 5,000 USD on retirement savings while another 21 percent indicate they have nothing.

Research on saving behavior attributes a key role to financial literacy in stimulating saving (Van Rooij *et al.*, 2012). As an extension, all forms of education toward financial and economic issues, taught at any age, can be seen as potential drivers of a more widespread saving behavior. One form of financial education is the so-called financial socialization, i.e., any form of financial education received when children or adolescents from several socialization agents, including parents, educators, peers and schools. Previous research indicates the effect of parenting to be as far stronger than financial socialization through any other socialization agent (Shim *et al.*, 2009; Grusec, 2011). Children acquire financial skills within the family through different socialization processes, such as observing parents' financial behavior or speaking with them about financial topics since young age (Solheim *et al.*, 2011). In this way, children develop financial skills and capabilities that foster their financial independence and facilitate their transition into adulthood.

It is nowadays widely acknowledged that relevant lifetime financial outcomes can be partially explained by differences in non-cognitive traits during childhood (Lades *et al.*, 2017). Economists are devoting increasing interest to the role of personal self-control as an effective predictor for saving behavior (Tangney *et al.*, 2004; Achtziger *et al.*, 2015). Self-control is typically defined as the ability to resist temptation and to overcome first impulses (Baumeister, 2002). Self-control problems might hinder savings via over spending (Thaler and Shefrin, 1981). As such, people *under*save because they lack the willpower to do so. Consequently, self-control problems typically result in overconsumption and low wealth (Ameriks *et al.*, 2007).

Research generally indicates that parenting is important to the process of developing self-control among young people (Feldman and Weinberger, 1994; Hay, 2001). Because of this, in this research we hypothesize that financial socialization affects saving behavior as well as personal self-control. Specifically, we expect a positive link between financial socialization and saving behavior, since parents may help the development of good saving habits by encouraging children to use

financial products while growing up at home. Moreover, we expect a positive relation between financial socialization and self-control, which is also supposed to be a significant driver of saving behavior. Thus, financial socialization might exert both direct and indirect effects on saving behavior through self-control.

The main contribution of this empirical work is twofold. First, since we hypothesize that self-control mediates the association between financial socialization and saving behavior, we decompose the effect of financial socialization on saving habits into direct and indirect components through self-control. In so doing, we extend previous work by Bucciol and Veronesi (2014), who document a positive direct effect of parental teachings received during childhood on the propensity to save during adulthood and consider the role of self-control as a potential mediator. Subsequently, we study how financial socialization and self-control are related with saving behavior while controlling for several sociodemographic characteristics. To this end, we use novel US household data collected in year 2016 from the National Financial Well-Being Survey. We measure financial socialization as exposure while growing up to financial concepts across different dimensions, including, among others, discussions about financial issues, teachings on how to be smart shoppers and experiential learning through allowances or saving accounts. Hence, our measure of financial socialization is broader than the ones used in previous literature, covering the practical and theoretical knowledge about generic and specific economic concepts learned in young age. A second contribution of this paper is that we examine the different links between financial socialization, self-control and several financial products and services like checking accounts, educational loans, insurances, retirement accounts and financial assets. In addition, we explore the role of financial socialization and self-control on automated savings for both retirement and non-retirement purposes.

Our findings indicate that parental influence is a significant driver of respondents' saving behavior. Financial socialization received at young age is found to be positively related with the subsequent probability to save regularly, both directly and indirectly via self-control. We show that individuals who received teachings about money in young age, then later in life are more likely to hold safe financial products such as insurances or retirement accounts. In addition, our results suggest that financial socialization increases individuals' awareness in the financial domain, fostering their competence in holding financial assets during adulthood. When we explore the specific effect of self-control in determining saving behavior, we find that an increase in self-control rises the propensity to have money in retirement accounts and financial assets. Moreover, both financial socialization and self-control exert positive and significant effects on the decision of automatically transferring savings to both retirement and non-retirement accounts.

The pattern of under-saving has raised concern by academics and policy makers, who have started to devote special attention to the determinants of saving behavior. The identification of which characteristics correlate with saving behavior can be of great relevance to develop adequate policy interventions to stimulate savings. Our results underline the importance of parents as relevant socialization agents in the formation of financial values, norms and habits that drive financial well-being during adulthood (Drever *et al*., 2015). Since our measure of financial socialization does not only cover teachings but also 'active' education in the form of having to manage a regular allowance, we believe that the measure we use captures in a better way the spirit of financial socialization.

The remainder of this paper is organized as follows. Section 2 provides a review of the literature. Section 3 presents the data and some summary statistics. Section 4 discusses the empirical analysis for saving habits, presenting the benchmark results and some robustness checks. Section 5 reports results from the role of financial socialization and self-control on different financial products and services and on automated saving strategies. Finally, Section 6 concludes.

2. LITERATURE REVIEW

This study examines the role of financial socialization and self-control on saving behavior. This section provides an overview of existing research on these three topics. We then review, in order, the literature concerning saving behavior, self-control problems and financial socialization.

2.1. Saving behavior

Saving behavior patterns have been widely analyzed in the literature, especially in the US context, where household saving rates have declined dramatically over the last 20 years (Wisman, 2009). Previous research indicates that a large fraction of Americans, and in particular those belonging to the so-called baby boom generation, save too little (Bernheim *et al.*, 2001). In line with this, Munnell *et al.* (2009) show that nearly half of workers in the US are expected to be unable to keep their standard of living in retirement. In December 2016, the average benefits for the principal groups of Social Security beneficiaries in the US, notably retired, disabled workers, and aged widows and widowers were lower compared with other major industrial countries (OECD, 2017). For this reason, we observe a switch to defined-contribution plans, such as a 401(k), which shift financial risks and responsibilities to the employees. The transition towards defined contribution plans has potential implications for financial stability, as it provides households with much more choice and flexibility in terms of how they manage their savings and investments.

Saving behavior has been associated with several socio-demographic factors. Women typically save less and score lower than men on risk tolerance measures (Fisher *et al.*, 2015). Hence, it is possible that risk tolerance contributes to a gender difference in savings. Researchers have also found that saving increases with age (Chang, 1994). Moreover, saving behavior is also influenced by decisions taken from peers. For instance, Duflo and Saez (2002) show that social interactions are a powerful mechanism in the process of information acquisition, with strong effects on economic decisions.

Among the different drivers of wealth heterogeneity, financial literacy has been shown to positively affect wealth accumulation (Van Rooij *et al.*, 2012). Financial literacy can be defined as people's ability to process economic information and make informed financial decisions (Lusardi and Mitchell, 2014). It has been significantly and positively associated with stock market participation, retirement planning and wealth accumulation (Van Rooij *et al.*, 2011; 2012). Fairly robust evidence also shows that people with low levels of financial literacy are more likely to exhibit debt problems (Lusardi and Tufano, 2009). One of the main issues when modelling the causal relationship between financial literacy and saving behavior is the plausible existence of reverse causality, as incentives to invest in financial knowledge may affect the relation between literacy and saving (Jappelli, 2010; Jappelli and Padula, 2013). From an econometric point of view, it is not always easy to find suitable instruments for the endogenous financial literacy. Possible candidates previously used in the literature are economics education (Van Rooij *et al*., 2012; Niu and Zhou, 2018) or financial situation of the oldest siblings (Van Rooij *et al*., 2011)[1].

Economic theory assumes that individuals have full information and process it properly, so that their financial choices are the result of maximizing a utility function (DellaVigna, 2009). However, the empirical evidence suggests deviations from this standard theory, as people do not always make sound financial decisions. Sometimes individuals do not adequately plan for retirement and many households report that they would like to save more but lack willpower (Lusardi and Mitchell, 2008).

Much of the recent literature seeks to incorporate behavioral factors into models of saving behavior. Madrian and Shea (2001) analyze the impact of automatic enrollment in the 401(k) plan on saving behavior of employees. Their findings do not only indicate an increase in 401(k) participation under automatic enrollment, but they also conform with several behavioral explanations for individual savings behavior, such as anchoring around the default and status quo bias. In line with this, Knoll

[1] We do not have such information in our data. Thus, in contrast to previous studies we do not focus on the role of financial literacy in influencing saving behavior.

(2010) shows that when deciding about how and when to save for retirement, individuals make suboptimal choices as they often rely on heuristics, or rules of thumb.

