

# **The effect of present looking on financial literacy**

Author: Manon Waals

Supervisor: Hasan Tahsin Apakan MSc.

Second reader: Dr. Cédric Argenton

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ANR: 402655

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## **Abstract**

This paper examines the relationship between present looking people and their financial knowledge. Data from CentERdata is used to measure both financial literacy as well as how present looking someone is in the Netherlands. After doing a factor analysis for both variables, one can conclude that present looking has a significant effect on financial literacy. During this study we found that the more present looking someone is the less financial knowledge the person has.

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## 1. Introduction

Financial literacy is very important in daily life and everybody gets in touch with it. First of all, students have to think about how much to save each month. But they also have to decide how much to lend to finance college and if they want to take insurances. This means that students have to have knowledge about interest, saving and investments. However financial literacy is not only important for students, it is even more important among the older people. Adults have to think about their retirement, and how much they would like to save for it. They also have to think about mortgages, and thus loans, if they are going to buy a house. So they need knowledge about interest as well as investments (Calvet, Campbell and Sodini; 2007). One of the studies where the importance of financial literacy is discussed is in the paper of Lusardi and Mitchell (2007). Lusardi and Mitchell showed that it is important for retirement planning, as well as for saving. They showed that those who have more financial literacy are more likely to save for retirement. So they conclude that people with more financial literacy also have a better financial behavior. But what is exactly financial literacy? Remund (2010) did a study about the definition of financial literacy. He did research to many definitions of financial literacy, which mostly contains: budgeting, saving, borrowing and investing. After analyzing many definitions, he concludes that financial literacy can be best described as follows:

*“Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal financial through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic condition”.*

Although it is showed that financial literacy is important in daily life, many papers show that financial literacy among people is not that high. As shown in the paper of Van Rooij, Lusardi and J. Alessie (2011) only 40.2% of their respondents answered all basic financial literacy questions correctly. But even worse, only 5% of their respondents answered all the advanced questions correctly. This can be seen as a big problem, because as said before, financial literacy is very important to make good financial decisions for retirement planning, saving and investing. In most papers they also mention this importance, but they only find that differences in financial knowledge are due to differences in income, age, race, gender. Not many papers explain other

variables that could have an effect on financial literacy. An important aspect that could have an effect on financial literacy is present looking. We think that if present looking has indeed an impact on financial literacy, this is an important insight for other practitioners. Namely, it could be the case that financial education, to improve financial literacy, might not be as effective as expected to those people. One explanation could be that people who are present looking do not care about financial education at all and would like to spend their time on things that will pay off now. Another important insight could be that if present looking has an effect on financial literacy this should be taken into account in other studies. For example, as discussed above Lusardi and Mitchell (2007) showed that there is a positive relationship between financial literacy and retirement planning, but they did not take into account present looking. However this could be an important variable that affects retirement planning.

In this paper, we mean by present looking people people who live with the motto ‘Carpe Diem’. According to the Oxford English Dictionary this means ‘*enjoy the day, pluck the day when it is ripe; affirming the need to make the most of the present time*’. So in other words, present looking people are people who only care about the present and do not look at the future.

We expect that there is a negative relationship between present looking people and financial literacy. We think that people who are more present looking enjoy life now and do not think about money they could have had in the future and so care less about things as saving, investing and retirement. So we think that those people are also less likely to invest in financial education. Thus we expect that people who are present looking have less financial knowledge.

In order to get more knowledge about this topic we will try to answer the following research question: ‘Is there a significant relationship between how present looking people are and the financial knowledge they have?’

In order to answer this question we will review the relevant literature in the next section of this paper. The third section includes the methods we will use to answer the research question. In section four first the basic results are shown and second the results of the regression are shown. Thereafter the results are discussed and finally, in the last section, a conclusion is drawn.

## **2. Literature review**

In the literature review first general literature, which is related to present looking, is shown. In the second part the studies which look at the relationship between present looking and financial literacy is shown.

### **2.1 General literature**

The first paper we will discuss is from Calvet, Campbell and Sodini (2007). They investigate the relationship between financial literacy and investment behavior. They found that there is a positive relationship between financial literacy and investment behavior. They concluded that those who have more financial knowledge have a better investment behavior and can obtain higher returns than those who have less financial knowledge.

The second paper which is also discussed in the introduction is from Lusardi and Mitchell (2007). They concluded that there is a positive relationship between financial literacy and retirement planning. They showed that people who have more financial knowledge have better understanding about interest compounding and are much more likely to save for retirement. So they conclude that people with more financial literacy also have a better financial behavior.

But could financial literacy be improved by financial education? This issue is discussed by Lusardi (2008). She looked at different studies and found that there are different views according to financial education. Some studies she looked at showed that there is a negative relationship between financial education and financial literacy, whereas other studies showed that there is a positive relationship between financial education and financial literacy. In the end she concluded that financial education can have a positive effect on financial literacy, however there should be some ‘standards for financial literacy’. To conclude, Lusardi found that the differences in financial knowledge among people have to take into account, for financial education to be effective.

## **2.2 Literature related to the research question**

There are not papers yet where they explicitly look at the relationship between present looking and financial literacy. However there are some articles which use control variables that are related to present looking, or which look at the relationship between something related to present looking and financial literacy.

One of these papers is from Van Rooij, Lusardi and Alessie (2011). In their study they investigated the relationship between financial literacy and wealth accumulation. First they measured the financial literacy of their respondents, by letting them answer 5 basic and 11 advanced financial literacy questions. To compute one variable for the basic financial literacy questions and one for the advanced financial literacy questions, they applied a factor analysis. The wealth of the respondents was directly asked. To measure the relationship between financial literacy and wealth accumulation they made use of an OLS regression. They found that financial literacy is positively related to wealth accumulation. One control variable they used, which is approximately equal to present looking, is patience. Because they do not have a direct measure of time preferences to measure patience, they look at how much people smoke and drink alcohol and take this as an instrumental variable. In the end however, they do not found a relationship between patience and financial literacy.

Another paper that is related to present looking is written by Sohn et al (2012). In their study they try to find a relationship between a person's attitude towards money and financial literacy. First of all, all the respondents had to fill in a questionnaire with 30 multiple choice questions, to measure their financial literacy. To measure the respondents' money attitude they also have to answer questions on a 5 point scale, on which later a factor analysis was applied. In the end they used a linear regression to measure the relationship between a person's money attitude and financial literacy. Sohn et al showed that there is a positive relationship between people who see money as a good or reward and financial literacy. On the other side people who perceived money in terms of avoidance or achievement have lower financial literacy. This might be related to present looking, because it could be the case that people who are present looking do not see money as an important thing and would like to avoid it. So this might indicate that there may be a negative relationship between present looking and financial literacy.

