

Evaluating the influence of parents on children's saving behavior in the Netherlands.

Leonie Claus, s2771519

Master Thesis

University of Groningen

Supervisor: prof. dr. B.W. Lensink

Word count: 11,425

07/06/2018

Abstract

The determinants of saving behavior is gaining importance since individuals are made more responsible for their own savings. Research suggests that parents play a substantial role in teaching children about the importance of savings through social interaction (Webley and Nyhus, 2006; Danes and Haberman, 2007; Buccioli and Veronesi, 2014). This paper evaluates the effect of parental financial interaction on children's saving behavior. In addition, this paper investigates the relationship between receiving parental financial advice as a child and saving behavior when taking into account a child's education and financial literacy as mediators. This research is achieved by exploiting data from the DNB Household survey and using a generalised least squares model to investigate this data. This paper found that parents are indeed able to influence their children's saving behavior by providing financial advice, providing pocket money, allowing spending freedom and stimulating to save. Furthermore, a higher level of financial literacy has a negative effect on the relationship between received parental advice as a child and the desire to save in the future. Meaning that parental advice has a greater positive influence on saving behavior for respondents who are not financially literate compared to respondents who are. To conclude, this paper shows that parents have a significant influence on the saving behavior of their children.

Keywords: DNB Household Survey, saving behavior, panel study

1. Introduction

This paper is of importance since it investigates whether parents are able to influence children's saving behavior. Saving can be seen as an important financial decision because it postpones consumption to the future in order to be able to enjoy certain benefits in the future. These benefits could be saving for an early retirement, saving for college, saving for unforeseen costs and more. It is important to investigate the determinants of saving behavior and how this behavior can be influenced because individuals are made more responsible for their own savings. For example, the privatization of social security (Poterba, Venti and Wise, 2007; SER, 2000). As a result, individuals are confronted with a significant amount of financial decisions. Furthermore, these financial decisions are becoming more complicated since individuals are confronted with a substantial amount of different financial products that for example, could be used in order to save for retirement (Lusardi and Mitchell, 2007). Thus, the determinants of saving behavior and basic financial knowledge are gaining importance.

In addition, savings can help manage vulnerability through a protective function. For instance, by exploiting savings in order to be able to pay unforeseen expenses and thus, use savings as an insurance mechanism to absorb shocks (Hulme, Moore and Barrientos, 2009). This insurance role of savings makes it an important factor of the economic and financial wellbeing of individuals and households. In line with the previous argument, Cronqvist and Siegel (2015) indicate that the individual's propensity to save is an important determinant of the variation in accumulated wealth (e.g. retirement savings) across people.

Several researchers indicate that people's preferences, such as saving behavior, is an outcome of natural selection and thus, it is partly determined by genes. For example, these studies found evidence that suggests that time preferences and risk preferences are indeed partly genetic (Carpenter, Garcia and Lum, 2011; Zhang, Brennan and Lo, 2014). Furthermore, Cronqvist and Siegel (2015) exploited data from the Swedish twin Registry and found that genes can explain 33 percent of the variation in savings. In contrast, research has also indicated that behavioral factors, especially self-control and discipline, can greatly affect individuals' saving behavior (Madrian and Shea, 2001). However, genes could influence part of these behavioral factors as well. Finally, saving behavior can also be affected through social interaction with for example, family and friends (Webley and Nyhus, 2006; Danes and Haberman, 2007; Bucciol and Veronesi, 2014). Bisin and Verdier (2001) indicate that parents exert costly effort, such as giving pocket money and opening a savings account, in order to teach their children about money and savings. However, they also state that this effort could be caused by parents trying to instill their personal preferences into their children instead of altruism.

In this paper, the focus will be on the social interaction with parents as a determinant of saving behavior. This is achieved by investigating the effect of receiving advice, pocket

money and stimulation to save from parents on children's saving behavior as adults. Moreover, the effect of having to do chores for money and being able to spend money freely on children's saving behavior is also considered. Therefore, this study is valuable since it adds to the scarce research on the effect of the five parental influences described above on children's saving behavior as adults. In addition, this paper will add value by investigating the relationship between receiving parental advice and children's saving behavior when taking into account children's own knowledge as a mediator. Meaning that an individual responds less to the parental advice received as a child if this individual becomes highly educated or financially literate as an adult (Yaniv, 2004). The effect of such mediators, based on children's characteristics, has not been investigated in earlier research and can help explain how parents influence the saving preferences of their children.

The paper will be organized as follows. Firstly, the existing literature will be discussed and hypotheses will be formulated. Secondly, the data and methodology used will be examined. Thirdly, the results will be discussed. Finally, a conclusion including limitations will be provided.

2. Literature overview and hypotheses

2.1. The influence of parents on children's financial behavior

To begin with, Bowen (1993) states that family members are able to observe other family members and that one family member is able to influence the entire family system. This idea is generated from Bowen's family systems theory that views the family as one connected unit. This theory suggests that family members can affect other members' feelings, ideas and actions. Moreover, family members want approval and support from the other family members. As a result, Bowen's family system theory suggests that family members are profoundly affected by each other and thus, parents, as part of the family unit, have an ability to influence their children. In accordance with Bowen (1993), Danes and Haberman (2007) state that families are an informal environment in which parents teach children skills, norms and attitudes by interacting with them. Moreover, they indicate that children are able to discover their family's view on financial decisions through these interactions. Therefore, parents should have the ability to influence and shape their children's financial behavior.

Webley and Nyhus (2006) studied the impact of parental financial behavior, such as saving preferences and planning horizon, on children's saving behavior. They discuss four mechanisms through which parents influence their children's financial behavior, namely modeling, guidance, habit formation and independence. These mechanisms will be discussed below.

Firstly, modeling means that parents serve as a role model for their children (Webley and Nyhus, 2006). This would indicate that children would be more prone to save if their parents

have a substantial amount of savings. Webley and Nyhus (2006) found that parents' economic socialization, income and household savings significantly affect children's savings. Especially the amount of household savings is highly significant and indicates that children's savings increase when the household savings increase. They used data obtained from three waves, meaning three years, of the DNB Household Survey in order to investigate the influence of parents on children. Furthermore, Hibbert, Beutler and Martin (2004) state that students who experienced more financial prudent behavior in their family tended to experience lower levels of financial strain. Therefore, they indicate that parents set an example by living within income and saving money. Thus, parents are able to teach their children those same financial practices. As a result, children might put a substantial weight on advice received from their parents since parents serve as their role model (Webley and Nyhus, 2006). Furthermore, children might feel more inspired to save if their parents, their role model, stimulate this idea of saving. As a result, receiving parental financial advice and stimulation to save as a child can influence saving behavior through this modeling mechanism.

Secondly, the guidance mechanism indicates that children who are involved in financial decision making by their parents, through discussions, will be better equipped to make financial decisions for themselves in the future (Webley and Nyhus, 2006). Bucciol and Veronesi (2014) examined the relationship between parental financial teaching and children's saving behavior utilizing the DNB Household survey. They found that parental teaching increased the preference to save as an adult by 14% and the amount saved by 23%. Furthermore, Jorgensen and Savla (2010) found that parents were able to significantly influence their children's financial behavior through discussions and giving advice. However, they also indicate that discussions and advice do not have a statistically significant effect on financial knowledge. The data was obtained from an online survey and contained 420 American college students. As a result, children might be influenced by receiving parental advice since parents make them feel involved in financial decisions this way. (Webley and Nyhus, 2006). As a result, receiving parental financial advice as a child can influence saving behavior through this guidance mechanism.

Thirdly, habit formation states that children who have been making a financial decision repeatedly since a young age, such as putting money on a bank account, are more likely to still exhibit this behavior in the future (Webley and Nyhus, 2006). Pocket money and having to do paid chores can be seen as parts of this habit formation mechanism since it will allow children to have their own money and spend it on a regular basis. Marshall and Magruder (1960) evaluate how pocket money affects children's knowledge of money. Their research is based on data obtained from 512 randomly selected children from Kentucky. To evaluate the effect of pocket money they performed interviews, calculated a money score based on the amount of correctly answered questions and performed a coin test where children had to indicate what they could buy with certain coins. Marshall and Magruder (1960) state that

children who receive pocket money have a substantial higher knowledge of money compared to children who did not receive pocket money. However, Buccioli and Veronesi (2014) state that they do not find significant results for the effect of pocket money on saving behavior because pocket money is not contingent to other responsibilities. Therefore, they indicate that performing chores as a child could lead to a significant effect on saving behavior since in this case the money received is contingent to the responsibility of doing the chores. Additionally, Marshall and Magruder (1960) found a significant influence of paid chores on children's knowledge of money. As a result, receiving pocket money and having to do chores as a child has a positive influence on saving behavior through the habit formation mechanism discussed by Webley and Nyhus (2006).