In the past few years, automatic saving has been proved to be one of the most powerful remedies for low participation and savings contribution rates (Tantia *et al.*, 2014). All in all, these results highlight the importance of considering also behavioral factors in the determination of saving behavior: bounded rationality, procrastination and nominal loss aversion may all play a role in explaining lack of saving (Thaler and Benartzi, 2004). Self-control is also indisputably an important factor in saving outcomes (Thaler, 1994).

2.2. Self-control problems

Economists are devoting increasing interest to the effects of dynamic inconsistencies, self-control and temptation on intertemporal decisions. Self-control is typically defined as the ability to resist temptation and to overcome first impulses (Baumeister, 2002). Previous literature on self-control strongly highlights its importance as a psychological resource that influences individuals' financial behavior (Achtziger *et al.*, 2015). High self-control has been positively related with goal achievement, the propensity to save regularly and, consequently, with the ability to manage unforeseen expenses (Tangney *et al.*, 2004). On the other hand, Gathergood (2012) shows that consumers who lack self-control make greater use of quick-access financial products and are more likely to have problems in dealing with over-indebtedness. Interestingly, using a sample of highly educated adults, Ameriks *et al.* (2003) explore the relation between self-control and wealth and find that self-control problems are smaller in scale for older than for younger respondents.

The effect of self-control on the decisions to save is difficult to predict a priori. Several studies agree to note that people fail to save for retirement even though they plan to do so (Choi *et al.*, 2002). Self-control failures are argued to be among the reasons why people exhibit time inconsistent preferences (Beshears *et al.*, 2015). Several scholars have been concerned about how self-control affects saving for retirement (Jabobs-Lawson and Hershey, 2005). However, the empirical findings are mixed. On the one hand, self-control problems might hinder savings via over spending (Thaler and Shefrin, 1981). Individuals who lack self-control usually prefer investment opportunities that provide higher immediate utility, as their spending attitudes are driven by short-term and impulsive motives (Gathergood and Weber, 2014**)**. On the other hand, knowing their lack of self-control, they might look for commitment devices, such as pensions, in order to limit their future temptation (Laibson, 2015). This is a central implication from the models of dynamically inconsistent time preferences (Strotz, 1956).

2.3. Financial socialization

Previous work has found a positive association between financial literacy among the young and parents' financial sophistication (Lusardi *et al*., 2010). Economic habits might be easily transmitted from parents to children through the mechanism of financial socialization. Hence, in this research we look at the role played by financial socialization in affecting saving behavior.

Money education received in young age positively affects subsequent financial decisions, notably those involving saving and assets accumulation. For instance, Bucciol and Veronesi (2014) find a positive effect of parental teaching strategies received during childhood on the propensity to save during adulthood. Similarly, using a Dutch sample of young adults, Webley and Nyhus (2013) provide evidence of a positive link between parental encouragement and the ability to control spending, saving preferences, conscientiousness and future orientation. In line with this, Bucciol and Zarri (2019) show that saving education provided by parents induces people to be more future oriented later in life. Kim and Chatterjee (2013) study the association between financial socialization experiences and beneficial financial practices in young adulthood. Their results indicate that owning a saving account during childhood is positively associated with financial asset ownership during adulthood. According to Serido and Deenanath (2016), children's progress toward financial independence is mainly driven by parental teachings. Parents play an important role in influencing good financial habits during childhood, which might also persist later in life.

Research on financial socialization supports a common view of parental education as a transitional process from childhood into early adulthood in which children develop consumer roles and gain financial independence (Gudmunson *et al.*, 2016). As stated by McGoldrick and Carter (1999), the successful transition throughout the life cycle stages is largely dependent on achievements and skills acquired in previous stages. Financial socialization goes further than simply focusing on an improvement in financial knowledge, as it represents the process by which attitudes and values of individuals are formed (Grohmann *et al.*, 2015).

However, the association between financial socialization and economic behavior might be mediated by third factors, being financial goals among the most widely studied (Topa and Herrador-Alcaide, 2016). For instance, Lee and Yu (2017) study the relationship between parenting behavior during adolescence and children's financial efficiency in early adulthood, finding adolescents' future orientation as a significant mediator between these two dimensions. Adolescents who learn from parents through financial socialization develop general skills that will be maintained over the life course. One of these skills is self-control. High self-control allows individuals to diligently follow their financial plans and to convert their financial goals into responsible financial behaviors (Tang, 2017). Parental influence is particularly important during adolescence, when the differences in self-

control are established (Hay, 2001). Indeed, according to Gottfredson and Hirschi (1990), one of the major causes of low self-control is ineffective parenting. For instance, children whose parents do not monitor their children's behavior are expected to display low self-control and thus exhibit more deviant, delinquent, and criminal behaviors over the life-course.

Lades *et al.* (2017) investigate the impact of self-control problems in childhood on future pension participation. Their mediation analysis shows that large part of this relationship (about 50 percent) can be explained by the contribution of self-control to a wide range of factors, such as educational attainment, economic status and home ownership. Furthermore, financial socialization from parents may also affect the behavior of children by influencing their general self-control skills, which in turn are important drivers of financial well-being during adulthood (Tang, 2017). To date, only a few studies have investigated the role of financial socialization in the development of self-control (Feldman and Weinberger, 1994; Hay, 2001), generally finding a positive effect.

3. DATA

Our dataset comes from the US National Financial Well-Being Survey (from now on, NFWBS). This survey was conducted in year 2016 by the Consumer Financial Protection Bureau and it was fielded on the GfK Knowledge Panel[2]. Data have been collected between October 27 and December 5, 2016. Sample data were drawn from an online panel after being properly weighted to reflect the US adult population with respect to age, gender, ethnicity, poverty and educational levels.

The NFWBS primarily investigates financial knowledge, financial behavior and financial wellbeing of a representative sample of individuals. Variables collected through NFWBS include information about respondents' saving behavior, financial skills and attitudes, and other related factors. Socio-economic information such as age, ethnicity, labor status or household income of the respondents come from GfK Knowledge Panel data[3]. For our study purposes, the main advantage of this dataset is that it includes a battery of questions related to individuals' financial experience and behavior. This allows us to investigate several financial factors that might affect saving decisions, which have not been explored in the previous literature and, to the best of our knowledge, are not available in other datasets.

[2] The Consumer Financial Protection Bureau is a Federal agency created in year 2010 to regulate the use of financial products and to help consumers in understanding financial services, supporting their participation in financial markets. The GfK Knowledge Panel is the largest probability-based Internet panel in the US, with a total of about 55,000 panel members.

[3] These data were collected prior to the survey as part of GfK's standard business operations.

A total of 6,394 subjects completed the survey. In the questionnaire, respondents are asked who takes cares of the money matters at the household. They have to choose from the following options: i) "I take care of all or most money matters", ii) "Someone else and I take care of money matters about the same", iii) "Someone else takes care of all or most money matters". As in Van Rooij *et al.* (2012), we focus on respondents who state they are those who mostly make financial decisions at home, namely those who pay the bills and take the responsibility to make financial investments. Indeed, their financial capabilities are most relevant for household financial decision making (Smith *et al.*, 2010). Since the survey does not gather information on all the members in the household, this is done to drop from the sample those who have no decision power with regard to financial issues. This leaves a subsample of 3,235 individuals. After leaving aside some respondents with missing values in the variables of interest, our final sample consists of 2,854 observations.

3.1. Main variables

3.1.1. Outcome variables

Three different sets of outcome variables are considered to analyze the determinants of households' saving. First, we aim to empirically examine how financial socialization and self-control relate to general saving behavior. To this end, we define the dummy variable *saving habits*, which takes the value one if the respondent agrees with the following sentence: "Putting money into savings is a habit for me". Looking at this variable is useful to learn more on regular saving habits, which are extremely important to achieve financial goals and to have adequate emergency reserves (Fisher and Anong, 2012).

Second, as we have detailed data on financial products chosen by the individuals, we analyze the association between self-control, financial socialization and the decisions to save through specific financial products. Respondents are asked to select which financial products and services they currently have from an exhaustive list, ranging from checking or savings accounts to non-retirement investments, such as stocks, bonds or mutual funds. We group these items into five categories representing (1) checking accounts, (2) educational loans, (3) life or health insurance, (4) retirement accounts and (5) financial assets. We model each category as a dummy variable measuring whether individuals currently hold each of the different financial products or services. We refer the reader to Appendix A.1 for further details.