In the paper of Meier and Sprenger (2013), they look at the effect of time preference on financial education. They applied a field experiment to measure this relationship. By visiting a specific website all people are asked ‘‘whether they wanted to receive a free, short credit counseling session’’. To all people, independent of participating in the counseling session, a survey and questions to measure their time preferences were send. They measure time preference by calculating the respondent’s discount rate. They do this by letting a person choose between an amount in the present versus a somewhat higher amount in the future. In the end, Meier and Sprenger applied a logit regression to measure the relationship between time preference and financial education. They concluded that people who care only about the present and less about the future are less likely to choose financial education. This might indicate that people who are present looking have less financial literacy, because they do not care about financial knowledge and so are less likely to choose financial education. The approach they used is best comparable to the method we are going to use in this paper, but there are also some differences. One big difference is that they ask their respondents to choose between a specific payment now or a bigger payment in the future, thus they ask in an indirect way about their time preference. In this study the respondents are directly asked by statements what they think about the present and future.



### **3. Methods**

All the data we used for this research are obtained by CentERdata. ‘‘CentERdata is an eminent research institute, located on the Tilburg University (TiU) campus, who try to answer questions in the field of man and society’’.

The questions about how present looking people are, are collected by the DNB Household survey of 2005. ‘‘The DNB household survey is a panel study among 2000 households that has been active since 1993’’. The data consists of both economic and psychological aspects of financial behavior. The data of financial literacy are also collected by CentERdata, in the name of a study from Van Rooij, Lusardi and Alessie, which is called ‘‘Financial literacy, retirement planning, and household wealth’’ (2011). Both the data about present looking and financial literacy are collected in 2005. The questions about financial literacy as well as the questions about present looking are asked to the same households.

To get a good measure of the effect of present looking on financial literacy we only used the respondents that both answered the questions of financial literacy as well as the questions about the future. After removing the other respondents we got a sample that still consists of 1136 respondents, which is equal to the amount of households. 639 people of these respondents are men, which is 56.3% of the sample. On the other side there are 497 women, which is 43.8% of the sample. If we look at the age of the respondents, we can see that the youngest respondent is in the age of 22 and the oldest person is in the age of 90. The average age of all the respondents is equal to 50.90 years (Appendix C).

#### **3.1 Dependent variable: financial literacy**

In order to calculate financial literacy we used the five basic multiple choice questions asked by Van Rooij, Lusardi and Alessie (2011). These five questions are related to basic economic problems, like interest on a savings account and inflation. The precise phrasing of these questions can be found in appendix A. To give a score to all these questions we give 1 point if the answer is correct and 0 points if the answer is incorrect. The respondents who did not know the answer or would not like to tell the answer also get 0 points.

Van Rooij, Lusardi and Alessie (2011) also asked some more advanced questions. These more advanced questions are related to harder economic subjects like stocks, bonds and mutual funds. The exact phrasing of these questions can also be found in appendix A. Like the basic financial

literacy questions they got ranked with either 1, if the answer is correct or 0, if the answer is incorrect.

In order to give a total score to all these questions, we did not just add up the scores. We use a factor analysis, which is also used by Van Rooij, Lusardi and Alessie (2011). This analysis creates one factor which identifies correlations between all the financial literacy questions. So instead of having one variable for each question, we get one variable for financial literacy.

### **3.2 Independent/ explanatory variable: present looking**

As already explained in the introduction, we mean by present looking people, people who only care about the present and do not look at the future.

To measure how present looking someone is we use the twelve questions about the future asked by the DNB Household Survey (2005). One of the questions used is: 'I am only concerned about the present, because I trust that things will work themselves out in the future'. The other questions can be found in Appendix B.

The questions can be answered on a scale of 1 which means "totally disagree" to 7 which means "totally agree". If we put the questions in a way in which 1 means totally future looking and 7 means totally present looking, someone who is totally present looking gets a score of 84, whereas someone who is completely future looking gets a score of 12.

However in order to give a score for each of these questions we also applied the factor analysis, as with the financial literacy questions. We do this in order to give the right weight to all these questions and creating one variable instead of twelve.

### **3.3 Control variables**

During the research we controlled for several variables that might affect financial literacy. We controlled for four variables. These are: gender, age, income and education.

Gender: We expect that men have a better financial knowledge, because we think more men are interested or study something with finance. As you can see in many economics studies, there are much more men than women.

Age: We expect that people with a higher age have also more financial knowledge. Older people have more experience with saving and investment decisions. So we think that there is a positive relationship between age and financial knowledge.

Income: We expect that people with higher income have more financial knowledge. We think that people with a higher income has to ‘learn’ more about finance because if they make wrong saving and investment decisions a lot of money will be lost. So we think that there is a positive relationship between income and financial literacy.

Education: We expect that people with higher/more education also have more financial knowledge, because we think that people with higher/more education also have had some courses about economics and finance. So we think that there is a positive relationship between education and financial literacy.

According to Lusardi and Mitchel (2007), there is a relationship between our control variables and financial literacy. Lusardi and Mitchel (2007) looked at the results of different countries and concluded that a lot of people have a lack of financial knowledge. More interesting, they found a specific group of people who have a lack of financial literacy, which are: ‘those with low income and low education, minorities and women’. The relationship between income and financial literacy is also found by Monticone (2010). She found that people with more wealth are more likely to engage in financial education. This financial education leads to more financial knowledge among those people.

From this we can conclude that there is both a positive relationship between income and financial literacy, as well as education and financial literacy. We can also conclude that women have less financial knowledge than men. This is also concluded by Lusardi (2006).

## 4. Results

In this section the general results about financial literacy and the present looking questions are showed first. The results of the answers on the financial literacy questions and also on the present looking questions are presented. It further shows the differences between women and men as well as the differences between age categories. In section 4.2 the results of the factor analysis as well as the regression analysis are presented and the possible relationships are explained.

### 4.1 General results

#### 4.1.1 Basic financial literacy

To measure the basic financial literacy of our respondents we give them a score of 1 for each questions answered correctly. This means that a total score of 5 can be reached. Table 4-a represents the amount of respondents who answered each question correctly. As shown in the table, question 1, the simple interest rate question, is perceived as the easiest one. Almost all respondents answered this question correctly. On the other side question 5, about doubling income and prices, is perceived as the hardest question. Although 70.6% of the respondents answered this questions still correct. So one can conclude that the basic financial literacy questions are not experienced to be that hard for the respondents.

*Table 4-a. Percentage that answered each question correct and incorrect (N=1136)*

	<b>Correct</b>	<b>Incorrect</b>
<b>Question 1</b>	93.1%	6.9%
<b>Question 2</b>	80.2%	19.8%
<b>Question 3</b>	85.9%	14.1%
<b>Question 4</b>	76.1%	23.9%
<b>Question 5</b>	70.6%	29.4%

*Note: not all percentages add up to 100% due to the rounding.*

Table 4-b represents the total score that can be reached, and the scores of both women and men separately. As one can see approximately 50% of the men answered all five basic financial literacy questions correctly. On the other side only 34.8% of the women answered all five basic questions correctly. Most women (35.8%) answered only four questions correctly. This difference is also showed in figure 1 (appendix D). Instead of looking only at the differences between men and women as showed below, we can also take age into account. This is shown in appendix D, figure 2, which shows the average total score in different age categories. While you can still see the difference between men and women, there are almost no differences between age categories.