Finally, the independence mechanism implies that children who are allowed to make their own financial decisions learn valuable skills through trial and error (Webley and Nyhus, 2006). These financial skills can be exploited to make decisions regarding savings in the future. Having spending freedom as a child can be considered part of this independence mechanism, since it will allow children to spend their money the way they want to and to learn from this. Marshall and Magruder (1960) denote that children who receive money to spend themselves have more knowledge of money than children who do not spend money themselves. Moreover, their research indicates that the knowledge of money is related to the amount of experience they are able to get using their pocket money. Thus the more they are able to experiment with their money, the more they will learn. However, Buccioli and Veronesi (2014) find that controlling spending as a parent increases the preference to save by 15.2 percent and total savings by 30.6 percent. As a result, there seem to be mixed results of the effect of spending freedom on saving behavior.

As a result, the theoretical and empirical papers discussed above suggest that parents are able to influence their children's saving behavior. Therefore, the following hypothesis is developed.

H1: Parental financial interaction will have a positive effect on children's saving behavior as adults.

2.2. The interactions between receiving parental advice and children's knowledge

This section will discuss several interactions between parental advice and a child's level of education and financial literacy as an adult. Yaniv (2004) introduced a theoretical framework to explain the influence of advice. It was stated that individuals weigh their own opinion as more important than those of others, such as advisors or family members. This is especially the case when there is a significant distance between their own opinion and the advisor's opinion. This is based on the idea that an individual can assess his own knowledge, but cannot

assess the knowledge of the advisor. Yaniv (2004) indicates that this relationship is especially strong when the individual is highly educated and thus, believes more in him- or herself. This leads to a lower ability to accept a distant opinion of someone else. Therefore, parental financial advice, as examined by Bucciol and Veronesi (2014), might not have a substantial positive impact on saving behavior when individuals are highly educated or financial literate. As a result, the following hypotheses are formulated.

H2: A high level of education will have a negative effect on the relationship between received parental financial advice as a child and saving behavior as an adult.

H3: A high level of financial literacy will have a negative effect on the relationship between received parental financial advice as a child and saving behavior as an adult.

2.3. Other factors that influence saving behavior

This section will be used to describe characteristics that affect children's saving behavior, but are not influenced by parents.

Firstly, financial behavior is influenced by gender. Jorgensen and Savla (2010) states that men who learned implicitly from their parents had more financial knowledge than men and women who learned explicitly from their parents. However, women were not significantly affected by how they were taught, implicit or explicit, about financial behavior. Secondly, the level of an individual's education can influence saving behavior. Webley and Nyhus (2006) find that households with a higher level of education tend to have a higher level of bank savings. However, Webley and Nyhus (2006) also indicate that this is not the case for married women due to their low market participation in the Netherlands. Thirdly, saving behavior is influenced by an individual's financial literacy and financial knowledge. Jappelli, and Padula (2013) state that financial literacy is positively correlated with saving. Moreover, Bucciol and Veronesi (2014) indicate that people with superior financial knowledge will experience higher savings since these people know how to allocate their funds better than people without this financial knowledge. Fourthly, risk aversion and risk loving has an impact on saving behavior. Jacobs-Lawson and Hershey (2005) indicate that risk averse individuals are expected to have a higher saving preference than risk loving individuals, since these risk loving individuals will move their funds to more risky assets such as equity stakes. Finally, time preference can impact saving behavior since time preference measures how a participant adjusts for time between different alternatives (Webley and Nyhus, 2006). Webley and Nyhus (2006) state that individuals will be less inclined to save if they prefer outcomes now instead of delaying the outcome to the future.

3. Research Design

3.1. Data

The data needed to investigate the influence of parents on children's saving behavior is obtained from the DNB Household Survey. The DNB Household Survey offers data on psychological and economic aspects of financial behavior in a panel study among 2000 households (centerdata.nl, 2018). They have been active since 1993. The DNB Household Survey provides information about income, possessions, personal characteristics and more (centerdata.nl, 2018). This survey is divided into six parts and is collected on an annual basis. The DNB household survey is set up in such a way that it examined the same individual for a longer time period and thus, research is able to obtain a better idea of a participant's psychological and economic behavior.

The data used in this paper is comprised of two separate questionnaires from the DNB Household survey, namely general information and economic and psychological concepts. The first questionnaire is used to obtain information such as a participant's age or education, while the second one is used to obtain data such as income, savings or personal characteristics. Appendix A provides the questions obtained from each questionnaire. This paper exploits the data available for the years 2004 until 2017. Bucciol and Veronesi (2014) state that surveys obtained before 2000 are not comparable in terms of sample design and before 2000 rich household were represented to a larger extent than poorer households. Furthermore, there is a significant amount of missing data in the years 2000 until 2003 for key variables in this paper and thus, those years are not taken into account. The complete dataset from 2004-2017 is comprised of 65,489 cases. However, due to the aggregation of the two different questionnaires, general information and economic and psychological concepts, there was a substantial amount of cases that only showed data for the variables from the general information questionnaire. The key variables examined in this paper are from the economic and psychological concepts questionnaire and thus, cases with no information on these variables were deleted from the sample. As a result, 44,831 cases were deleted and the dataset is left with 20,658 observations from 7,486 different participants. In this dataset respondents participated, on average, 2.76 times in the survey.

3.2. Descriptive statistics

The descriptive statistics for all the dependent and explanatory variables were calculated and are illustrated in table 1.

Firstly, it can be seen that 71% of the survey participants indicate that they had a preference to save in the past year. Secondly, the average savings are € 5247.38 and corresponds, on average, to 15 percent of yearly net income. Thirdly, the five independent variables illustrate means that are in the middle of the value range. Fourthly, 48% of the respondents are female

which seems to indicate that the data is representative for both genders. Moreover, the average age of the respondents is 50. The youngest participant is 15 years old, while the oldest participant is 93 years old. Furthermore, 58% of the respondents completed high education, 37% completed medium education and the remaining 5% completed lower education. Lower education is under-represented and this is likely to be caused by the developed education system in the Netherlands. In addition, 26% of the respondents view themselves as financially literate, while the remainder identify themselves as being financially illiterate. Finally, respondents have, on average, a score in the middle range for time preference, but respondents seem to be rather risk averse with an average risk aversion score of 31.34 on a scale of 7 to 42.

Table 1: Descriptive statistics for the dependent and independent variables.

This table presents the descriptive statistics of the individual sample of the dependent and independent variables.

	Mean	Median	Standard deviation	Minimum	Maximum	N
<i>Dependent Variables</i>						
Saving preference	0.71	1.00	0.45	0	1	18555
Desire to save in the future	3.28	3.00	0.85	1	4	18109
Savings	5247.38	3250.00	7184.63	750	75000	14236
Savings/income	0.15	0.10	0.30	0	11	13762
<i>Independent Variables</i>						
Parental advice	2.56	3.00	1.05	1	4	20657
Pocket Money	2.72	3.00	1.32	1	4	20657
Chores	2.49	2.00	1.36	1	5	20657
Spending freedom	3.39	3.00	1.29	1	5	20657
Stimulation to Save	2.72	3.00	1.00	1	4	20657
<i>Control Variables</i>						
Gender	0.48	0.00	0.50	0	1	20621
Age	49.57	50.00	16.57	15	93	20621
High Education	0.58	1.00	0.49	0	1	20598
Medium Education	0.37	0.00	0.48	0	1	20598
Lower Education	0.05	0.00	0.22	0	1	20598
Financial Literacy	0.26	0.00	0.44	0	1	20657
Risk Aversion	31.34	31.00	6.09	7	42	17867
Time Preference	2.42	2.00	1.13	1	5	19465

It can be argued that the independent variables are closely related to each other since they all measure certain ways in which parents can influence saving behavior. A correlation matrix is constructed in order to check for near collinearity, meaning that one variable can be written as a function of another variable or other variables. The correlation matrix is presented in appendix B and shows that the variables are not extremely correlated with each other since the highest correlation coefficient is approximately 0.62. Therefore, near collinearity does not seem to be a problem with the data.

3.3. Description of variables

In this section, the variables used in this paper will be described. Appendix A provides a more detailed overview of the construction of the variables and the exact survey questions used by the DNB Household Survey.

3.3.1. Dependent variables

The dependent variable, saving behavior, will be measured in three ways, namely the preference to save, the desire to save in the future and the ratio of yearly savings to income.

Firstly, the preference to save is based on past behavior. It evaluates whether the participant saved money in the past 12 months by asking a dichotomous question [yes or no]. Thus, this variable is a dummy variable and can take the value 1 [yes] or 0 [no]. The construction of this variable is in line with the research of Bucciol and Veronesi (2014) and Webley and Nyhus (2013).