We finally explore how financial socialization and self-control are related with alternative saving strategies. The last decade has seen many behavioral applications to savings programs. In particular, automatic saving has been proved to be one of the most powerful remedies for low participation and savings contribution rates (Tantia *et al.*, 2014). Automatic saving may foster

financial decisions, as it decreases the complexity of decision-making and it reduces attitudes of procrastination. However, the decision to save automatically has not been widely explored in previous research. NFWBS includes unique data with powerful tools to investigate this peculiar dimension of saving behavior. It contains two questions meant to assess whether respondents have money automatically transferred into retirement and non-retirement saving accounts, respectively. These questions allow us to compare the features of such financial decisions with those of saving money voluntarily through different saving products. We define the dummy variable *automated retirement*, which is equal to one if the respondent allocates a certain amount of money into an account for retirement purposes, and zero otherwise. We create another dummy variable (*automated non retirement*) that takes a value of one if the respondent chooses to transfer money automatically into a non-retirement account. The exact wording of the questions is reported in Appendix A.2.

3.1.2. Financial socialization and self-control

Parents may transmit saving habits to children through the mechanism of financial socialization. There are different ways to introduce children to the value of money, such as setting regular allowances and saving goals or discussing with them questions about budgeting. We include a proxy for financial socialization in our analysis. Respondents were asked seven questions about teachings received from family while growing up at home, which are used by the NFWBS to measure *financial socialization.*

These questions ask respondents whether they discussed family matters with parents and if they spoke with them about the importance of saving. In addition to these standard items on financial socialization, individuals are asked information about specific parental lessons received in young age. Specifically, they are asked whether they received teachings about how to establish a good credit rating, how to be a smart shopper or how to determine success in life. The last two financial socialization items are related to practical teachings received from parents. Indeed, the NFWBS asks respondents if the family provided them with a regular allowance or a saving account. The exact wording of the questions is reported in Appendix A.3. For each item related to financial socialization, we define a dichotomous variable for respondents who provided a positive answer to each question. We perform a factor analysis with polychoric correlation on those binary variables. In this way, we are able to retain a unique index representing financial socialization. Bartlett test of sphericity (p-value< 0.001) indicates that it is appropriate to perform factor analysis[4].

[4] The summary index used in our analysis is mostly correlated with the second financial socialization item ("Spoke to me about the importance of saving"). The correlation is equal to 0.823.

Next, we measure self-control based on the answers to three questions in the NFWBS. Individuals are asked to indicate on a scale from 1 ("Not at all") to 4 ("Completely well") the response that best describes them for each of the following items: "I often act without thinking through all the alternatives", "I am good at resisting temptation", "I am able to work diligently toward long-term goals". We model each item related to self-control as a dichotomous variable, with the value one representing answers 3 and 4 provided by respondents[5]. We then combine the information from the three items in a unique index representing individuals' self-control. Our summary index is drawn from a factor analysis with polychoric correlation; Bartlett test of sphericity (p-value< 0.001) indicates that it is appropriate to perform factor analysis. The index, that we label *self-control*, takes values in the 0-1 range and provides us with a comprehensive measure of individuals' self-control.

Given the relevance of behavioral biases in shaping economic behavior of individuals (Gathergood and Weber, 2014**)**, we conduct a mediation analysis to investigate whether differences in self-control may act as a channel through which early financial socialization enhances individuals' saving decisions later in life. After having identified the role of self-control as a mediator in the relation between financial socialization and saving behavior, we further investigate its role as an independent variable capable to affect saving behavior.

3.2. Summary statistics

Table 1 reports summary statistics of the variables used in the analysis. More than half of the respondents (55%) state that putting money into savings is a habit for them. The great majority of people (80%) own life or health insurances, 71% of respondents report to save through retirement accounts, while 34% hold financial assets; 20% of respondents currently have education saving accounts or loans and 87% have checking accounts. A similar percentage of individuals indicate to have money automatically transferred into retirement and non-retirement saving accounts (43% and 42%, respectively). In our sample, 54% declare to have received teachings about money during childhood and 80% show high levels of self-control[6].

In our analysis we also control for standard socio-demographic characteristics. The average respondent is male, in the middle age group 35-54, married and without dependent children. About 42% of the respondents are graduated and only a small percentage of respondents (6.7%) are self-employed. Around half of the individuals report to be in good health and about 67% own their home.

[5] We recode answers of the first statement such that, in all cases, an increase in the index implies higher self-control.

[6] Descriptive statistics about the original sample are very similar to those presented in Table 1. In particular, the mean levels of financial socialization and self-control in the original sample are equal to 54% and 78%, respectively.

Finally, 21% report levels of household income before taxes below 30,000 USD and 30% report levels of household income above 100,000 USD.

TABLE 1 ABOUT HERE

4. EMPIRICAL ANALYSIS: SAVING HABITS

We aim to examine the influence of financial socialization and self-control on individuals' saving habits. To this end, we estimate the following equation, for individual $i = 1, ..., N$:

$$saving\ habits_i = \beta_0^F + \beta_1^F financial\ socialization_i + \beta_2^F selfcontrol_i + X_i'\gamma^F + \varepsilon_i^F \quad (1)$$

where *saving habits* is a binary variable representing saving habits as previously described, *financial socialization* and *selfcontrol* are our variables of interest and β_1^F, β_2^F are the associated parameters to be estimated. *X* is a vector of control variables including standard socio-demographic information such as gender, age, education and marital status, plus economic and financial information on occupational status, housing property and income. Finally, ε^F is an idiosyncratic random error term. If we assume that ε^F follows a standard normal distribution, Equation (1) can be estimated using a Probit model.

As indicated before, we hypothesize that financial socialization exerts not only a direct effect on saving habits but also an indirect one through self-control. For instance, teachings received during childhood affect individuals' self-control (Tang, 2017), which in turn has been shown to influence financial behavior such as retirement planning, wise use of debt and credit, budgeting and saving (Baumeister, 2002; Howlett *et al.*, 2008). Here we are interested in disentangling how self-control partially mediates the total effect of financial socialization on saving habits.

In the context of linear regression, the total effect of financial socialization on saving habits could be estimated by running a reduced form of Equation (1) in which we leave out self-control as follows:

$$saving\ habits_i = \beta_0^R + \beta_1^R financial\ socialization_i + X_i'\gamma^R + \varepsilon_i^R \quad (2)$$

being β_1^R a measure of the *total effect* of financial socialization on *saving habit*.

The *direct effect* of financial socialization on saving habits is captured by the regression coefficient β_1^F in Equation (1). The *indirect effect* constitutes the part of the relationship between financial socialization and saving behavior that is due to self-control and it will be simply given by

$\beta_1^R - \beta_1^F$. Hence, within the framework of linear regression models the decomposition of the total effect of a covariate into direct and indirect effects would be straightforward (Kohler *et al.*, 2011).

However, in non-linear regression models like Probit, identifying the indirect effect is not so easy as it depends on the scale parameters in Equations (1) and (2). More specifically, since coefficient estimates in a Probit model are equal to the true parameters divided by the scale of the random error term (Karlson *et al.*, 2012), the indirect effect of financial socialization on *saving habits* is given by:

$$\beta_1^R - \beta_1^F = \frac{\beta_1^R}{\sigma_2^R} - \frac{\beta_1^F}{\sigma_2^F} \tag{3}$$

where σ_2^F and σ_2^R are the scale parameters in Equations (1) and (2) that are a function of the standard deviation of the error terms. Since adding variables to the model reduces the residual variance of *saving habits* it holds that $\sigma_2^F \leq \sigma_2^R$. Thus, the indirect effect of financial socialization on saving habit through self-control cannot be simply addressed as $\beta_1^R - \beta_1^F$. As such, we would be conflating mediation with the rescaling of the model, a situation which arises whenever the mediator variable has an independent effect on the dependent variable (Kohler *et al.*, 2011).