*Table 4-b. The amount of questions answered correctly (N=1136)*

	<b>Total score</b>	<b>Women</b>	<b>Men</b>
<b>0</b>	1.9%	2.4%	1.6%
<b>1</b>	2.1%	3.0%	1.4%
<b>2</b>	4.7%	5.2%	4.2%
<b>3</b>	14.3%	18.7%	11.0%
<b>4</b>	33.3%	35.8%	31.3%
<b>5</b>	43.7%	34.8%	50.5%

*Note: not all percentages add up to 100% due to the rounding.*

#### **4.1.2 Advanced financial literacy**

The advanced financial literacy questions are ranked the same as the basic financial literacy questions. So the respondent gets 1 point for every correct answer. Table 5-a shows, like table 4-a, the amount of respondents who answered each question correctly. We can conclude that these questions are perceived as much harder than the basic financial literacy questions, because the amount of respondents who answered the questions correctly is much lower. The question about mutual funds, question 8, is most answered correctly (71.6%). On the other side, question 13, which is about early sale of your bond, is answered most of the time incorrect. Only 35.2% of our respondents have answered this question correctly.

Table 5-a. Percentage that answered each question correct and incorrect (N=1136)

	<b>Correct</b>	<b>Incorrect</b>
<b>Question 6</b>	69.7%	30.3%
<b>Question 7</b>	65.4%	34.6%
<b>Question 8</b>	71.6%	28.4%
<b>Question 9</b>	61.7%	38.3%
<b>Question 10</b>	52.1%	47.9%
<b>Question 11</b>	71.3%	28.7%
<b>Question 12</b>	67.3%	32.7%
<b>Question 13</b>	35.2%	64.8%

Note: not all percentages add up to 100% due to the rounding.

As you can see in table 5-b there is a slightly difference in the score of both women and men. Whereas most women have a score of only 5, most men have a score of 8. Where 25.4% of the male respondents have a score of 8, only 5.6% of the women have a score of 8. This difference in score is much larger than the differences in the basic financial literacy questions. This difference is also clearly showed in figure 3 (appendix D). One can see that the scores of men are upward sloping, while the scores of the women have a kind of bell-shape. Like the basic financial literacy questions, we also made a figure which takes the different ages into account. This is also shown in appendix D, figure 4. Like figure 2, there is a big difference between men and women, but only a small difference between age categories. Where the average score of women varies between 3 and 4 over all age categories, the average score of men varies between 5 and 6.

Table 5-b. The amount of questions answered correctly (N=1136)

	<b>Total score</b>	<b>Women</b>	<b>Men</b>
<b>0</b>	7.5%	9.7%	5.8%
<b>1</b>	5.3%	9.1%	2.3%
<b>2</b>	5.8%	8.7%	3.6%
<b>3</b>	7.7%	10.9%	5.2%
<b>4</b>	10.9%	14.1%	8.5%
<b>5</b>	15.6%	18.1%	13.6%
<b>6</b>	14.7%	13.9%	15.3%
<b>7</b>	15.8%	10.1%	20.3%
<b>8</b>	16.7%	5.6%	25.4%

Note: not all percentages add up to 100% due to the rounding.

### 4.1.3 Present looking

As described earlier, for each question the score is calculated on a scale of 1 to 7. This means that a total score of 84 can be reached. This score of 84 means that a person is totally present looking, while a score of 12 (the lowest score possible) means that the person is taking the future always into account. Because many values can be reached, we made categories with a length of 7. This can also be seen in table 6 and figure 5 (appendix D) which both show the frequencies in all categories. As presented in table 6 and figure 5 most respondent got a score between 35 and 56. This means that these respondents are neither totally present looking, nor totally future looking. There are not very big differences between men and women, so we cannot conclude that men (women) are more present looking than women (men). If we look at the differences between age categories (figure 6, appendix D), we also see that there are no large differences between these categories. The only age category that is somewhat different are the respondents of 81 years and older. There one can see that on one side women are somewhat less present looking, whereas men are slightly more present looking than the respondents in the other age categories.

Table 6. Distribution scores present looking questions (N=1136)

	<b>Frequency</b>	<b>Percent</b>	<b>Women</b>	<b>Men</b>
<b>X&lt;=21</b>	4	0.4%	0.2%	0.5%
<b>21&lt;X&lt;=28</b>	31	2.7%	2.6%	2.8%
<b>28&lt;X&lt;=35</b>	93	8.2%	6.8%	9.2%
<b>35&lt;X&lt;=42</b>	247	21.7%	20.7%	22.5%
<b>42&lt;X&lt;=49</b>	367	32.3%	32.2%	32.4%
<b>49&lt;X&lt;=56</b>	252	22.2%	24.1%	20.7%
<b>56&lt;X&lt;=63</b>	106	9.3%	9.7%	9.1%
<b>63&lt;X&lt;=70</b>	30	2.6%	3.4%	2.0%
<b>X&gt;70</b>	6	0.5%	0.2%	0.8%

Note: not all percentages add up to 100% due to the rounding.

## **4.2 Regression analysis**

### **4.2.1 Factor analysis**

After ranking the financial literacy questions, a factor analysis is applied. This simplifies the regression, because it reduces the amount of independent variables. Instead of one variable for each question we get only one variable for all questions together. Because this method is also applied in the paper of Van Rooij, Lusardi and Alessie (2011) we used the same measure in this paper. However, in this paper we made one variable for both the basic and advanced financial literacy questions, instead of one variable for the basic financial literacy questions and one variable for the advanced financial literacy questions. Like Van Rooij, Lusardi and Alessie (2011) we used the Bartlett's method to score the questions.

Appendix E.1 shows the results of the Bartlett's method we applied on the financial literacy questions. From table 7, the descriptive statistics, one can conclude that the score of question I1 ('Suppose you had € 100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?') has the highest mean, which means that this questions is answered mostly correct. The table shows also relatively high standard deviations. This is not remarkable because only the answers 1, correct, and 0, incorrect, are taken into account.

Table 8 shows the adequacy of the factor analysis. This is measured by the Kaiser-Meyer-Olkin (KMO) and Bartlett's test. The KMO, which measures the sample adequacy, is an index between 0 and 1. The closer the number is to 1, the more useful the factor analysis is. If the KMO is smaller than 0.5, the factor analysis is unacceptable (Kaiser and Rice, 1974). Because the KMO has a value of the 0.893, we can conclude that the sample adequacy is "meritorious", or valuable. The Bartlett's test has a significance of around 0.000, which also indicates that the factor analysis is useful (Ahmadi, Rezaei and Kheiri, 2013). So, the data is in this case "completely suitable for factor analysis".

From the table 9 in appendix E.1 we can conclude that the first factor explains 31.645% of the variance, while all the other factors are not significant.