Secondly, the variable desire to save in the near future is similar to the variable saving preference, but this variable evaluates whether the participant is going to put money aside in the next 12 months. This variable can take the values 1 [certainly not], 2 [probably not], 3 [yes, perhaps] and 4 [yes, certainly]. The construction of this variable leads to data on an ordinal scale. However, ordinal scales can be used as interval scales for calculations, when there is a substantial amount of respondents and when there are enough points on the scale (Brooks, 2014). The construction of this variable is in line with the research of Webley and Nyhus (2013).

Finally, the variable savings over income evaluates the amount of yearly savings compared to a participant's yearly net income. This will account for differences in savings due to different wealth levels of participants. Yearly savings is derived from a closed question with seven different brackets by taking the mid points for each bracket. This led to more data points that are also more consistent compared to the data obtained from the open question on savings.

Income is based on yearly net income and is also derived from a closed question with six different brackets by taking the mid points for each bracket.

3.3.2. Independent variables

There are five different independent variables implemented in order to investigate the effect of parental financial interaction on savings. These variables will be referred to as independent variables or parental influence variables throughout the remainder of this paper. Firstly, the variable parental advice measures to what extent a participant received advice from their parents as a child regarding financial decisions. The question used to obtain this information is a closed question that ranges from 1 [received no advice] to 4 [received a substantial amount of advice]. Secondly, the variable pocket money evaluates whether or not the participant received pocket money as a child. This variable can take the values 1 [no], 2 [occasionally], 3 [yes, but sometimes forgotten] and 4 [yes]. Thirdly, the variable chores entails to what extent the participant performed chores in order to get additional money from their parents. This variable ranges from 1 [never] to 5 [often]. Furthermore, the variable spending freedom evaluates to what extent spending was controlled/monitored by the participant's parents. The question used to obtain this information is a closed question that ranges from 1 [parents controlled all spending] to 5 [participant was free to decide his or her own spending]. Finally, the variable stimulation to save evaluates to what extent parents or grandparents stimulated the participant to save as a child. This variable ranges from 1 [not stimulated] to 5 [stimulated saving substantially].

In addition to these individual variables, this paper will implement several interaction variables in order to investigate the relationship between financial advice and saving behavior mediated by the respondent's own knowledge. Therefore, the variable parental advice will be combined with the participant's education and financial literacy.

3.3.3. Control variables

Several control variables are exploited in order to take into account differences in individuals' demographic and financial characteristics. These control variables are age, gender, education, financial literacy, risk aversion and time preference.

To begin with, the variable age measures the participant's age at the beginning of the year as a continuous variable.

Secondly, the variable gender indicates whether the participant is a female [1] or male [0]. This variable is included because Buccioli and Veronesi (2014) found that women have a lower amount of bank savings than men do.

Thirdly, the level of the participant's education is included as a control variable. The dummy variable high education takes the value of 1 if the participant completed vocational college or university and otherwise it is zero. The dummy variable medium education takes the value of 1 if the participant's highest level of completed education is pre-vocational education, pre-university education, or senior vocational training and otherwise it is zero. The variable lower education is omitted in order to use it as a reference variable to avoid perfect collinearity.

Fourthly, the variable financial literacy is measured as a dummy variable, where the value 0 means illiterate and the value 1 means literate. Illiterate in this case means having no or a limited amount of financial knowledge and literate indicates that the respondent has a basic or exceptional amount of financial knowledge.

Furthermore, the variable risk aversion measures to what extent participants dislike risk. This variable is an aggregation of several different survey questions related to risk preferences. This variable ranges from 7 [very risk loving] to 42 [very risk averse].

Finally, the variable time preference indicates which time period is most important to the participant when it comes to making financial decisions. This variable ranges from 1 [the next few months] to 5 [longer than the next five years].

3.4. Research methodology

In this paper the research question, to what extent does parental financial interaction influence children's saving behavior, will be evaluated by using a generalised least squares model. For the regressions the random effects model is employed as a panel estimator approach.

The first distinction made is that this dataset translates in an unbalanced panel. An unbalanced panel means that the cross sectional elements, in this case participants, do not have the same amount of observations (Brooks, 2014). This indicates that some respondents answered a particular question more times, meaning for more years in a row, than some other respondents did. These missing observations are taken care of by the software used to estimate the model, namely Eviews.

A fixed effects model estimates different intercept terms for each entity by taking demeaned values. However this would cause all variables that do not vary over time to cancel out (Brooks, 2014). Since the independent variables parental advice, pocket money, chores, spending freedom and stimulation to save are all based on past behavior (when the respondents were children) they do not vary over time. Thus, the research question cannot be investigated by implementing a fixed effects model. The random effects model estimated different intercept terms for each entity as well, but they come from a common intercept, β_0 , combined with a random variable, ϵ_i (Brooks, 2014). The random variable measures the

deviation from the common intercept. As a result, a random effects model was chosen instead of a fixed effects model since several independent variables do not vary over time.

The following specification of the random effects model is used in order to evaluate the research question:

$$S_{it} = \beta_0 + \beta_1 P_i + \beta_3 C_{it} + \omega_{it}, \quad (1)$$

$$\text{where } \omega_{it} = \epsilon_i + \vartheta_{it}$$

Firstly, S_{it} presents the three different dependent variables used in this paper as proxies for saving behavior. Secondly, β_0 is the common intercept, which is the same for all cross sectional units and over time (Brooks, 2014). Thirdly, P_i represents the different parental influence variables, explained in the data section. Furthermore, C_{it} contains all the control variables that were discussed in the data section. Finally, ω_{it} is the error term which is a combination of the cross sectional error term, ϵ_i , and the individual observation error term, ϑ_{it} .

However, it is important to note that the random effects model should only be implemented when the error term is uncorrelated with the independent variables (Brooks, 2014). This can be tested by the Correlated Random Effects - Hausman Test in Eviews. In this case, the dataset used led to significant results, a p-value of 0.0000, in all the regression models. This indicates that a random effects model is actually not appropriate for this dataset. Nevertheless, in this paper the random effects model is still implemented since it is not possible to estimate the model using fixed effects. Due to this limitation, it should be taken into account that the estimates will be biased and inconsistent (Brooks, 2014).

Nevertheless, the interaction variables of parental advice with the respondent's education and financial literacy do vary over time. As a result, the fixed effects model can be implemented to investigate the effect of these interaction variables on saving behavior. The fixed effects model decomposes the disturbance term, u_{it} , into an individual specific effect, μ_i , and a remainder effect, ϑ_{it} (Brooks, 2014). The model presented below is used when evaluating the effect of the interaction variables:

$$S_{it} = \beta_0 + \beta_1 I_i + \beta_3 C_{it} + \mu_i + \vartheta_{it}, \quad (2)$$

$$\text{since } u_{it} = \mu_i + \vartheta_{it}$$

Firstly, S_{it} presents the three different dependent variables used in this paper as proxies for saving behavior. Secondly, β_0 is the intercept. Thirdly, I_i presents the different interaction variables with receiving parental advice as a child. Furthermore, C_{it} contains all the control

variables that were discussed in the data section. Finally, μ_i and ϑ_{it} combined represent the error term u_{it} .

4. Results

4.1. ANOVA tests

This section will provide ANOVA test statistics for the main independent variables used in this paper, namely financial advice, pocket money, chores, spending freedom and stimulation to save. ANOVA tests are exploited in order to describe the differences between groups. For example, financial advice consists of 4 groups, namely children who received no advice, children who received advice to a certain extent, children who received some advice and practical help and children who received advice and practical help. This means that the test can evaluate whether the mean saving behavior is different for different quartiles or quintiles (sub-groups) for a specific independent variable.

Firstly, panel A in table 2 illustrates the results for the variable parental advice. It can be seen that children who received advice from their parents have a saving preference that is at least 6 percent higher than children who did not receive any parental advice. Meaning that in the first quartile 64 percent of the respondents indicate that they had a desire to save in the past year compared to 70 percent in the second quartile. Moreover, it seems that the more advice children received the higher the percentage of respondents that state that they had a preference to save. Furthermore, the desire to save in the future seems to increase when children receive more advice from their parents. The results discussed above have an ANOVA p-value of 0.00 and thus, the results are statistically significant at a 1, 5 and 10 percent significance level. As a result, the amount of parental advice received as a child has a significant effect on the mean saving preference and the desire to save in the near future. Additionally, savings as a percentage of income is decreasing for children who receive advice compared to children who do not receive this advice. The exception is children who receive parental advice and practical help often. This result is slightly significant at a significance level of 10 percent.