Therefore, to identify the pathways that explain why financial socialization affects saving habits we conduct a mediation analysis using the KHB procedure proposed by Kohler *et al.*, (2011) and by Karlson *et al.* (2012). Its main idea is to enrich the reduced form model in Equation (2) with the inclusion in the specification of one further variable, the residual from the OLS regression of *selfcontrol* on *financial situation*. In this new model, the standard deviation of the residuals is identical to the one in Equation (1), which allows to have the same rescaling of the coefficients in Equation (3). Based on Monte Carlo simulations, this procedure has been shown to be more effective than other alternatives such as average partial effects (Wooldridge, 2002) or the decomposition method proposed by Erikson *et al.* (2005) and Buis (2010) to split the total effect of a covariate in direct and indirect effects in the context of non-linear regression models. Mediation analysis through the KHB method has also been employed in the study about the effect of childhood self-control on adult pension participation by Lades *et al.* (2017) [7].

[7] In our analysis, the KHB method replaces self-control in Equation (1) by the residuals of an auxiliary regression of self-control on financial socialization. Since these residuals and self-control only differ in the share of self-control that is correlated with financial socialization, the scale of the error term in Equation (1) and the scale of the error term in the regression that uses the residuals are about the same, which in turn alleviates the rescaling issue. The difference between the β_1^R in (2) and the total effect obtained using the KHB method is due to a slight change in the scale of the coefficients when introducing the residuals. For further details about the method see Kohler *et al.* (2011).

In our analysis we use the KHB method for decomposing the total effect of financial socialization on saving habits into its direct and indirect components through self-control. We report the outcomes of the regression analysis on saving habits and of the mediation analysis in Sub-section 4.1.

4.1. Regression results

We start our analysis by estimating the reduced form model of Equation (2). This way we look at the association between our measure of financial socialization and general saving habits, while controlling for a wide set of control variables. The parameter estimates are shown in Column (1) of Table 2. Column (2) reports average marginal effects.

TABLE 2 ABOUT HERE

It is clear that financial socialization is highly associated with general saving habits. In our sample, those who received teachings about money while growing up at home are 20 percent more likely to save on a regular basis, meaning that parental influence is a significant predictor of respondents' saving behavior. We find that early acquisition of financial skills has a significant role in stimulating good economic behavior such as better saving habits. Indeed, habits formed during youth are highly influential for adult behavior (Whitebread and Bingham, 2013)[8].

However, parents' financial socialization may also indirectly affect the behavior of children by influencing their general self-control skills. Indeed, through the process of financial socialization children develop self-control, which is another important driver of financial well-being in adulthood (Tang, 2017).

For this reason, we adopt the KHB method to test the mediating effect of self-control in the relation between financial socialization and saving habits. Table 3 shows the Probit regression coefficients obtained from the KHB method. The standard output of the method presents the direct, indirect and total effects. Our results suggest that financial socialization received during childhood

[8] One might argue that the socio-economic background of the family relates with financial socialization in a way that affects saving behavior. In other words, children who grow up in richer families might receive higher financial education than comparable children who come from disadvantaged families. For this to be true, it must be the case that the index of financial socialization exhibits a certain degree of association with some dimension of parental socio-economic background. The NFWBS contains information on the highest level of education of the person who raised the respondent. We consider this variable as an indicator of socio-economic background. However, the correlation between financial socialization and parental education is quite low in our sample (0.256), meaning that the relationship between financial socialization and saving behavior is not explained by parental characteristics.

has significant direct and indirect effects on respondents' saving habits. Indeed, having been provided with teachings about money while growing up at home leads to higher probability of developing saving habits, both directly (direct effect coefficient, $p<0.01$) and indirectly via self-control (indirect effect coefficient, $p<0.01$). It turns out that 28 percent (0.167/0.597) of the total effect of financial socialization is attributable to self-control[9]. This means that much of the pathway between financial socialization and saving behavior is via this variable: self-control is a channel through which financial socialization leads to better saving habits.

TABLE 3 ABOUT HERE

Subsequently, we add our measure of self-control as an independent regressor in our specification. We exploit the richness of our data to learn more on the role of self-control in determining saving habits. That is, we estimate the model in Equation (1). Columns (3) and (4) of Table 2 report the coefficients and the average marginal effects of the model which also includes self-control as a regressor, respectively[10]. The amount of explained saving habits variance substantially increases when we include self-control in the model. The significance patterns that emerge from the output provide interesting results.

We find that financial socialization is still positively and significantly related with the likelihood of saving regularly, even if the association between the two variables is quite lower after controlling for self-control. Results indicate that self-control is a significant predictor of saving habits[11]. In particular, one standard deviation increase of self-control raises the probability to save money as a habit by 0.293*0.419=12.2 percentage points. The positive effect of self-control on saving habits is strongly significant not only from a statistical perspective, but also from an economic point of view. Indeed, self-control increases the ability to delay gratification, which is critical to set financial goals and to develop household budgets in service of those goals (Drever *et al.*, 2015).

[9] The slight discrepancy between the coefficient of financial socialization reported in Table 2 (Column 1) and the one reporting the total effect of financial socialization in Table 3 is due to non-linearity.

[10] Table 2 also reports the coefficient estimates to be consistent with the decomposition made by the KHB method in Table 3. Note that the direct effect of financial socialization on saving habits obtained in Table 3 equals the parameter estimate of financial socialization in Column 2 of Table 2. It is important to highlight that the total effect reported in Table 3 is slightly different from the parameter estimate of financial socialization in Column 1 of Table 2 because the KHB procedure expresses the total effect in the same scale as the direct effect. This also happens in Lades *et al.* (2017).

[11] We repeat our estimates using a linear probability model with heteroskedasticity-consistent standard errors, obtaining similar results both quantitatively and qualitatively.

As regards the other control variables, we do not find a significant relationship between age and saving habits. Conversely, we find a positive association between education and the propensity to save regularly. People with higher educational levels may also increase their confidence in dealing with financial matters, with positive effects on their saving behavior. As expected, having no children that need to be financially supported increases the probability to save as a habit by 6 percent.

We also find that saving habits are 10.6 percent less likely for those who are self-employed. A possible interpretation is that other categories of workers, notably those who are employees, may foster their saving habits by participating in saving plans that have been already established in the workplace. Besides that, self-employed could be less stimulated to save regularly as they do not earn a constant wage.

The propensity for better saving habits is positively correlated with good health conditions. In addition, we show that an increase in income boosts the probability to save regularly. This result is in line with Chakrabarty *et al.* (2008), who find that households are more likely to follow a regular saving plan when they have higher permanent income. Finally, we find that individuals who own their house are more likely to save regularly compared to those who rent their house, possibly because of the lower financial constraints that they face. However, differences in saving habits may partly result from different preferences on consumption choices, including the choice about renting or buying a home. According to Henderson and Ioannides (1983) when the individual's investment demand is at least as great as his consumption demand, owning is preferred to renting. Individual preferences for investment rather than immediate consumption may also affect economic behavior by augmenting saving awareness, with positive impact on saving habits.

4.2. Robustness checks

In the previous analysis, we have presented regression results by using a summary index for self-control, which has been drawn from factor analysis. As a robustness check, we replace it with an alternative measure of self-control, which is a binary variable representing the likelihood of resisting temptation[12]. The main findings of Table 2 are confirmed, with financial socialization and self-control still positively and significantly related to the likelihood of saving regularly. Results from the mediation analysis are also consistent with those previously reported.

Another robustness check is related to the definition of financial socialization. As discussed in Sub-section 3.1.2, our key variable of interest is constructed as an index summarizing all the financial socialization items contained in the NFWBS data set. However, studies concerned about

[12] This is one of the three items that we used to build the summary index from factor analysis. We consider it as it provides the most relevant contribution in the definition of the summary self-control index.

parental influence on economic behavior usually consider teachings on saving money only, rather than several other parental socialization practices (Bernheim *et al.*, 2001). Therefore, one may argue that our measure of financial socialization is too broad, as it could reflect a general competence in financial matters, rather than the specific effect of financial socialization. For this reason, we perform again our estimates in Table 2 by replacing the original financial socialization measure by two narrower indices that represent parental teachings about money (NFWBS financial socialization items 1-5) and financial hands-on experiences (items 6-7), respectively[13]. We refer the reader again to Appendix A.3 for further details. In addition, we also define financial socialization in a (standardized) 0-7 scale as the sum of the seven binary dummies for each of the above mentioned financial socialization items. Our central findings are not affected by these alternative definitions of financial socialization. Hence, the effects of financial socialization and self-control are consistent in sign and significance with those previously reported[14].