Table 10, which is shown below, can be seen as the most important one. This table represents the correlations between the common factor, F, and the variables. In this case the component is equal to financial literacy. From the table one can conclude that the answer of question 6 is the most



important variable that explains financial literacy, whereas the answer of question 5 is the least important factor that explains financial literacy.

Table 10. Component matrix financial literacy questions

	<b>Component</b>
<b>Score_d1 (6)</b>	0.684
<b>Score_d3 (8)</b>	0.679
<b>Score_p6 (12)</b>	0.673
<b>Score_p5 (11)</b>	0.653
<b>Score_d4 (9)</b>	0.629
<b>Score_p4 (10)</b>	0.612
<b>Score_I3 (3)</b>	0.592
<b>Score_p7 (13)</b>	0.512
<b>Score_d2 (7)</b>	0.503
<b>Score_I4 (4)</b>	0.480
<b>Score_I1 (1)</b>	0.473
<b>Score_I2 (2)</b>	0.397
<b>Score_I5 (5)</b>	0.240

For the present looking questions we did not rank the questions beforehand, because the questions are already scaled on a 1 to 7 base. Therefore the factor analysis is applied directly on those questions. Appendix E.2 shows the results of the Bartlett's method.

Table 11 shows the descriptive statistics. The seventh statement about the future, "I think it is important to take warnings about negative consequences of my acts seriously, even if these negative consequences would only occur in the distant future", has the highest mean. On the other side statement 9, "In general, I ignore warnings about future problems because I think these problems will be solved before they get critical", has to lowest mean. If one look at the standard deviation, one can conclude that they are all relatively high, which means that there is a large variation in each variable.

If we look at the correlation matrix (figure 8, appendix E.2), one can see that there are also negative values in it. This is the case because some questions are asked in the other way around, which means that not 7 means that someone is totally present looking, but 1.

Table 12 of appendix E.2 shows the KMO and Bartlett's test. Like the financial literacy questions, one can now also conclude that the data is 'completely suitable for the factor analysis' (Kaiser and Rice, 1974; Ahmadi, Rezaei and Kheiri, 2013).

In table 14, which is shown below, the correlations between the common factor F and the variables are shown. One can see that there are also negative correlations. This is the case because some statements, as explained before, are stated in a different way. From this table we can conclude that the component is how present looking someone is. So a positive sign means that a higher answer means that the respondent is more present looking. On the other side, a negative sign means that a high answer means that someone is less present looking.

*Table 14. Component matrix present looking questions*

	<b>Component</b>
<b>Toek03</b>	0.726
<b>Toek11</b>	0.717
<b>Toek02</b>	-0.662
<b>Toek10</b>	0.588
<b>Toek12</b>	0.572
<b>Toek09</b>	0.571
<b>Toek01</b>	-0.570
<b>Toek08</b>	-0.489
<b>Toek07</b>	-0.424
<b>Toek06</b>	-0.392
<b>Toek04</b>	0.261
<b>Toek05</b>	

## 4.2.2 Regression

In order to look at the effect of present looking on financial literacy, we applied an OLS regression, in which we control for gender, age, income and education. The results of the regression are presented below.

Table 15. Model Summary <sup>c</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.418 <sup>a</sup>	0.174	0.172	0.91019279	0.174	59.705	4	1130	0.000
2	0.447 <sup>b</sup>	0.200	0.196	0.89649923	0.025	35.784	1	1129	0.000

a. Predictors: (Constant), highest level of education completed, net income, age, sex.

b. Predictors: (Constant), highest level of education completed, net income, age, sex, BART factor score present looking.

c. Dependent Variable: BART factor score financial literacy.

Table 15 shows a model summary of two models. In the first model only the control variables are taken into account, whereas in the second model both the control variables, as well as BART factor score of the present looking questions is taken into account. In the first model, one can see that 17.4% of the variability in financial literacy is explained by our control variables. If we look at the adjusted R square, one can see that 17.2% of the variability in financial literacy is explained by our control variables. This number is lower than the normal R square, because now the number of independent variables are taken into account. If we add the BART score of present looking (model 2) 19.6% of the variability in financial literacy is explained by all independent variables. This increase in adjusted R square is a positive outcome for our results, because this increase means that adding the BART factor score for present looking improves the model more than expected by chance. One can also see that this adding the BART factor score for present looking is statistically significant.

So adding the BART factor score of present looking in the regression increases the predictive capacity at predicting financial literacy in a statistically significant way.

Table 16. ANOVA <sup>a</sup>

<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
<b>1</b>	<b>Regression</b>	197.850	4	49.463	59.705	0.000
	<b>Residual</b>	936.150	1130	0.828		
	<b>Total</b>	1134.000	1134			
<b>2</b>	<b>Regression</b>	226.610	5	45.322	56.391	0.000
	<b>Residual</b>	907.390	1129	0.804		
	<b>Total</b>	1134.000	1134			

a. *Dependent Variable: BART factor score financial literacy.*

b. *Predictors: (Constant), highest level of education completed, net income, age, sex.*

c. *Predictors: (Constant), highest level of education completed, net income, age, sex, BART factor score present looking.*

The fact that the BART factor score of present looking increases the predictive capacity at predicting financial literacy in a statistically significant way can also be concluded from table 16. Both models show a significance of around 0.000. This means that the model, including present looking, is still a statistically significant predictor of financial literacy.

Table 17, which is shown below, shows the results we are most interested in. Because we have to look at the regression which includes present looking, model 2 is the most important model to look at.

From the results in the table, one can make a formula. The formula can be presented as follows, where  $\hat{y}$  stands for financial literacy.

$$\hat{y} = -0.301 - 0.514 * Sex + 0.004 * Age - 0.000006151 * Net\ income + 0.176 \\ * Highest\ level\ of\ education\ completed - 0.162 \\ * BART\ factor\ score\ present\ looking$$

Table 17. Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta				Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-0.353	0.182			-1.943	0.052					
	Sex	-0.530	0.057	-0.263		-9.345	0.000	-0.304	-0.268	-0.253	0.921	1.086
	Age	0.004	0.002	0.059		2.092	0.037	0.070	0.062	0.057	0.927	1.079
	Net income	-5.184E-6	0.000	-0.023		-0.831	0.406	0.019	-0.025	-0.022	0.981	1.019
2	Highest level of education completed	0.193	0.018	0.292		10.574	0.000	0.311	0.300	0.286	0.958	1.043
	(Constant)	-0.301	0.179			-1.683	0.093					
	Sex	-0.514	0.056	-0.255		-9.184	0.000	-0.304	-0.264	-0.244	0.919	1.089
	Age	0.004	0.002	0.061		2.199	0.028	0.070	0.065	0.059	0.927	1.079
	Net income	-6.151E-6	0.000	-0.027		-1.000	0.317	0.019	-0.030	-0.027	0.981	1.020
	Highest level of education completed	0.176	0.018	0.266		9.682	0.000	0.311	0.277	0.258	0.936	1.069
	BART factor score present looking	-0.162	0.027	-0.162		-5.982	0.000	-0.221	-0.175	-0.159	0.969	1.032