Secondly, panel B portrays ANOVA results for pocket money. Children who received pocket money have a higher preference to save than children who did not receive pocket money. The minimal increase in saving preference is 4 percent. Meaning that in the first quartile 67 percent of the respondents indicate that they had a desire to save in the past year compared to 71 percent in the second quartile. Moreover, the desire to save in the next 12 months increases for the different sub-groups when children receive pocket money. Finally, savings as a percentage of income is increasing for children who receive pocket money compared to children who do not receive pocket money. As a result, receiving pocket money at a young age influences the amount of yearly savings as a percentage of yearly income.

Table 2: ANOVA test results

This table shows the ANOVA test results for the effect of the parental interaction variables (panel A to E) on saving preference (column 1), desire to save in the near future (column 2), savings in the past 12 months (column 3) and savings as a percentage of net income (column 4).

	Saving preference	Desire to save in the near future	Savings	Savings/income
Panel A: Received parental advice				
1 – no	0.64	3.10	5237.12	0.16
2 – Yes, but to a certain extent	0.70	3.23	5073.63	0.14
3 – Yes, some advice and help	0.74	3.33	5365.54	0.15
4 – Yes, advice and help	0.77	3.43	5306.95	0.16
ANOVA p-value	0.00	0.00	0.30	0.08
Panel B: Received pocket money				
1 – no	0.67	3.15	4902.33	0.14
2 – sometimes	0.71	3.21	4968.49	0.15
3 – yes, but sometimes forgotten	0.71	3.31	5145.05	0.14
4 – yes	0.75	3.38	5570.13	0.16
ANOVA p-value	0.00	0.00	0.00	0.09
Panel C: Performed chores				
1 – never	0.69	3.23	5102.56	0.15
2 – almost never	0.71	3.27	5344.70	0.15
3 – sometimes	0.72	3.30	4977.47	0.15
4 – regularly	0.74	3.34	5500.09	0.14
5 – often	0.71	3.31	5536.31	0.17
ANOVA p-value	0.00	0.00	0.02	0.05
Panel D: Spending freedom				
1 – all spending controlled	0.65	3.21	5294.36	0.16
2 – most spending controlled	0.72	3.33	5083.67	0.15
3 – part of spending controlled	0.72	3.32	5420.19	0.15
4 – almost nothing controlled	0.74	3.32	5462.12	0.15
5 – nothing controlled	0.70	3.20	5020.53	0.15
ANOVA p-value	0.00	0.00	0.04	0.68
Panel E: Received stimulation to save				
1 – no	0.61	3.08	4833.00	0.14
2 – Yes, but to a certain extent	0.68	3.19	5026.91	0.14
3 – Yes	0.74	3.32	5236.14	0.15
4 – Yes, a lot of stimulation	0.77	3.42	5679.53	0.16
ANOVA p-value	0.00	0.00	0.00	0.05

Thirdly, panel C in table 2 shows that children who performed chores for additional money have a saving preference that is at least 2 percent higher than for children who did not have to do any chores. Meaning that in the first quintile 69 percent of the respondents indicate that they had a desire to save in the past year compared to 71 percent in the second quintile. Furthermore, the desire to save in the near future seems to be influenced by doing chores in a similar way as saving preferences. The results discussed above have an ANOVA p-value of 0.00 and thus, the results are statistically significant at a 1, 5 and 10 percent significance level. Finally, total yearly savings as a percentage of yearly income is increasing for children who did chores compared to children who did not. However, for children who did chores regularly, this ratio decreases. This one-way ANOVA test is significant at a significance level of 5 and 10 percent. As a result, doing chores as a child has a positive effect on saving behavior most of the time, but there are some irregularities.

Fourthly, panel D displays that children who were allowed to spend their money more freely have a higher preference to save than children who were not. Only when their spending was not supervised at all, the desire to save starts to decrease. The minimal increase in the preference to save is 5 percent. Moreover, this same pattern is visible for the desire to save in the near future. The results discussed above are statistically significant at a 1, 5 and 10 percent significance level. As a result, allowing children to spend their own money has a positive influence on the mean saving preference and desire to save in the near future as long as spending is not completely unsupervised. The one-way ANOVA is not statistically significant for total savings as a percentage of income at a 1, 5 or 10 percent level.

Finally, panel E in table 2 illustrates that children that were stimulated to save by their parents have a higher preference to save and desire to save in the near future. The minimal increase in the preference to save is 7 percent. Meaning that in the first quartile 61 percent of the respondents indicate that they had a desire to save in the past year compared to 68 percent in the second quartile. This result is significant at a 1, 5 and 10 percent level. Finally, savings as a percentage of income is increasing for children who receive saving stimulation from their parents. This result is significant at a 5 and 10 percent level. As a result, providing stimulation to save as parents positively influences children's saving behavior.

4.2. Regression results

The regression results will be presented in three sections. Each section provides the results for a different proxy for saving behavior, namely saving preference, desire to save in the future and savings as a percentage of net income. Each section will first give an overview of the results of the parental influence variables. There are six columns presented in the tables that present these results. The first column provides the model when all parental influence variables are taken into account. The columns 2-6 provide the model when only one parental influence variable is taken into account namely, parental advice, pocket money, chores,

spending freedom and stimulation to save, respectively. Finally, the results of the interaction variables will be examined for each proxy for saving behavior.

4.2.1 Results for children's preference to save as an adult

To begin with, column 1 implies that parental advice does not significantly affect the preference to save. However, column 2 indicates that receiving more parental advice leads to an increase in the preference to save as an adult of 2.7 percent. This result is significant at a 1, 5 and 10 percent significance level. This result is in line with previous research (Jorgensen and Savla, 2010; Buccioli and Veronesi, 2014).

Secondly, column 1 shows that pocket money has a significant effect on the preference to save as an adult at a 1, 5 and 10 percent significance level. When children experienced an increase in the frequency that they received pocket money, their preference to save increased with 1.3 percent. Column 3, which shows the model when only taking into account pocket money as a parental influence, supports this finding. This model states that as a child experiences an increase in the frequency that they received pocket money, their preference to save increased with 1 percent. This result is significant at a 1, 5 and 10 percent significance level. These results are in line with the research of Marshall and Magruder (1960).

Thirdly, column 1 states that doing chores as a child does not have a substantial impact on the preference to save as an adult. Moreover, column 4 supports this finding.

Fourthly, column 1 shows that allowing children to spend their money freely leads to an increase in the preference to save as an adult. An increase in the spending freedom of 1, on the scale from 1 to 5, leads to an increase in the preference to save of 1.38 percent. In addition to this, column 5 shows the model only including the parental influence variable spending freedom. This model provides additional support for the result found in column 1. An increase in spending freedom leads to an increase in the preference to save as an adult of 1.02 percent. These results are significant at a 1, 5 and 10 percent significance level. These results are in line with the research of Marshall and Magruder (1960), but not with the results of Buccioli and Veronesi (2014). This paper finds the opposite result of Buccioli and Veronesi (2014) for spending supervision/freedom. This dissimilarity could be the result of differences in control variables. For example, this paper includes the control variables risk aversion and financial literacy, while Buccioli and Veronesi (2014) include household size and being the homeowner. Furthermore, Buccioli and Veronesi (2014) exploit data from 2000-2012, while this paper includes data from 2004-2017.

Table 3 Regression results for the effect of parent's on children's preference to save as an adult

This table present the regression results of the effect of parental influences on the respondent's savings as a percentage of income. Column 1 presents the model including all parental influence variables. Column 2-6 present the same model when it includes only one independent variable (parental advice, pocket money, chores, spending freedom and stimulation to save respectively). Standard errors are presented in brackets and the significance levels of 1%, 5% and 10% are denoted by ***, ** and * respectively.