Our findings of Tables 2 and 3 remain robust even when we restrict our sample to respondents younger than 50 years. We perform this additional check as someone might argue that the time between the respondent received financial socialization and the time she completes the survey would otherwise be too large. Even in this case the main coefficients do not change much, though precision of the estimates slightly declines.

Appendix B reports the regression output of the robustness checks mentioned above.

5. EXTENSIONS

5.1. Financial products and services

In this Section we further analyze the relationship between self-control, financial socialization and the decisions to save using different financial products and services. We estimate the following equation, for $i = 1, \dots, N$ and $j = 1, \dots, 5$:

$$Y_{i,j} = \beta_{0,j}^{F} + \beta_{1,j}^{F} financial\ socialization_i + \beta_{2,j}^{F} self control_i + X_{i,j}^{'} \gamma_j^{F} + \varepsilon_{i,j}^{F} \qquad (4)$$

where now the dependent variable $Y_{i,j}$ is a vector of five binary outcomes for individual *i* denoting the categories of financial instruments (checking accounts, educational loans, life or health insurance, retirement accounts, financial assets) described in Sub-section 3.1.1. Exploring all these financial

[13] We first include them separately and then together in our specification.

[14] The estimation results from the mediation analysis are also qualitatively the same. Results are available upon request.

instruments is interesting not only because they have various financial purposes, but also because they differ in their frequency in the society.

Our goal here is to explore the relationship between financial socialization, self-control and the decisions to save through different financial products and services in a multivariate framework. Households frequently hold multiple financial products at the same time. Therefore, it is possible that the decisions to save through different financial products are jointly determined, rather than the result of independent processes. If there are meaningful correlations between the error processes, the simultaneous estimation of several binary outcomes will be more efficient than those derived from single-equation Probit regressions. Accordingly, we estimate a seemingly unrelated Multivariate Probit model by Maximum Likelihood[15]. Estimated average marginal effects are reported in Table 4. The correlation coefficients between the residuals from the Multivariate Probit equations are also presented.

TABLE 4 ABOUT HERE

Most of the correlation coefficients of the residuals are statistically significant. This supports our hypothesis that the outcome variables share some common unobserved factors and justifies the use of Multivariate Probit instead of independent Probit model; the positive sign of the correlation coefficients indicates that the decisions to save through specific financial products or services are complimentary to each other. This suggests that respondents spread their investment portfolio among different financial instruments, which is a commonly used diversification strategy. For example, respondents who hold insurances tend to also have other financial products, notably retirement or checking accounts. Those who hold retirement accounts are also more likely to have financial assets. Conversely, no significant correlation is found between having financial assets and educational loans, meaning that the decisions to own these financial products are independent.

Our findings from Table 4 shed light on the importance of financial socialization and self-control and their relationships with many financial decisions. The exceptions are checking accounts, that are widespread in the population (87.6 percent of the individuals in the sample hold at least one account) and education loans, that instead are more rare (present in 20.3 percent of the sample) and

[15] The estimates have been conducted using the *cmp* module in Stata 15. The *cmp* modelling framework proposed by Roodman (2011) allows for the simultaneous estimation of several binary outcomes in which the errors share a multivariate normal distribution. It fits non-linear seemingly unrelated regression models based on Maximum Likelihood simulations. Moreover, it easily enables to retrieve marginal effects after estimation. For this reason, it is appropriate for jointly predicting decisions over different financial products on an individual-specific basis.

related to a specific purpose. In particular, regression results reported in Columns 3-5 show that parental teachings have long-term impacts on how individuals behave in the future and confirm the role of parents as relevant socialization agents. Those who received financial socialization while growing up at home, through teachings about money or primary exposures to financial instruments, then later in life are more likely to have safe financial products such as insurances or retirement accounts (Columns 3 and 4). Our results on these dependent variables are in line with previous evidence by Bucciol and Zarri (2019), who show that socialization by parents enhances individuals' future orientation. Hence, we argue that future orientation is an important driver of financial decisions, with positive implications on the propensity to hold precautionary savings.

Financial socialization also increases the likelihood of having financial products such as stocks, bonds or mutual funds (Column 5). Indeed, financial socialization received early in life influences individuals' awareness in the financial domain, fostering their competence in taking financial decisions during adulthood. This confirms previous results by Shim *et al.* (2009), who show that individuals who are confident with their financial transactions tend to have sufficient guidance from their parents since childhood, in addition to basic financial knowledge acquired from different sources.

Our results indicate that an increase in self-control boosts the propensity to have money in retirement accounts by 9 percent, possibly because respondents with good self-control exhibit a higher preference for saving rather than spending left-over-money. They may find it less costly to reduce their current consumption in order to stick to their long-term financial plans.

Apart from being positively associated with the willingness to have retirement accounts, self-control positively affects the probability of having financial assets. Overall, results reported in Table 4 confirm previous research showing that individuals with high levels of self-control have better general financial behavior (Strömbäck *et al*., 2017). Nevertheless, it seems that financial socialization is more important than self-control for explaining financial assets ownership. We point out that in these specifications the coefficient estimates of financial socialization measure the direct effect, whereas the corresponding ones for self-control gather its effect plus the indirect effect of financial socialization. Since the marginal effect for the net impact of financial socialization is larger than the one for self-control, we have some evidence that financial knowledge matters more than self-control problems for holding financial assets. However, in the case of retirement savings, the size of both effects is roughly similar. Our findings presented in Table 4 also indicate interesting correlations among financial products and services and several socio-demographic factors, which we discuss hereafter.

Checking accounts

Having a checking account is a first step towards building a financial identity, which leads to further access to financial products and services (Hogarth *et al*., 2004). Checking accounts mainly exist to allow consumers instant access to cash and withdraw money, to pay bills, and for other everyday basic consumer financial needs. Indeed, holding checking accounts is widespread in our sample and it requires no specific financial skill or effort to exercise self-control. Even so, we find that some control variables are significantly related with the likelihood of having checking accounts. For instance, individuals who have higher education, rich income levels and those who own their home are more likely to have checking accounts. Such characteristics may help them to feel more comfortable in the banking system. Conversely, we find that the self-employed are less likely to hold checking accounts, possibly because of their stronger preferences for the privacy of their financial records (Hogarth *et al*., 2004).

Educational loans

Educational loans have become an important source of financial support for US households after the growing increase in higher education tuition prices (Fan and Chatterjee, 2018). Our results indicate that individuals older than 69 have 12 percent lower probability of asking for educational loans. Our reference group consists of working-age individuals, who may be more likely to take out educational loans in the wake of the last recession, possibly to boost their own employment prospects. Individuals may also take out loans to help finance for their children's college tuition rather than to fund their own education. We find that married individuals have larger loans compared to non-married individuals. Notice that, among the financial products and services considered in Table 4, being married is statistically significant only for this outcome variable. Married individuals are usually more constrained by their social networks, so that they may be more interested in achieving a wide range of educational opportunities (for themselves or for their children) which can ultimately influence their wealth and labor market participation. We find that low-income households are less likely to borrow for education. Educational loans must be repaid to avoid harsh penalties; for this reason, low-income households may wish to limit debt for fear of not succeeding in repaying it (Cowan, 2016).

Life or health insurance

We find that women are more likely to have insurances, probably because they are more risk averse than men and, consequently, make safer choices (Luciano *et al*., 2016). Interestingly, insurances ownership is positively related with college education. More educated individuals may

have a stronger desire to protect family members, that is, a higher intensity of the bequest motive (Truett and Truett, 1990). Other variables that explain the ownership of insurances are occupational status and income, which means that socioeconomic factors are important determinants of policy insurance holdings. Furthermore, decisions about insurances are strongly and positively correlated with home ownership. Indeed, many home mortgages include or require some life insurance (Gandolfi and Miners, 1996), all of which could explain the positive effect of home ownership on the dependent variable presented in Column 3. As for geographical differences, our results show that people in the South exhibit a lower likelihood of having life or health insurances in comparison to those living in the Northeast.

Retirement accounts

Demographics are also strongly associated with the probability of having retirement accounts. Older individuals, with high education or income and homeowners are more likely to have retirement accounts. Conversely, being female decreases the probability of having such financial products. Household responsibilities among women may negatively affect their labor market participation, lowering their possibilities to obtain work-provided benefits such as employer-sponsored retirement plans.