a. Dependent variable: BART factor score financial literacy

First of all, if we look at the significance, one can conclude that four of our variables are statistically significant. These variables are sex, age, highest level of education completed and the BART factor score of present looking. On the other side, net income is statistically insignificant. Looking at the formula and table 17 one can see the effects of all variables on financial literacy. The control variables sex and net income have both a negative effect on financial literacy, whereas age and highest level of education completed have both a positive effect on financial literacy. These results are almost the same as expected before. Only the effect of income on financial literacy is remarkable. Before the research we expected a positive relationship between income and financial literacy. Lusardi and Mitchell (2007) and Monticone (2010) showed that this was also the case. However the results in this paper showed that there is a small negative relationship between income and financial literacy and this relationship is also statistically insignificant. One explanation for this outcome could be that, instead of Van Rooij, Lusardi and Alessie (2011), we decided not to remove the outliers regarding to income. We did not do this, because the main variable we were investigating was present looking and not income. So that could be a clarification why income has a different effect of financial literacy than expected.

If we look at the variables one by one, we see the following:

Sex can only have two values (1=male and 2=female), you can see that financial literacy goes down more when someone is a female. A change of one has the largest impact on financial literacy, compared to the other variables. The age of a person, however, has the smallest significant effect on financial literacy. An increase in age by one, increases financial literacy by only 0.004. Higher education has also a positive impact on financial literacy, as opposed to age, this has a bigger effect. If education goes up by one, financial literacy will go up by 0.176. If we look at the BART factor score of present looking, the variable in which we are most interested, one can conclude that the higher the BART factor score of present looking, the lower financial literacy. If the BART factor score of present looking goes up by one, financial literacy will go down by 0.162, all other things equal.

So to conclude, present looking has a statistically significant effect on financial literacy. One can conclude that the more present looking someone is the less financial literacy this person has, all

other things equal. However we have to take into account some problems that are discussed in the next section.

## 5. Discussion

In this section the results are discussed and remarks are made for further research. Although we can conclude on first sight that present looking has a negative effect on financial literacy, which is statistically significant, there are still some problems with this conclusion. These problems can be investigated by further research.

First of all the data we use is relatively old, namely from 2005. This means that the data now could be a lot different from the data eleven years ago. It could be the case that the respondents would answer the questions about the future much different now than they did in 2005 and it may also be the case that people, in general, have more financial knowledge now than eleven years ago. Therefore it might be good to do the same research with more up-to-date data and see if the conclusion is still the same as the conclusion in this paper.

The data is not only relatively old, but the data is also from the Netherlands only. It can be the case that the results of other countries are quite different and so another conclusion would be drawn for those countries. So for further researches it would not only be good to use more up-to-date data, but also data from different countries and look if the results are still the same as the results in this paper.

The Second problem is about the phrasing of the answer options of the financial literacy questions. Especially the answers of the basic financial literacy questions could be questioned. One can see that the answers are phrased in such a way that the possible answers are larger, equal, or smaller. One might argue that with simple reasoning the correct answer would be given by the respondents, without knowing the exact answer. So for further research we would suggest to phrase the answers in such a way that the respondent has to give a more precise answer. In that case one gets a better measure of the financial knowledge of the respondents.

The last, but also a very important issue, is that the R square of the model, which includes the BART score of present looking, is very low. In table 15, model 2, is shown that the adjusted R square is only 19.6%. This means that the variability in financial literacy can only be explained for 19.6% by present looking and the control variables (gender, age, education and income). This makes it very difficult to interpret the results in a right way, because there may be more



important variables that explain present looking. So in a next study there have to be more variables in the model to see if present looking still has the same impact on financial literacy or if there are other variables that have more impact on financial literacy than present looking. Other variables that may influence financial literacy may be the influence of parents during the childhood, or financial education (Lusardi, 2008).

## 6. Conclusion

In this paper we looked at the relationship between present looking and financial literacy. We did this research from data of the Netherlands only. The main finding of this paper is that present looking has negative and significant effect on financial literacy. So on first sight we can conclude that the more present looking someone is the less financial literacy the person has.

However we have to be careful to draw this conclusion, because there are also some drawbacks that have to be taken into account. First of all the data we used is only from the Netherlands and also relatively old. Also the phrasing of the questions could be improved to get a better measure of financial literacy. The last, but also very important point is that the R square of the model, which includes the BART score of present looking, is very low. So to get a better measure of the effect of present looking on financial literacy, in further studies we have to add more variables to the model, to see if present looking still has an effect of financial literacy.

Because present looking has a significant negative effect on financial literacy, this paper provided important insights. The negative effect concluded in this paper should be used in other papers as control variables. In the paper of Lusardi and Mitchell (2007) they found a positive effect between financial literacy and retirement planning, but they did not take into account present looking. Present looking can have an important effect on retirement planning, because people who are more present looking care less about the future. So we think that those people will also care less about the retirement planning. So present looking could be an important factor that explains a person's financial behavior. Concluding, present looking should be taken into account in other studies, because this might affect the results considerably.

So all in all, the answer to the research question ‘‘Is there a significant relationship between how present looking people are and the financial knowledge they have?’’, is yes. There is a significant, negative relationship between present looking and financial literacy. However further research has to be done, taking the problems into account, to see if the conclusion made in this paper is still reliable.

## 7. References

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## **Appendix A Questions financial literacy**

### **Basic questions financial literacy**

1) Suppose you had € 100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

(i) More than € 102; (ii) Exactly € 102; (iii) Less than € 102; (iv) Do not know; (v) Refusal.

2) Suppose you had € 100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have on this account in total? (i) More than € 200; (ii) Exactly € 200; (iii) Less than € 200; (iv) Do not know; (v) Refusal.

3) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? (i) More than today; (ii) Exactly the same; (iii) Less than today; (iv) Do not know; (v) Refusal.

4) Assume a friend inherits € 10000 today and his sibling inherits € 10000 3 years from now. Who is richer because of the inheritance? (i) My friend; (ii) His sibling; (iii) They are equally rich; (iv) Do not know; (v) Refusal.

5) Suppose that in the year 2010, your income has doubled and prices of all goods have doubled too. In 2010, how much will you be able to buy with your income? (i) More than today; (ii) The same; (iii) Less than today; (iv) Do not know; (v) Refusal.

### **Advanced questions financial literacy**

6) Which statement describes the main function of the stock market?

(i) The stock market helps to predict stock earnings; (ii) The stock market results in an increase in the price of stocks; (iii) The stock market brings people who want to buy stocks together with those who want to sell stocks; (iv) None of the above; (v) Do not know; (vi) Refusal.

7) What happens if somebody buys the stock of firm B in the stock market? (i) He owns a part of firm B; (ii) He has lent money to firm B; (iii) He is liable for firm B debt; (iv) None of the above; (v) Do not know; (vi) Refusal.