Preference to save	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.4381*** (0.0437)	0.5326*** (0.0376)	0.5749*** (0.0380)	0.6054*** (0.0373)	0.5899*** (0.0361)	0.5140*** (0.0369)
Parental advice	0.0052 (0.0059)	0.0270*** (0.0046)				
Pocket money	0.0130*** (0.0045)		0.0100*** (0.0038)			
Chores	-0.0016 (0.0037)			0.0022 (0.0035)		
Spending freedom	0.0138*** (0.0042)				0.0102*** (0.0038)	
Stimulation to save	0.0329*** (0.0059)					0.0389*** (0.0047)
Gender	0.0067 (0.0098)	0.0084 (0.0097)	0.0119 (0.0098)	0.0118 (0.0098)	0.0102 (0.0097)	0.0076 (0.0097)
Age	-0.0027*** (0.0003)	-0.0026*** (0.0003)	-0.0027*** (0.0003)	-0.0030*** (0.0003)	-0.0032*** (0.0003)	-0.0028*** (0.0003)
High education	0.1064*** (0.0240)	0.1164*** (0.0240)	0.1165*** (0.0241)	0.1201*** (0.0241)	0.1204*** (0.0241)	0.1105*** (0.0240)
Medium education	0.0700*** (0.0242)	0.0785*** (0.0242)	0.0774*** (0.0242)	0.0786*** (0.0242)	0.0770*** (0.0242)	0.0730*** (0.0242)
Financial literacy	0.0185** (0.0081)	0.0186** (0.0081)	0.0199** (0.0081)	0.0204** (0.0081)	0.0209*** (0.0081)	0.0187** (0.0081)
Risk aversion	0.0022*** (0.0006)	0.0022*** (0.0006)	0.0023*** (0.0006)	0.0023*** (0.0006)	0.0023*** (0.0006)	0.0022*** (0.0006)
Time preference	0.0313*** (0.0030)	0.0320*** (0.0030)	0.0324*** (0.0030)	0.0325*** (0.0030)	0.0327*** (0.0030)	0.0311*** (0.0030)
N	16915	16915	16915	16915	16915	16915
Hausman test (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fixed effects	No	No	No	No	No	No

Finally, column 1 shows that receiving parental stimulation to save as a child leads to an increase in the preference to save as an adult. An increase in the stimulation to save of 1, on the scale from 1 to 4, leads to an increase in the preference to save of 3.29 percent. In addition, column 6 shows the model only including the parental influence variable stimulation to save. The model presented in column 6 denotes that an increase in the received stimulation to save results in an increase in the preference to save as an adult of 3.89 percent. These results are significant at a 1, 5 and 10 percent significance level. These results are in line with the paper of Buccioli and Veronesi (2014).

The results above show that parents have a substantial influence on the saving behavior of their children. Children who have to do chores in order to earn additional money do not exhibit higher saving preferences. Therefore, it seems that chores are not a way in which parents are able to influence the saving behavior of their children. Furthermore, providing advice and stimulation to save as a parent has a substantial effect on children's preferences to save with effects around 3 and 4 percent. Spending freedom and pocket money have significant influences on saving behavior, but to a lesser extent, namely around 1 and 1.5 percent. This indicates that parents can influence their children's saving behavior more through the modeling and guidance mechanisms than the habit and independence mechanism discussed by Webley and Nyhus (2006). As a result, the null hypothesis corresponding to hypothesis 1, stating that parental financial interaction has no effect on children's saving behavior, can be rejected. Therefore, this paper shows that parents have a substantial role in developing their children's saving behavior as adults.

Table 3, column 1-6, also displays that the control variables age, high education, medium education, financial literacy, risk aversion and time preference significantly influence saving preferences. An increase in any of these variables, except for age, translates in an increase in children's preference to save as an adult. These results are in line with results from Webley and Nyhus (2006), Jappelli, and Padula (2013), Jacobs-Lawson and Hershey (2005) and Buccioli and Veronesi (2014).

Table 4 is presented in appendix C and it shows the regression results for the effect of receiving parental advice on children's preference to save as an adult mediated by the respondent's knowledge as an adult. All models presented in table 4 denote that parental advice combined with high education, medium education or financial literacy does not have a significant impact on the preference to save as an adult. As a result, null hypothesis 2 and 3 cannot be rejected at any significance level. This means that parental advice does not have a greater positive influence on saving behavior for respondents with a low level of education or a low level of financial literacy.

4.2.2 Results for children's desire to save in the near future as adults

This section provides the results for the desire to save in the near future as a proxy for children's saving behavior as adults. As described in the data section, this variable can take the values 1 to 4. This means that the numbers presented below show an increase along the scale when evaluating the effect of an explanatory variable on the desire to save in the near future. For example, an increase of 1 in the desire to save in the near future means going one step up on the ordinal scale, from 1 to 2 or from 2 to 3 etcetera.

Firstly, column 1 in table 5 suggests that parental advice does not significantly affect the desire to save in the near future. However, column 2 indicates that receiving more parental advice leads to an increase in the desire to save in the near future of 0.0505. This result is significant at a 1, 5 and 10 percent significance level. This result is in line with previous research (Jorgensen and Savla, 2010; Bucciol and Veronesi, 2014).

Secondly, column 1 shows that pocket money has a significant effect on the desire to save in the future as an adult at a 1, 5 and 10 percent significance level. When children experienced an increase in the frequency that they received pocket money, their desire to save in the near future increased with 0.0277. Column 3 supports this finding and reveals that when children experience an increase in the frequency that they received pocket money, their desire to save in the near future increased with 0.0229. This result is significant at a 1, 5 and 10 percent significance level. These results are in line with the research of Marshall and Magruder (1960).

Thirdly, column 1 and 4 denote that doing chores as a child does not have a substantial impact on the desire to save in the near future as an adult at any significance level.

Fourthly, column 1 suggests that allowing children to spend their money freely has a significant impact on the desire to save in the near future at a 1, 5 and 10 percent significance level. An increase in the spending freedom of 1, on the scale from 1 to 5, leads to an increase in the desire to save in the near future of 0.0207. In addition to this, the model presented in column 5 provides additional support for the result found in column 1. An increase in spending freedom leads to an increase in the desire to save in the near future of 0.0138. This result is significant at a 10 percent significance level. These results are in line with the research of Marshall and Magruder (1960), but not with the results of Bucciol and Veronesi (2014) as explained in the previous section.

Table 5 Regression results for the effect of parent's on children's desire to save in the near future

This table present the regression results of the effect of parental influences on the respondent's savings as a percentage of income. Column 1 presents the model including all parental influence variables. Column 2-6 present the same model when it includes only one independent variable (parental advice, pocket money, chores, spending freedom and stimulation to save respectively). Standard errors are presented in brackets and the significance levels of 1%, 5% and 10% are denoted by ***, ** and * respectively.

Desire to save in the future	(1)	(2)	(3)	(4)	(5)	(6)
Constant	3.0636*** (0.0815)	3.2248*** (0.0699)	3.2882*** (0.0706)	3.3774*** (0.0694)	3.3429*** (0.0672)	3.1816*** (0.0686)
Parental advice	0.0068 (0.0110)	0.0505*** (0.0087)				
Pocket money	0.0277*** (0.0084)		0.0229*** (0.0072)			
Chores	-0.0094 (0.0069)			-0.0006 (0.0067)		
Spending freedom	0.0207*** (0.0080)				0.0138* (0.0071)	
Stimulation to save	0.0675*** (0.0112)					0.0760*** (0.0089)
Gender	0.0257 (0.0183)	0.0300 (0.0183)	0.0371** (0.0183)	0.0355* (0.0184)	0.0343* (0.0184)	0.0281 (0.0183)
Age	-0.0107*** (0.0006)	-0.0106*** (0.0006)	-0.0107*** (0.0006)	-0.0114*** (0.0006)	-0.0116*** (0.0006)	-0.0110*** (0.0006)
High education	0.1394*** (0.0451)	0.1600*** (0.0451)	0.1586*** (0.0452)	0.1680*** (0.0452)	0.1681*** (0.0451)	0.1481*** (0.0450)
Medium education	0.0511 (0.0453)	0.0676 (0.0453)	0.0650 (0.0455)	0.0683 (0.0455)	0.0662 (0.0454)	0.0567 (0.0453)
Financial literacy	0.0566*** (0.0146)	0.0569*** (0.0146)	0.0592*** (0.0146)	0.0604*** (0.0146)	0.0609*** (0.0146)	0.0570*** (0.0146)
Risk aversion	0.0067*** (0.0011)	0.0068*** (0.0011)	0.0069*** (0.0011)	0.0069*** (0.0011)	0.0069*** (0.0011)	0.0068*** (0.0011)
Time preference	0.0491*** (0.0054)	0.0504*** (0.0054)	0.0510*** (0.0054)	0.0514*** (0.0054)	0.0516*** (0.0054)	0.0488*** (0.0054)
N	16654	16654	16654	16654	16654	16654
Hausman test (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fixed effects	No	No	No	No	No	No

Finally, column 1 shows that receiving parental stimulation to save as a child leads to an increase in the desire to save in the near future as an adult. An increase in the stimulation to save leads to an increase in the desire to save in the future of 0.0675. In addition to this, column 6 shows the model only including the parental influence variable stimulation to save and supports the results of column 1. An increase in the received stimulation to save results in an increase in the desire to save in the future as an adult of 0.0760. These results are significant at a 1, 5 and 10 percent significance level. These results are in line with the paper of Buccioli and Veronesi (2014).

The results above show that parents do have a substantial influence on the saving behavior of their children. Providing advice and stimulation to save as a parent have the highest impact on children's desire to save in the future compared to the other parental influences. This implies that parents can influence their children's saving behavior mostly through the modeling and guidance mechanisms. The same result was found in the previous section when looking at the preference to save. As a result, null hypothesis 1 that states that parental financial interaction has no effect on children's saving behavior can be rejected. Therefore, this paper indicates that parents have a substantial role in shaping their children's saving behavior as adults.