Financial assets

Several variables, including age, gender, education and health status of respondents are significant determinants of financial assets ownership. Assets holding increases with age and income, while females are 5.9 percent less likely to have stocks, bonds or mutual funds. As expected, college educated are more likely to own these financial products. Indeed, holding income constant, higher education implies steeper income profiles than would be indicated by the income variable alone (Gandolfi and Miners, 1996). The absence of dependent children and the dummy variable for good health also show positive relationships with financial assets ownership. Interestingly, we find that people living in the Midwest have a higher probability of holding financial assets.

TABLE 4 ABOUT HERE

5.2. Saving strategies

Finally, we investigate the association between financial socialization, self-control and the decision to save through different saving strategies. To this end, we consider the same specification described in Equation (1), where now the dependent variable *saving habits* is replaced by the outcome

variables on saving strategies presented in Sub-section 3.1.1 (*automated retirement* and *automated non retirement*). One could proceed modelling both outcomes separately. However, it is possible that decisions to save through different saving strategies may be jointly determined. Therefore, we use a seemingly unrelated bivariate Probit model (SUR-Biprobit), which allows for the simultaneous estimation of the correlation structure between the dependent variables and the regression coefficients. The relatedness between the two outcomes occurs via correlation of the errors that appears in the index-function model formulation of the binary outcome model. Specifically, the two outcomes are determined by a system of two equations:

$$\begin{cases} Automated\ retirement_i = \beta_0 + \beta_1 financial\ soc_i + \beta_2 self control_i + X_i'\gamma + \varepsilon_i \\ Automated\ non\ retirement_i = \beta_0 + \beta_1 financial\ soc_i + \beta_2 self control_i + X_i'\gamma + \omega_i \end{cases} \quad (5)$$

where the errors ε_i and ω_i are jointly normally distributed with mean zero, variance one, and correlations ρ. The model is jointly estimated by Full Information Maximum Likelihood. It collapses to two separate Probit models if $\rho = 0$.

Table 5 reports the results from the model on the decisions to save through an automated retirement account (Column 1) and an automated non-retirement account (Column 2). It might happen that a problem of reverse causality is present in the model specified in Equation (5). More specifically, it could be the case that the decision to save automatically acts as a commitment device that lowers perceived self-control problems. This notwithstanding, we are not claiming that our results should be given a causal interpretation. Even so, the correlation patterns between automated types of savings and the explanatory variables remain of great interest.

Results reported in Table 5 suggest that both financial socialization and self-control are positively and significantly associated with the decision to automatically transfer savings to both retirement and non-retirement accounts. Interestingly, the magnitude of the two effects is about the same. As argued before, we recall that the coefficient for financial socialization just measures the direct effect whereas the one for self-control also includes the indirect effect of financial socialization. Hence, from the marginal effects we cannot conclude which of the two dimensions weighs more.

Common strategies for self-control management rely on the use of automatic transfers from current accounts to saving accounts (Webley and Nyhus, 2006). This would imply that people with high self-control would have a low demand for automated accounts. We find the opposite, which suggests that in our sample those who exhibit high self-control are more likely to invest in any types of financial instruments, choosing also committed devices. In turn, this may indicate that the role of self-control in predicting financial decisions is mainly via the development of conscientiousness and

future orientation among individuals. We are cautious when interpreting this result since our measure of this dimension is not specifically defined in the finance domain. Even though NFWBS measures the financial well-being of the US population, so that our self-control measure can be regarded as a valuable proxy for self-control problems, it might be the case that its estimated effect is confounded with other factors. Regarding the socio-demographic variables, an interesting result is that people in middle and elder age display a lower likelihood of having automated savings, either for retirement or for other purposes. Accordingly, automated savings appear to be more common among individuals under 55. A possible explanation is the following: if we consider automated savings to be a way of commitment for leaving some money aside for the future, people over 55 might be more concerned about the present due to having fewer years of life ahead. This does not mean they do not save money, but that at least they do not do it automatically.

Whilst males are more likely to hold automated non-retirement accounts, married people are less likely to have automated savings for retirement. Interestingly, self-employed people are less likely to hold automated savings, either for retirement or for non-retirement purposes. Conversely, both kinds of automated savings are more widespread among highly educated people. People in good health conditions display a higher probability of transferring money automatically to retirement accounts. As could be expected, the probability of saving automatically is higher among high income people and home owners. Everything else being equal, these individuals have higher chances for saving and thus a higher likelihood of transferring savings in an automated way.

Table 5 also presents the estimated tetrachoric correlation (ρ) between the error terms, which is significantly different from zero. This suggests that those who automatically save for retirement also transfer some automated savings for other purposes. Thus, the decisions to save through different saving products share some common unobservables that, in case of not accounting for, would lead to biased parameter estimates.

TABLE 5 ABOUT HERE

6. CONCLUSIONS

This paper contributes to the growing empirical literature on the determinants of saving behavior by exploring the role of financial socialization and self-control on saving decisions. Using novel data from the US, we have firstly assessed the direct and indirect linkages between financial socialization and saving habits using the KHB decomposition method. Consistently with our expectations, our results show that financial socialization does not only have a direct positive effect

on the probability of saving money as a regular habit, but also an indirect positive one by means of increasing self-control. Hence, there are two different channels by which higher financial socialization is linked with a higher likelihood of developing saving as a habit. These findings clearly suggest that financial socialization received in young age has significant direct and indirect effects on respondents' saving habits.

We have further explored the relationship between financial socialization, self-control and different types of financial products using a multivariate framework that controls for the presence of shared unobserved heterogeneity among variables. Our results from this analysis suggest that the relevance of financial socialization depends on the type of financial product being examined. People who received financial education at home, either through teachings about money or by direct exposure to financial instruments, are more likely to hold insurances, retirement accounts and financial assets. However, the tenure of educational loans of checking accounts is not related to teachings received from family. Similarly, people with high self-control scores are more likely to hold retirement accounts and financial assets, whereas this variable is not significant for explaining the ownership of the other types of assets.

Finally, we have examined the determinants of automated retirement and non-retirement saving accounts. Interestingly, we find that both financial socialization and self-control are significantly and positively related with the decision to automatically transfer savings to both types of automated saving accounts.

In our regressions, we have controlled for several demographic and socio-economic characteristics. Our findings are robust to different definitions of our variables of interest. We highlight the fact that our measure of financial socialization is broader than the ones previously used in the literature. Our indicator does not only consider 'theoretical' teachings about good financial behavior but also 'practical' teachings about how to manage a regular allowance. We believe that financial socialization is better identified with our measure than it was in earlier research.

Overall, our results support the role of parental socialization and self-control as important drivers of saving behavior. As indicated earlier, we are cautious when interpreting the effect of self-control on saving decisions since our measure of this dimension might not be totally representative of self-control in the finance domain.

Our results have relevant policy implications. Since we provide robust evidence of financial socialization and self-control being two important drivers of financial behavior, it seems that parents should place greater attention on the economic-related teachings given to their children. This is especially important as higher self-control appears also to be an intermediate outcome of parental teachings received in young age. Knowing that self-control skills matter not only for financial

behaviors, but also for consumer choices, interpersonal relationships and emotional problems, improving financial socialization practices warrants additional emphasis. Making children participate in household discussions about every day financial decisions, stressing them the importance of saving and to adjust their expenditures to the budget constraint, or managing a regular allowance early in childhood are some examples of financial socialization practices parents should put into action with their children.

Nevertheless, our study has some limitations that should be pointed out. The main limitation is that it our measure of self-control is self-reported, and this is not free of bias. People may overestimate their capacity to control themselves. Future research might try to replicate our analysis by means of experimental protocols that elicit self-control in a more objective way. Another drawback is that we lack information on individual's risk aversion and non-cognitive abilities other than self-control (i.e. patience and temperament), which could also be relevant for characterizing the saving pattern behavior. In addition, our study relies on cross-sectional data. A valuable avenue for further research could be to examine the role of financial socialization and self-control using longitudinal data, which could provide further insights into the dynamics of these variables and financial behavior. Further research may also compare how saving habits and experiences vary by gender. This would be beneficial to provide a better understanding of the determinants of financial decisions. In addition, it might be interesting to explore the relationship between financial socialization, self-control and other relevant dimensions such as future orientation.