8) Which statement about mutual funds is correct? (i) Once one invests in a mutual fund, one cannot withdraw the money in the first year; (ii) Mutual funds can invest in several assets, for example invest in both stocks and bonds; (iii) Mutual funds pay a guaranteed rate of return which depends on their past performance; (iv) None of the above; (v) Do not know; (vi) Refusal.

9) What happens if somebody buys a bond of firm B? (i) He owns a part of firm B; (ii) He has lent money to firm B; (iii) He is liable for firm B's debts; (iv) None of the above; (v) Do not know; (vi) Refusal.

10) Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return: (i) Savings accounts; (ii) Bonds; (iii) Stocks; (iv) Do not know; (v) Refusal.

11) Normally, which asset displays the highest fluctuations over time: (i) Savings accounts; (ii) Bonds; (iii) Stocks; (iv) Do not know; (v) Refusal.

12) When an investor spreads his money among different assets, does the risk of losing money (i) Increase; (ii) Decrease; (iii) Stay the same; (iv) Do not know; (v) Refusal.

13) If you buy a 10-year bond, it means you cannot sell it after 5 years without incurring a major penalty. (i) True; (ii) False; (iii) Do not know; (iv) Refusal.

## **Appendix B Questions present and future**

- 1) I think about how things can change in the future, and try to influence those things in my everyday life.
- 2) I often work on things that will only pay off in a couple of years.
- 3) I am only concerned about the present, because I trust that things will work themselves out in the future.
- 4) With everything I do, I am only concerned about the immediate consequences (say a period of a couple of days or weeks).
- 5) Whether something is convenient for me or not, to a large extent determines the decisions that I take or the actions that I undertake.
- 6) I am ready to sacrifice my well-being in the present to achieve certain results in the future.
- 7) I think it is important to take warnings about negative consequences of my acts seriously, even if these negative consequences would only occur in the distant future.
- 8) I think it is more important to work on things that have important consequences in the future, than to work on things that have immediate but less important consequences.
- 9) In general, I ignore warnings about future problems because I think these problems will be solved before they get critical.
- 10) I think there is no need to sacrifice things now for problems that lie in the future, because it will always be possible to solve these future problems later.
- 11) I only respond to urgent problems, trusting that problems that come up later can be solved in a later stage.
- 12) I get clear results in my daily work, this is more important to me than getting vague results.

## Appendix C General measures

Table 1. Sex of the respondents (N=1136)

	Frequency	Percentage
<b>Men</b>	639	56.3%
<b>Women</b>	497	43.8%
<b>Total</b>	1136	100%

Table 2. Age and year of birth of the respondents (N=1136)

	Minimum	Maximum	Mean	Standard deviation
<b>Year of birth</b>	1915	1983	1953.91	14.890
<b>Age</b>	22	90	50.90	14.195

Table 3. Age categories of the respondents (N=1136)

	Frequency	Percent	Cumulative percent
<b>30 and younger</b>	111	9.8	9.8
<b>30 &lt; age ≤ 40</b>	209	18.4	28.2
<b>40 &lt; age ≤ 50</b>	254	22.4	50.5
<b>50 &lt; age ≤ 60</b>	246	21.7	72.2
<b>60 &lt; age ≤ 70</b>	182	16.0	88.2
<b>70 &lt; age ≤ 80</b>	116	10.2	98.4
<b>81 and older</b>	18	1.6	100.0
<b>Total</b>	1136	100.0	100.0



## Appendix D

Figure 1. The amount of questions answered correctly (N=1136)

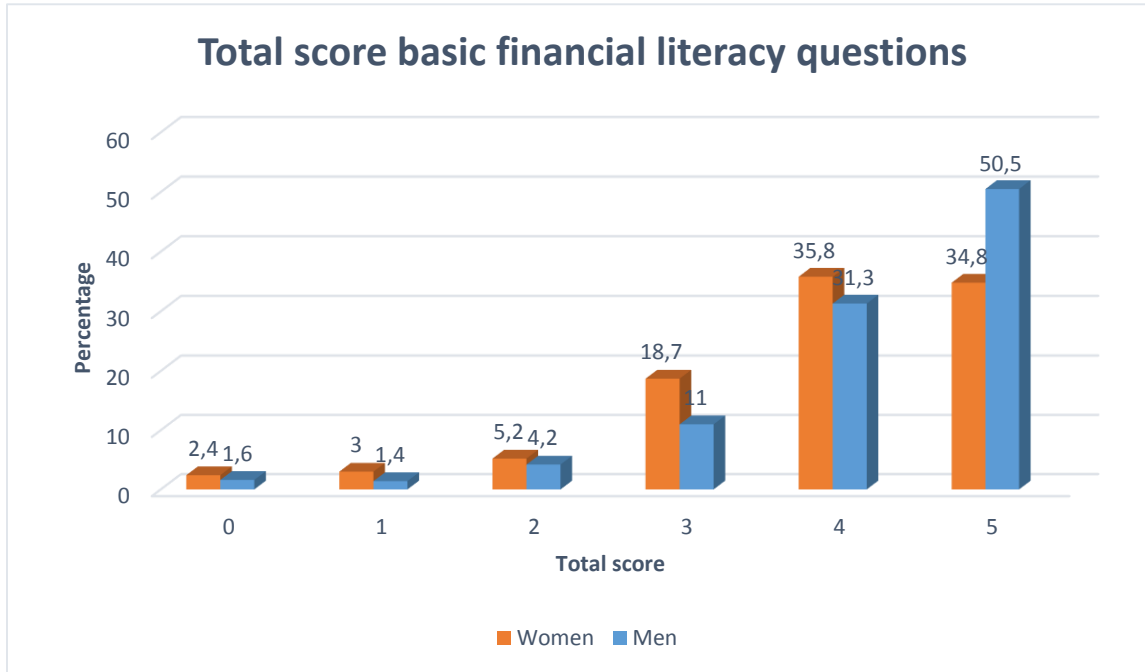


Figure 2. Average total score within each age category (N=1136)