Table 5, column 1-6, also displays that the control variables age, high education, financial literacy, risk aversion and time preference significantly influence the desire to save in the near future. An increase in any of these variables, except for age, translates in an increase in children's desire to save in the near future as an adult. These results are in line with results from Webley and Nyhus (2006), Jappelli, and Padula (2013), Jacobs-Lawson and Hershey (2005) and Buccioli and Veronesi (2014). The results for the control variables are similar to the ones found for the effect on saving preferences presented in table 3 in the previous section. The exception is that medium education had a significant positive effect on the desire to save in the past, but not on the desire to save in the near future.

Table 6 shows the regression results for the effect of receiving parental advice on children's desire to save in the near future mediated by the respondent's knowledge as an adult. Column 1 shows the model presenting all three interaction variables of parental advice combined with education or financial literacy. Column 1 states that parental advice combined with high education or medium education does not have a significant impact on the desire to save in the near future. Moreover, column 2 and 3, where each interaction variable is taken into account on its own, supports this finding. As a result, null hypothesis 2 cannot be rejected at a 1, 5 or 10 percent significance level. This means that parental advice does not have a greater positive influence on saving behavior for respondents with a low level of education compared to respondents with a high or medium level of education. However, Column 1 states that parental advice combined with financial literacy does have a significant impact on the desire

Table 6 Regression results for the effect of parent's on children's desire to save in the near future

This table present the regression results of the effect of parental advice on the desire to save in the near future mediated by the respondent's own knowledge. Column 1 presents the model including all interaction variables. Column 2-4 present the same model when it includes only one interaction variable (high education, medium education and financial literacy respectively). Standard errors are presented in brackets and the significance levels of 1%, 5% and 10% are denoted by ***, ** and * respectively.

Desire to save in the future	(1)	(2)	(3)	(4)
Constant	3.0556*** (0.1224)	3.0603*** (0.1219)	3.0541*** (0.1222)	3.0686*** (0.1218)
Parental advice*high education	0.0227 (0.1309)	-0.0562 (0.0612)		
Parental advice*medium education	0.0872 (0.1259)		0.0660 (0.0589)	
Parental advice*financial literacy	-0.0319* (0.0179)			-0.0315* (0.0179)
High education	0.0505 (0.3523)	0.2466 (0.2042)	0.1082 (0.1221)	0.0953 (0.1216)
Medium education	-0.0739 (0.3249)	0.1372 (0.1154)	-0.0210 (0.1738)	0.1243 (0.1147)
Financial literacy	0.1227** (0.0502)	0.0396** (0.0190)	0.0396** (0.0190)	0.1217** (0.0502)
Risk aversion	0.0024 (0.0015)	0.0025 (0.0015)	0.0025 (0.0015)	0.0024 (0.0015)
Time preference	0.0150** (0.0067)	0.0151** (0.0067)	0.0151** (0.0067)	0.0151** (0.0067)
N	16654	16654	16654	16654
Hausman test (p-value)	0.0000	0.0000	0.0000	0.0000
Fixed effects	Yes	Yes	Yes	Yes

to save in the near future as an adult. The model shows that respondents who are financially literate and experience an increase in parental advice show an increase in the desire to save in the future that is 3.19 percent less than for respondents who are not financially literate. Moreover, column 4 presents the model where the interaction variable financial advice combined with financial literacy is the only interaction variable taken into account. This model supports the finding in column 1 and illustrates that respondents who are financially literate and experience an increase in parental advice show an increase in the desire to save in the future that is 3.15 percent less than for respondents who are not financially literate. The results are significant at a 10 percent level and thus, null hypothesis 3 can be rejected. As a result, parental advice does have a greater positive influence on saving behavior for respondents who are not financially literate compared to respondents who are. Therefore, these results provide some evidence for the idea that individuals who can be considered more knowledgeable will be less inclined to listen to the advice provided by their parents as indicated by Yaniv (2014). Since savings are considered a financial topic it can be argued that being financially literate is a better indication of being knowledgeable on this subject than having a high level of education. Namely, a high level education does not necessarily indicate that the respondent has been taught about savings. Therefore, the idea that financial literacy is more directly related to being knowledgeable on the topic savings compared to education can be used to explain the significant results found for financial literacy, whilst not finding the same for high or medium education.

4.2.3 Results for saving as a percentage of net income as adults

Firstly, column 1 in table 7 suggest that parental advice does not significantly affect yearly savings as a percentage of yearly net income. additionally, column 2 supports this finding.

Secondly, column 1 shows that pocket money has a significant effect on savings as a percentage of net income. When children experienced an increase in the frequency that they received pocket money, savings as a percentage of income increased with 0.53 percent. Column 3 supports this finding and reveals that as a child experiences an increase in the frequency that he or she received pocket money, savings as a percentage of income increased with 0.49 percent. These results are significant at a 5 and 10 percent significance level. These results are in line with the research of Marshall and Magruder (1960).

Thirdly, column 1 and 4 denote that doing chores as a child does not have a substantial impact on savings as a percentage of income as an adult at any significance level.

Fourthly, column 1 suggest that letting a child spend his or her money freely does not significantly affect savings as a percentage of income. Column 5 supports this finding.

Table 7 Regression results for the effect of parent's on the respondents' savings as a percentage of net income

This table present the regression results of the effect of parental influences on the respondents' savings as a percentage of income. Column 1 presents the model including all parental influence variables. Column 2-6 present the same model when it includes only one independent variable (parental advice, pocket money, chores, spending freedom and stimulation to save respectively). Standard errors are presented in brackets and the significance levels of 1%, 5% and 10% are denoted by ***, ** and * respectively.

Savings/income	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.0479** (0.0244)	0.0690*** (0.0212)	0.0552** (0.0215)	0.0733*** (0.0211)	0.0778*** (0.0203)	0.0643*** (0.0209)
Parental advice	-0.0016 (0.0030)	0.0020 (0.0024)				
Pocket money	0.0053** (0.0023)		0.0049** (0.0020)			
Chores	-0.0007 (0.0019)			0.0005 (0.0018)		
Spending freedom	0.0007 (0.0022)				-0.0012 (0.0019)	
Stimulation to save	0.0045 (0.0030)					0.0042* (0.0024)
Gender	-0.0109** (0.0051)	-0.0109** (0.0050)	-0.0104** (0.0050)	-0.0106** (0.0050)	-0.0106** (0.0050)	-0.0111** (0.0050)
Age	0.0008*** (0.0002)	0.0007*** (0.0002)	0.0008*** (0.0002)	0.0007*** (0.0002)	0.0007*** (0.0002)	0.0007*** (0.0002)
High education	0.0291** (0.0133)	0.0313** (0.0132)	0.0300** (0.0132)	0.0313** (0.0132)	0.0314** (0.0132)	0.0306** (0.0132)
Medium education	0.0172 (0.0134)	0.0184 (0.0134)	0.0179 (0.0133)	0.0183 (0.0134)	0.0185 (0.0134)	0.0179 (0.0134)
Financial literacy	0.0225*** (0.0049)	0.0227*** (0.0049)	0.0226*** (0.0049)	0.0229*** (0.0049)	0.0228*** (0.0049)	0.0227*** (0.0049)
Risk aversion	-0.0013*** (0.0004)	-0.0013*** (0.0004)	-0.0013*** (0.0004)	-0.0013*** (0.0004)	-0.0013*** (0.0004)	-0.0013*** (0.0004)
Time preference	0.0167*** (0.0019)	0.0170*** (0.0019)	0.0169*** (0.0019)	0.0170*** (0.0019)	0.0170*** (0.0019)	0.0168*** (0.0019)
N	13236	13236	13236	13236	13236	13236
Hausman test (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fixed effects	No	No	No	No	No	No

Finally, column 1 shows that receiving stimulation to save as a child does not significantly affect savings as a percentage of income as an adult. However, column 6 shows that an increase in the received stimulation to save results in an increase in savings as a percentage of net income of 0.42 percent. This result is slightly significant at a 10 percent significance level. These results are in line with the paper of Buccioli and Veronesi (2014).

The results above show that parents influence their children's saving behavior. Receiving parental advice, having spending freedom and doing chores do not significantly affect savings as a percentage of income. Nevertheless, parents are able to influence their children's savings as a percentage of income by giving them pocket money and stimulating them to save. As a result, there is some evidence that the null hypothesis corresponding to hypothesis 1 can be rejected.