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Table 1. Descriptive statistics

	Mean	**Std. dev.**	**Min.**	**Max.**
Outcome variables				
Saving habits	0.550	0.498	0	1
Life or health insurance	0.803	0.398	0	1
Retirement accounts	0.711	0.453	0	1
Financial assets	0.344	0.475	0	1
Educational loans	0.203	0.402	0	1
Checking accounts	0.876	0.329	0	1
Automated retirement	0.431	0.495	0	1
Automated non retirement	0.419	0.493	0	1
Main variables				
Financial socialization	0.545	0.328	0	1
Self-control	0.802	0.293	0	1
Control variables				
Age: 18-34	0.204	0.403	0	1
Age: 55-69	0.274	0.446	0	1
Age: > 69	0.194	0.396	0	1
Female	0.460	0.498	0	1
Married	0.557	0.497	0	1
No dependent children	0.641	0.480	0	1
College	0.422	0.494	0	1
Self-employed	0.067	0.250	0	1
Good health	0.501	0.500	0	1
Income <30k	0.212	0.409	0	1
Income >100k	0.301	0.459	0	1
Home owner	0.674	0.469	0	1
Area: Midwest	0.216	0.412	0	1
Area: South	0.357	0.479	0	1
Area: West	0.234	0.423	0	1

Note: The final sample includes 2,854 individuals interviewed in year 2016. All the variables are dummy apart from self-control and financial socialization.

Table 2. Saving habits

	(1)	(2)	(3)	(4)
	Saving habits		**Saving habits**	
	Coefficient	**Marginal effect**	**Coefficient**	**Marginal effect**
Financial socialization	0.564***	0.200***	0.430***	0.144***
	(0.078)	(0.027)	(0.081)	(0.027)
Self-control			1.254***	0.419***
			(0.095)	(0.029)
Age: 18-34	0.012	0.004	0.011	0.004
	(0.073)	(0.026)	(0.075)	(0.025)
Age: 55-69	0.111*	0.039*	0.068	0.023
	(0.067)	(0.024)	(0.069)	(0.023)
Age: >69	0.059	0.021	-0.018	-0.006
	(0.077)	(0.027)	(0.079)	(0.026)
Female	-0.093*	-0.033*	-0.099*	-0.033*
	(0.051)	(0.018)	(0.052)	(0.018)
Married	0.014	0.005	-0.016	-0.005
	(0.055)	(0.020)	(0.057)	(0.019)
No dependent children	0.159***	0.056***	0.178***	0.060***
	(0.057)	(0.020)	(0.059)	(0.020)
College	0.161***	0.057***	0.135**	0.045**
	(0.056)	(0.020)	(0.057)	(0.019)
Self-employed	-0.294***	-0.104***	-0.317***	-0.106***
	(0.101)	(0.035)	(0.103)	(0.034)
Good health	0.303***	0.107***	0.199***	0.067***
	(0.051)	(0.018)	(0.053)	(0.017)
Income <30k	-0.211***	-0.075***	-0.196***	-0.066***
	(0.069)	(0.024)	(0.070)	(0.023)
Income >100k	0.311***	0.110***	0.310***	0.104***
	(0.062)	(0.022)	(0.063)	(0.021)
Home owner	0.315***	0.112***	0.248***	0.083***
	(0.060)	(0.021)	(0.062)	(0.021)
Area: Midwest	-0.043	-0.015	-0.078	-0.026
	(0.077)	(0.027)	(0.079)	(0.026)
Area: South	0.101	0.036	0.048	0.016
	(0.069)	(0.025)	(0.071)	(0.024)
Area: West	0.105	0.037	0.067	0.022
	(0.076)	(0.027)	(0.078)	(0.026)
Log-Likelihood	-1772.539		-1680.103	
Pseudo R-squared	0.097		0.145	
Avg. dependent variable	0.550		0.550	
Observations	2,854	2,854	2,854	2,854

Note: Probit analysis, coefficients (Columns 1 and 3) and average marginal effects (Columns 2 and 4) reported. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels respectively**.** Reference groups are: age between 35 and 54 (age), less than college (education), other employments (occupational status), medium income (income), house renter (housing property), Northeast (area of residence).

Table 3. Mediation analysis

Saving habits	Coefficient	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
Financial socialization						
(Total) Reduced	0.597	0.081	7.41	0.000	0.440	0.755
(Direct) Full	0.430	0.081	5.32	0.000	0.272	0.588
(Indirect) Diff	0.167	0.024	6.92	0.000	0.120	0.215

Note: Total, direct and indirect effects of financial socialization on saving habits. The mediator in the indirect effect is self-control.

Table 4. Financial products and services

	(1) Checking accounts	(2) Educational loans	3) Insurance	(4) Retirement accounts	(5) Financial assets
Financial socialization	0.015	-0.011	0.055**	0.087***	0.123***
	(0.018)	(0.022)	(0.022)	(0.021)	(0.025)
Self-control	0.021	-0.017	0.013	0.090***	0.076**
	(0.020)	(0.025)	(0.024)	(0.023)	(0.030)
Age: 18-34	0.005	0.108***	-0.010	-0.051***	-0.024
	(0.017)	(0.017)	(0.020)	(0.019)	(0.024)
Age: 55-69	0.019	-0.120***	0.015	0.090***	0.079***
	(0.016)	(0.019)	(0.019)	(0.019)	(0.021)
Age: >69	0.005	-0.126***	0.037*	0.088***	0.157***
	(0.018)	(0.024)	(0.022)	(0.022)	(0.023)
Female	-0.001	0.019	0.040***	-0.034**	-0.059***
	(0.012)	(0.014)	(0.014)	(0.014)	(0.016)
Married	0.019	0.047***	0.023	0.002	-0.028
	(0.013)	(0.016)	(0.015)	(0.015)	(0.018)
No dependent children	0.018	-0.115***	-0.004	0.043***	0.066***
	(0.013)	(0.015)	(0.016)	(0.016)	(0.018)
College	0.060***	0.145***	0.073***	0.133***	0.146***
	(0.014)	(0.015)	(0.016)	(0.016)	(0.016)
Self-employed	-0.056***	-0.003	-0.091***	-0.182***	0.003
	(0.021)	(0.026)	(0.026)	(0.026)	(0.031)
Good health	0.010	0.022	0.020	0.025*	0.050***
	(0.012)	(0.014)	(0.015)	(0.015)	(0.016)
Income <30k	-0.088***	-0.075***	-0.138***	-0.200***	-0.136***
	(0.014)	(0.021)	(0.017)	(0.016)	(0.025)
Income >100k	0.033**	0.037**	0.049***	0.103***	0.130***
	(0.017)	(0.016)	(0.019)	(0.019)	(0.018)
Home owner	0.055***	-0.064***	0.092***	0.147***	0.170***
	(0.014)	(0.017)	(0.016)	(0.015)	(0.020)
Area: Midwest	0.023	0.011	-0.013	0.017	0.064***
	(0.018)	(0.021)	(0.022)	(0.022)	(0.024)
Area: South	0.008	0.001	-0.040**	-0.033*	0.034
	(0.016)	(0.019)	(0.020)	(0.019)	(0.022)
Area: West	0.020	-0.034	-0.041*	-0.015	0.028
	(0.018)	(0.021)	(0.021)	(0.021)	(0.024)
ρ12	0.221***				
ρ13	0.400***				
ρ14	0.218***				
ρ15	0.210***				
ρ23	0.276***				
ρ24	0.118***				
ρ25	0.036				
ρ34	0.406***				
ρ35	0.207***				
ρ45	0.368***				
Log-Likelihood			-5825.552		
Pseudo R-squared			0.155		
Avg. dependent variable	0.876	0.203	0.803	0.711	0.344
Observations	2,854	2,854	2,854	2,854	2,854

Note: Multivariate Probit analysis, average marginal effects reported. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels respectively**.** Reference groups are: age between 35 and 54 (age), less than college (education), other employments (occupational status), medium income (income), house renter (housing property), Northeast (area of residence).