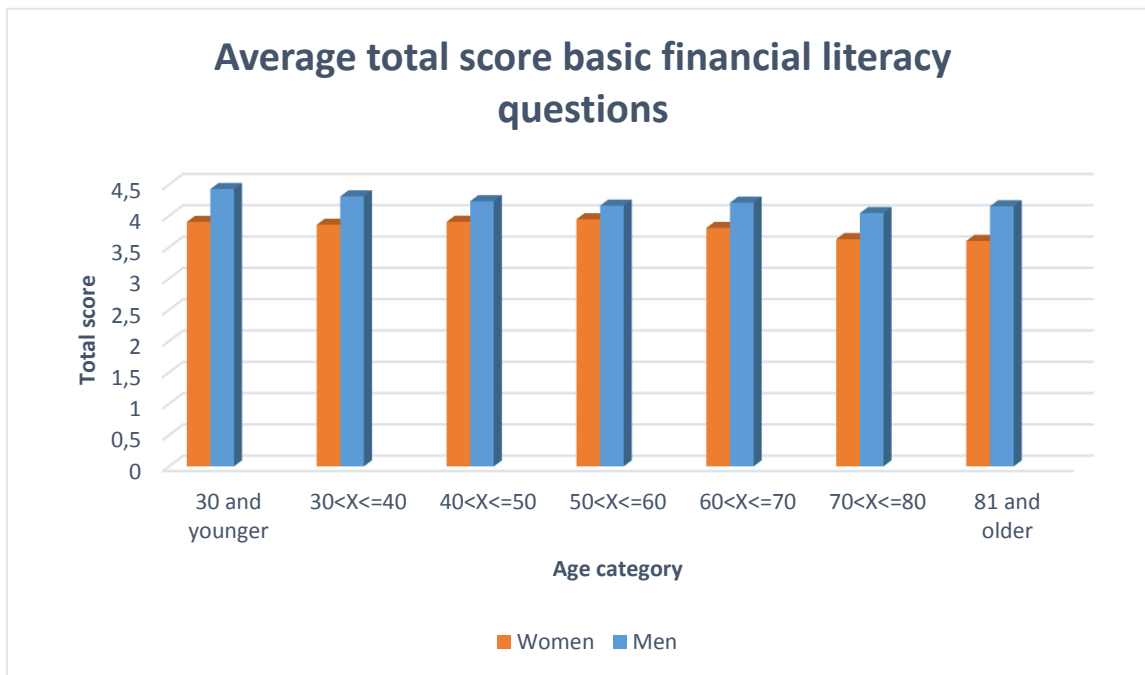


Figure 3. The amount of questions answered correctly (N=1136)

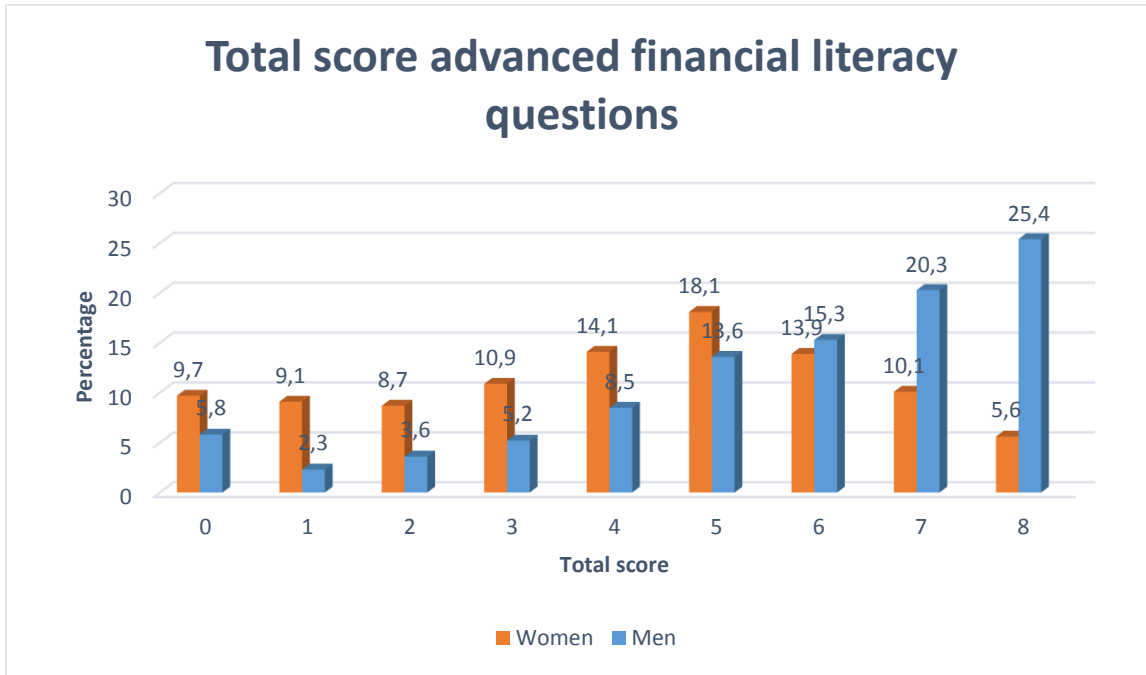


Figure 4. Average total score within each age category (N=1136)

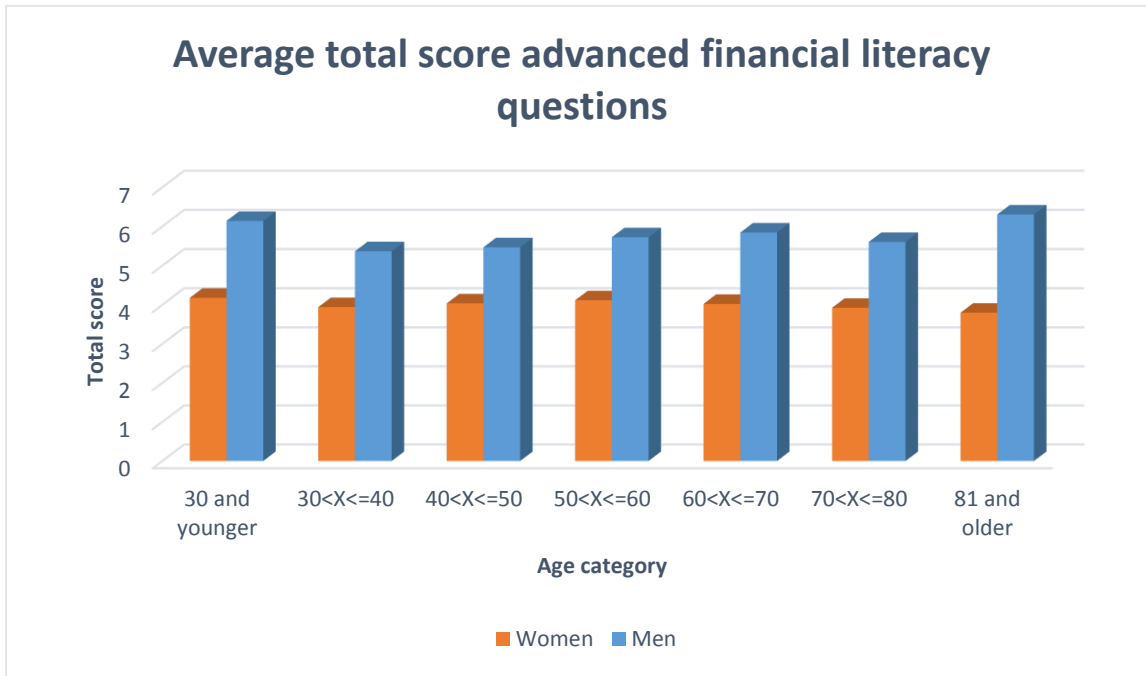


Figure 5. Distribution scores present looking questions (N=1136)