Table 7, column 1-6, also displays that the control variables gender, age, high education, financial literacy, risk aversion and time preference significantly influence total savings as a percentage of net income. An increase in any of these variables, except for gender, translates in an increase in children's savings as a percentage of net income. These results are in line with results from Webley and Nyhus (2006), Jappelli, and Padula (2013), Jacobs-Lawson and Hershey (2005) and Buccioli and Veronesi (2014). The results for the control variables are similar to the ones found for the effect on saving preferences and the desire to save in the near future presented in table 3 and 5 in the previous sections. The exception is that medium education had a significant positive effect of the preference to save in the past, but not on the desire to save in the near future and savings as a percentage of income. Moreover, gender has a significant effect on savings as a percentage of income, but not on saving preferences or the desire to save in the near future.

Table 8 is presented in appendix C and it shows the regression results for the effect of receiving parental advice on the respondent's savings as a percentage of income mediated by the respondent's knowledge as an adult. All models indicate that there are no significant results. Therefore, null hypothesis 2 and 3 cannot be rejected at any significance level. This means that parental advice does not have a greater positive influence on saving behavior for respondents with low levels of education or low levels of financial literacy compared to respondents with high levels of education or financial literacy.

5. Conclusion

Previous research indicates that investigating the determinants of saving behavior is gaining importance since individuals are made more responsible for their own savings (Poterba, Venti and Wise, 2007; SER, 2000). Therefore, individuals are confronted with a substantial amount

of complicated financial decisions and financial products (Lusardi and Mitchell, 2007). As a result, financial knowledge and savings are gaining importance.

Additionally, research suggests that parents play a substantial role in teaching children about the importance of savings through social interaction (Webley and Nyhus, 2006; Danes and Haberman, 2007; Bucciol and Veronesi, 2014). Webley and Nyhus (2006) discuss several of these mechanisms through which parents influence their children's financial behavior. The four mechanisms are modeling, guidance, habit formation and independence.

This paper found that parents are indeed able to influence their children's saving behavior. According to the results found in this paper, providing financial advice, providing pocket money, not controlling spending and stimulating to save are the main ways through which parents are able to positively influence children's saving behavior as adults. The modeling and guidance mechanisms, receiving parental advice and stimulation to save, affect saving behavior to a larger extent than the habit formation and independence mechanisms. This means that parents influence their children's saving behavior mainly by being their role model and by discussing financial decisions with them. Furthermore, the effect of parental advice on saving behavior differs for different levels of financial literacy. This means that, financial literacy has a negative effect on the relationship between parental financial advice and the desire to save in the near future. This is in line with the research of Yaniv (2004) who states that individuals weigh their own opinion as more important since they are able to assess their own competence. This effect is more likely to occur when individuals are extremely knowledgeable on the subject since then they view themselves as more competent than others to assess the financial product and decisions they are confronted with. To sum up, this paper shows that parents have a significant influence on the saving behavior of their children.

This paper contains several limitations. To begin with, this paper uses a random effects model in three cases even though this is not appropriate for this dataset. This leads to inconsistencies. As a result, inferences based on the results presented in tables 3, 5 and 7 should be made cautiously since the estimates are biased due to this limitation. Moreover, this paper is based on survey data. Survey data leads to variables that are based on a respondent's self-assessment and these self-assessments do not always correspond to actual behavior (Hasting, Madrian and Skimmyhorn, 2013). As a result, the survey data can be considered a limitation of this paper. Finally, this paper is not able to take into account the effect of genetic differences in respondents. In spite of that, previous research does indicate that saving behavior is at least partly genetic (Carpenter, Garcia and Lum, 2011; Zhang, Brennan and Lo, 2014; Cronqvist and Siegel, 2015). Therefore, future research should be focused on trying to implement this effect of genes into their investigation and thus, trying to model for each effect that has an influence on children's saving behavior. This will lead to a better representation of the effect of parents on children's saving behavior.

Nevertheless, this research adds value by illustrating if and to what extent parents are able to influence their children's saving behavior as adults. Furthermore, it shows that a child's future financial knowledge mediates the relation between received parental advice as a child and the desire to save in the near future. These insights indicate that saving behavior can be increased by policies that promote parents to teach their children about financial matters. Therefore, policy makers could focus on stimulating parents to give their children financial advice, pocket money, spending freedom and stimulation to save.

Concluding, this paper finds that parents substantially influence their children's future saving behavior. Yet, additional research is essential to dispose of the limitations that this paper contains.

References

Beutler, I., Dickson, L. (2008). Consumer economic socialization. *Handbook of consumer finance research*, 83-102. Springer, New York.

Bisin, A., Verdier, T., 2001. The economics of cultural transmission and the dynamics of preferences. *Journal of Economic Theory* 97, 298–319.

Bowen, M., 1993. *Family therapy in clinical practice*. Jason Aronson, Maryland.

Brooks, C., 2014. *Introductory Econometrics for Finance*. Cambridge university press, Cambridge.

Buccioli, A., Veronesi, M., 2014. Teaching children to save: what is the best strategy for lifetime savings?. *Journal of Economic Psychology* 45, 1-17.

Carpenter, J. P., Garcia, J. R., Lum, J. K., 2011. Dopamine receptor genes predict risk preferences, time preferences, and related economic choices. *Journal of Risk and Uncertainty* 42(3), 233-261.

CentERdata, 2017. DNB Household Survey 2017 - Documentation. Retrieved from <https://www.dhsdata.nl/site/releases/browse/49/274>.

CentERdata, 2018. DNB Household Survey. Retrieved from <https://www.centerdata.nl/en/projects-by-centerdata/dnb-household-survey-dhs>.

Cronqvist, H., Siegel, S., 2015. The origins of savings behavior. *Journal of Political Economy* 123(1), 123-169.

Danes, S.M., Haberman H.R., 2007. Teen financial knowledge, self-efficacy, and behavior: a gendered view. *Journal of Financial Counseling and Planning* 18 (2), 48-60.

Hastings, J. S., Madrian, B. C., Skimmyhorn, W. L., 2013. Financial literacy, financial education, and economic outcomes. *Annual Review of Economics* 5, 347-373.

Hibbert, J. R., Beutler, I. F., Martin, T., 2004. Financial prudence and next generation financial strain. *Financial Counseling and Planning* 15, 51-59.

Hulme, D., Moore, K., Barrientos, O., 2009. Assessing the insurance role of microsavings. Unpublished working paper. University of Manchester, Manchester.

Jacobs-Lawson, J. M., Hershey, D. A., 2005. Influence of future time perspective, financial knowledge, and financial risk tolerance on retirement saving behaviors. *Financial Services Review* 14(4), 331.

Jappelli, T., Padula, M., 2013. Investment in financial literacy and saving decisions. *Journal of Banking & Finance* 37(8), 2779-2792.

Jorgensen, B. L., Savla, J., 2010. Financial literacy of young adults: the importance of parental socialization. *Family relations* 59(4), 465-478.

Lusardi, A., Mitchell, O. S., 2007. Financial literacy and retirement preparedness: evidence and implications for financial education. *Business economics* 42(1), 35-44.

Madrian, B.C., Shea, D.F., 2001. The power of suggestion: inertia in 401(k) participation and savings behavior. *The Quarterly Journal of Economics* 116(4), 1149-1187.

Marshall, H. R., Magruder, L., 1960. Relations between parent money education practices and children's knowledge and use of money. *Child Development* 31, 253-284.

Poterba, J. M., Venti, S. F., Wise, D. A., 2009. The decline of defined benefit retirement plans and asset flows. In *Social Security policy in a changing environment*, 333-379. University of Chicago Press, Chicago.

SER ((Sociaal-Economische Raad), 2000. Social security in the netherlands: the need for organisational reform. Retrieved from https://www.ser.nl/~media/files/internet/talen/engels/1999/1999_05.ashx

Webley, P., Nyhus, E. K., 2006. Parents' influence on children's future orientation and saving. *Journal of Economic Psychology* 27(1), 140-164.

Webley, P., Nyhus, E. K., 2013. Economic socialization, saving and assets in European young adults. *Economics of Education Review* 33, 19-30.

Yaniv, I., 2004. Receiving other people's advice: influence and benefit. *Organizational Behavior and Human Decision Processes* 93(1), 1-13.

Zhang, R., Brennan, T.J., Lo, A.W., 2014. The origin of risk aversion. *Proceedings of the National Academy of Sciences* 111(50), 17777-17782.

Appendix A

Table 9 below presents all the DNB Household Survey question that are used in this paper. These are the exact questions that that make up the data used in this paper.