Table 5. Saving strategies

	(1) Automated retirement account		(2) Automated non retirement account
Financial socialization	0.095***		0.106***
	(0.026)		(0.028)
Self-control	0.139***		0.140***
	(0.030)		(0.032)
Age: 18-34	-0.031		-0.004
	(0.023)		(0.026)
Age: 55-69	-0.155***		-0.043*
	(0.021)		(0.024)
Age: >69	-0.335***		-0.078***
	(0.025)		(0.028)
Female	-0.015		-0.037**
	(0.017)		(0.018)
Married	-0.036**		-0.002
	(0.018)		(0.020)
No dependent children	-0.013		0.016
	(0.018)		(0.020)
College	0.096***		0.044**
	(0.018)		(0.020)
Self-employed	-0.220***		-0.065*
	(0.035)		(0.037)
Good health	0.045***		0.014
	(0.017)		(0.019)
Income <30k	-0.239***		-0.172***
	(0.024)		(0.026)
Income >100k	0.112***		0.078***
	(0.019)		(0.022)
Home owner	0.077***		0.062***
	(0.021)		(0.022)
Area: Midwest	0.024		-0.000
	(0.025)		(0.027)
Area: South	0.010		0.018
	(0.022)		(0.025)
Area: West	0.008		0.055**
	(0.024)		(0.027)
Rho (ρ)		0.455***	
Log-Likelihood		-3258.776	
Pseudo R-squared		0.119	
Avg. dependent variable	0.431		0.419
Observations	2,854		2,854

Note: Bivariate Probit analysis, average marginal effects reported. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels respectively**.** Reference groups are: age between 35 and 54 (age), less than college (education), other employments (occupational status), medium income (income), house renter (housing property), Northeast (area of residence).

APPENDIX

A. NFWBS: exact wording of the questions

A.1. Financial products and services

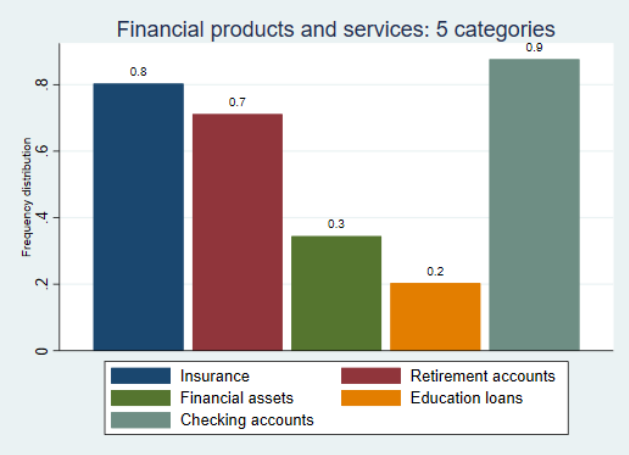
The NFWBS asks respondents to select which financial products and services they currently have from an exhaustive list including checking or savings accounts, life or health insurance, retirement or pension account, non-retirement investments and education loan. The exact wording of the questions and the distribution of responses is reported in Table A.1. We grouped categories 2 and 3 in a variable representing "Insurance", categories 4 and 5 in a variable representing "Retirement accounts" and categories 7 and 8 in a variable representing "Educational loans". We model each category as a binary variable taking the value one if the respondent currently holds the specific financial product or service, and zero otherwise.

Table A.1. Financial products and services

[NFWBS variable name: PRODHAVE]
Question: *"Which of the following financial products and services do you currently have?"*
Possible answers: *"Yes"*; *"No"*

		Answer: *"Yes"* *N (fraction)*
1	Checking or Savings Account at a bank or credit union	2,501 *(0.87)*
2	Life Insurance	1,555 *(0.54)*
3	Health Insurance	2,104 *(0.74)*
4	Retirement Account (such as a 401k or IRA)	1,765 *(0.61)*
5	Pension	1,043 *(0.36)*
6	Non-Retirement Investments (such as stocks, bonds or mutual funds)	983 *(0.34)*
7	Education Savings Account (such as 529 or Coverdale)	202 *(0.07)*
8	Student/Education Loan (for yourself or someone else)	421 *(0.15)*
	Respondent did not select any item in PRODHAVE bank	87 *(0.03)*

Note: The final sample includes 2,854 individuals interviewed in year 2016



A.2. Saving strategies

Table A.2. Saving strategies

[NFWBS variable name: PRODHAVE]
Question: "Do you currently have money automatically transferred to:"
Possible answers: *"Yes"*; *"No"; "I do not have this type of account"*

		Answer: *"Yes"* *N (fraction)*
1	A Retirement Savings Account	1,230 *(0.43)*
2	A Non-Retirement Savings Account	1,196 *(0.41)*

Note: The final sample includes 2,854 individuals interviewed in year 2016

A.3. Financial socialization

Table A.3. Financial socialization

[NFWBS variable name: FINSOC2]
Question: *"While growing up at home, did your family do any of the following?"*
Possible answers: *"Yes"*; *"No"*

		Answer: *"Yes"* *N (fraction)*
1	Discussed family financial matters with me	972 *(0.34)*
2	Spoke to me about the importance of saving	1,854 *(0.65)*
3	Discussed how to establish a good credit rating	1,013 *(0.35)*
4	Taught me how to be a smart shopper	1,724 *(0.60)*
5	Taught me that my actions determine my success in life	2,120 *(0.74)*
6	Provided me with a regular allowance	1,141 *(0.40)*
7	Provided me with a savings account	1,211 *(0.42)*

Note: The final sample includes 2,854 individuals interviewed in year 2016

B. Robustness checks on saving habits: estimation results

Table A.4. Robustness checks

	(1) Saving habits	(2) Saving habits	(3) Saving habits	(4) Saving habits	(5) Saving habits
Financial socialization	0.172***				0.138***
	(0.027)				(0.036)
Financial socialization: std 0-7				0.155***	
				(0.028)	
Financial socialization: items 1-5		0.115***			
		(0.023)			
Financial socialization: items 6-7			0.108***		
			(0.027)		
Self-control		0.419***	0.440***	0.421***	0.390***
		(0.029)	(0.029)	(0.029)	(0.038)
Self-control: resisting temptation	0.217***				
	(0.020)				
Age: 18-34	0.008	0.005	0.009	0.002	-0.003
	(0.025)	(0.025)	(0.025)	(0.025)	(0.026)
Age: 55-69	0.028	0.022	0.023	0.024	
	(0.023)	(0.023)	(0.023)	(0.023)	
Age: >69	-0.006	-0.008	-0.001	-0.003	
	(0.027)	(0.026)	(0.027)	(0.026)	
Female	-0.029*	-0.034*	-0.032*	-0.032*	0.119***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.031)
Married	-0.002	-0.006	-0.007	-0.005	-0.003
	(0.019)	(0.019)	(0.019)	(0.019)	(0.026)
No dependent children	0.060***	0.061***	0.059***	0.058***	-0.058**
	(0.020)	(0.020)	(0.020)	(0.020)	(0.024)
College	0.059***	0.048**	0.046**	0.043**	0.007
	(0.019)	(0.019)	(0.019)	(0.019)	(0.027)
Self-employed	-0.101***	-0.107***	-0.103***	-0.105***	0.059**
	(0.035)	(0.034)	(0.034)	(0.034)	(0.025)
Good health	0.084***	0.068***	0.068***	0.065***	0.059**
	(0.018)	(0.018)	(0.018)	(0.018)	(0.026)
Income <30k	-0.080***	-0.068***	-0.068***	-0.065***	-0.038
	(0.024)	(0.023)	(0.023)	(0.023)	(0.033)
Income >100k	0.112***	0.105***	0.105***	0.103***	0.099***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.028)
Home owner	0.097***	0.084***	0.081***	0.082***	0.068**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.027)
Area: Midwest	-0.022	-0.027	-0.029	-0.027	
	(0.027)	(0.026)	(0.026)	(0.026)	
Area: South	0.024	0.015	0.017	0.016	
	(0.024)	(0.024)	(0.024)	(0.024)	
Area: West	0.025	0.022	0.016	0.022	
	(0.026)	(0.026)	(0.026)	(0.026)	
Log-Likelihood	-1716.850	-1681.705	-1686.673	-1679.608	-891.742
Pseudo R-squared	0.126	0.144	0.141	0.145	0.151
Avg. dependent variable	0.550	0.550	0.550	0.550	0.526
Observations	2,854	2,854	2,854	2,854	1,518

Note: Univariate Probit analysis, average marginal effects reported. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels respectively**.** In Column 1 we replace our self-control index with an alternative binary variable representing the likelihood of resisting temptation. In Columns 2-4 we replace the original financial socialization index by alternative definitions as described in Sub-section 4.2. Column 5 reports regression results for a subsample of respondents younger than 50.