Table 9: DNB Household Survey question used throughout this paper

Variable	Related DNB Household Survey question
Questions from the economic and psychological concepts questionnaire:	
Saving preference	Did your household put any money aside in the past 12 months? This dummy variable takes the value [1] if the respondent answered yes and [0] otherwise.
Desire to save in the future	Is your household planning to put money aside in the next 12 months? This variable takes the value [4] if the respondent answered 'yes, certainly', [3] if the respondent answered 'yes, perhaps', [2] if the respondent answered 'probably not' and [1] if the respondent answered 'certainly not'.
Savings	About how much money has your household put aside in the past 12 months? This is a categorical variable that can take seven different values between 0 and more than 75,000. Since this variable is categorical, it is set equal to the mid-point. For the last category 'more than 75,000' the extreme value of 75,000 was used.
Net income	The total net income of your household consists of the income of all members of the household, after deduction of taxes and premiums for social insurance policies, over the past 12 months. Into which of the categories mentioned below did the total net income of your household go in the past 12 months? This is a categorical variable that can take seven different values between 0 and more than 75,000. Since this variable is categorical, it is set equal to the mid-point. For the last category 'more than 75,000' the extreme value was used.
Parental advice	Did your (grand)parents try to teach you how to budget when you were between 12 and 16 years of age? This variables takes the value [1] if the respondent answered 'no', [2] if the respondent answered 'yes, but to a certain extent' [3] if the respondent answered 'yes, they gave me some advice and practical help', [4] if the respondent answered 'yes, they gave me advice and practical help'.
Pocket money	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. This variable takes the value [1] if the respondent answered 'no', [2] if the respondent answered 'occasionally', [3] if the respondent answered 'yes, but it was sometimes forgotten' and [4] if the respondent answered 'yes'.

Chores	When you were between 8 and 12 years of age, did you do little household chores (like washing the car) for which you received some money from your parents? This variables takes the value [1] if the respondent answered ‘never’, [2] if the respondent answered ‘hardly ever’ [3] if the respondent answered ‘occasionally’, [4] if the respondent answered ‘sometimes’ and [5] if the respondent answered ‘often’.
Spending freedom	When you were between 8 and 12 years of age, could you spend your money as you pleased? This variables takes the value [1] if the respondent answered ‘my parents decided on how I spent all my money’, [2] if the respondent answered ‘my parents decided on how I spent most of my money’ [3] if the respondent answered ‘part of my expenditure was decided by me, the rest was decided by my parents’, [4] if the respondent answered ‘mostly, I could decide on how I spent my money’ and [5] if the respondent answered ‘I could decide on all my expenditures’.
Stimulation to save	Did your (grand)parents stimulate you to save money between the age of 12 and 16? This variable takes the value [1] if the respondent answered ‘no, not at all’, [2] if the respondent answered ‘yes, but to a certain extent’, [3] if the respondent answered ‘yes, they told me how important saving is’ and [4] if the respondent answered ‘yes, they emphasized the necessity of saving’.
Financial literacy	How knowledgeable do you consider yourself with respect to financial matters? This dummy variable takes the value [0] if the respondent answered ‘not knowledgeable’ or ‘more or less knowledgeable’ and [1] if the respondent answered ‘knowledgeable’ or ‘very knowledgeable’.
Risk aversion	<p>This variables is an aggregation of six different questions on a scale from 1 to 7 where 1 corresponds to the most risk seeking option and 7 corresponds to the most risk averse option.</p> <ul style="list-style-type: none"> - I think it is more important to have safe investments and guaranteed returns, than to take a risk to have a chance to get the highest possible returns. - I do not invest in shares, because I find this too risky. - If I think an investment will be profitable, I am prepared to borrow money to make this investment. - I want to be certain that my investments are safe. - If I want to improve my financial position, I should take financial risks. - I am prepared to take the risk to lose money, when there is also a chance to gain money.

Time preference

People use different periods when they decide about what part of the income to spend, and what part to save. Which of the periods mentioned below is in your household most important with regard to planning expenditures and savings? This variable takes the value [1] if the respondent answered ‘the next couple of months’, [2] if the respondent answered ‘the next year’, [3] if the respondent answered ‘the next couple of years’, [4] if the respondent answered ‘the next 5 to 10 years’ and [5] if the respondent answered ‘more than 10 years from now’.

Questions from the general information questionnaire:

Gender

This dummy variable takes the value [1] if the respondent indicated to be female and [0] if the respondent indicated to be male.

Age

Age has been calculated as current year (being the year in which the wave was collected) minus the date of birth minus 1. Therefore, it is the age of the respondent at the beginning of the year in which the wave was collected.

Education (high medium and low)

Highest level of education completed? This variable is split into high, medium and low education.

High education takes the value [1] if the participant completed vocational college or university and [0] otherwise.

Medium education takes the value [1] if the participant highest level of completed education is pre-vocational education, pre-university education, or senior vocational training and [0] otherwise.

Low education takes the value [1] if the participant highest level of completed education is primary education, special education, no education and other sort of education and [0] otherwise. This variable is omitted in the analysis to avoid perfect collinearity.

Source: CentERdata, 2017.

Appendix B

Table 10: Correlation matrix of the independent variables

	Parental advice	Pocket money	Chores	Spending freedom	Stimulation to save
Parental advice	1.0000	0.2728	0.2133	-0.0744	0.6155
Pocket money	0.2728	1.0000	0.3183	-0.5113	0.1555
Chores	0.2133	0.3183	1.0000	-0.2418	0.1184
Spending freedom	-0.0744	-0.5113	-0.2418	1.0000	0.0346
Stimulation to save	0.6155	0.1555	0.1184	0.0346	1.0000

Appendix C

Table 4 Regression results for the effect of parent's on children's preference to save as an adult

This table presents the regression results of the effect of parental advice on saving preference mediated by the respondent's own knowledge. Column 1 presents the model including all interaction variables. Column 2-4 present the same model when it includes only one interaction variable (high education, medium education and financial literacy respectively). Standard errors are presented in brackets and the significance levels of 1%, 5% and 10% are denoted by ***, ** and * respectively.

Saving preference	(1)	(2)	(3)	(4)
Constant	0.6274*** (0.0692)	0.6307*** (0.0689)	0.6294*** (0.0691)	0.6298*** (0.0688)
Parental advice*high education	0.0571 (0.0739)	0.0130 (0.0348)		
Parental advice*medium education	0.0483 (0.0712)		-0.0005 (0.0335)	
Parental advice*financial literacy	-0.0052 (0.0101)			-0.0052 (0.0101)
High education	-0.1180 (0.1995)	-0.0084 (0.1162)	0.0266 (0.0692)	0.0265 (0.0689)
Medium education	-0.0640 (0.1841)	0.0529 (0.0654)	0.0568 (0.0988)	0.0555 (0.0650)
Financial literacy	0.0192 (0.0283)	0.0055 (0.0107)	0.0055 (0.0107)	0.0190 (0.0283)
Risk aversion	0.0009 (0.0009)	0.0009 (0.0009)	0.0009 (0.0009)	0.0009 (0.0009)
Time preference	0.0116*** (0.0038)	0.0116*** (0.0038)	0.0116*** (0.0038)	0.0116*** (0.0038)
N	16915	16915	16915	16915
Hausman test (p-value)	0.0000	0.0000	0.0000	0.0000
Fixed effects	Yes	Yes	Yes	Yes

Table 8 Regression results for the effect of parent's on the respondents' savings as a percentage of net income

This table present the regression results of the effect of parental advice on savings as a percentage of net income mediated by the respondent's own knowledge. Column 1 presents the model including all interaction variables. Column 2-4 present the same model when it includes only one interaction variable (high education, medium education and financial literacy respectively). Standard errors are presented in brackets and the significance levels of 1%, 5% and 10% are denoted by ***, ** and * respectively.

Saving preference	(1)	(2)	(3)	(4)
Constant	0.1072* (0.0568)	0.1125** (0.0546)	0.1189** (0.0544)	0.1175** (0.0544)
Parental advice*high education	-0.0498 (0.0698)	-0.0282 (0.0284)		
Parental advice*medium education	-0.0236 (0.0695)		0.0217 (0.0282)	
Parental advice*financial literacy	0.0001 (0.0074)			0.0002 (0.0074)
High education	0.1522 (0.2056)	0.0905 (0.0960)	0.0106 (0.0540)	0.0116 (0.0540)
Medium education	0.1029 (0.1998)	0.0375 (0.0527)	-0.0250 (0.0883)	0.0298 (0.0522)
Financial literacy	0.0116 (0.0212)	0.0120 (0.0079)	0.0119 (0.0079)	0.0114 (0.0211)
Risk aversion	-0.0006 (0.0006)	-0.0006 (0.0006)	-0.0006 (0.0006)	-0.0006 (0.0006)
Time preference	0.0072** (0.0028)	0.0072** (0.0028)	0.0072** (0.0028)	0.0073** (0.0028)
N	13236	13236	13236	13236
Hausman test (p-value)	0.0000	0.0000	0.0000	0.0000
Fixed effects	Yes	Yes	Yes	Yes