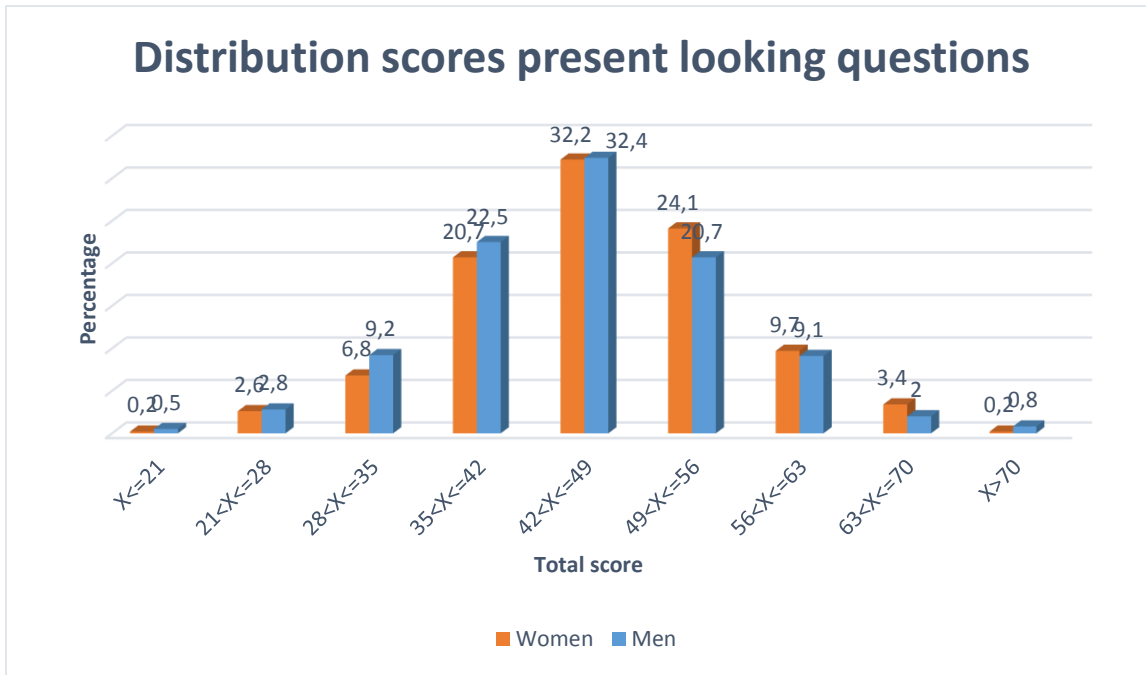
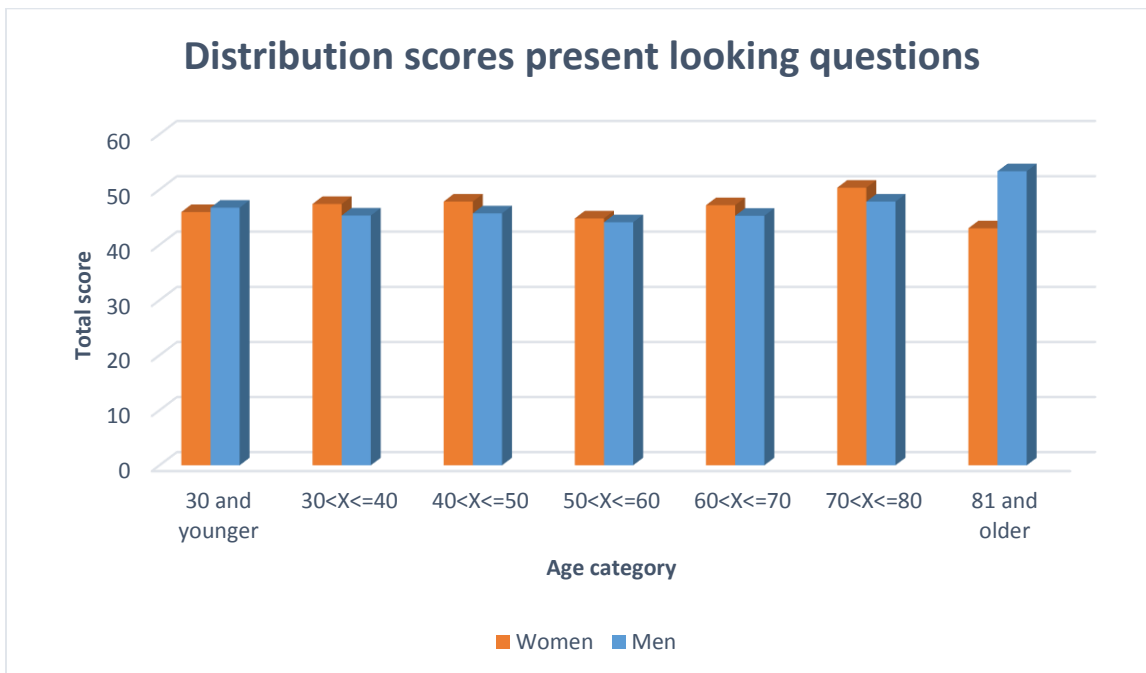


Figure 6. Average total score within each age category (N=1136)



## Appendix E Factor analysis

### E.1 Factor analysis financial literacy questions

Table 7. Descriptive statistics

	Mean	Std. Deviation	Analysis N
Score_I1 (1)	0.93	0.253	1136
Score_I2 (2)	0.80	0.399	1136
Score_I3 (3)	0.86	0.348	1136
Score_I4 (4)	0.76	0.427	1136
Score_I5 (5)	0.71	0.456	1136
Score_d1 (6)	0.70	0.460	1136
Score_d2 (7)	0.65	0.476	1136
Score_d3 (8)	0.72	0.451	1136
Score_d4 (9)	0.62	0.486	1136
Score_p4 (10)	0.52	0.500	1136
Score_p5 (11)	0.71	0.453	1136
Score_p6 (12)	0.67	0.469	1136
Score_p7 (13)	0.35	0.478	1136

Figure 7. Correlation matrix

	score_I1	score_I2	score_I3	score_I4	score_I5	score_d1	score_d2	score_d3	score_d4	score_p4	score_p5	score_p6	score_p7
score_I1	1	0,354	0,32	0,272	0,13	0,215	0,146	0,253	0,194	0,193	0,205	0,234	0,113
score_I2	0,354	1	0,212	0,161	0,091	0,196	0,084	0,201	0,158	0,182	0,144	0,238	0,131
score_I3	0,32	0,212	1	0,283	0,128	0,361	0,211	0,306	0,259	0,296	0,325	0,339	0,187
score_I4	0,272	0,161	0,283	1	0,109	0,245	0,125	0,209	0,22	0,222	0,246	0,282	0,219
score_I5	0,13	0,091	0,128	0,109	1	0,168	0,107	0,107	0,076	0,109	0,082	0,115	0,067
score_d1	0,215	0,196	0,361	0,245	0,168	1	0,33	0,455	0,368	0,327	0,378	0,403	0,297
score_d2	0,146	0,084	0,211	0,125	0,107	0,33	1	0,276	0,39	0,233	0,255	0,275	0,195
score_d3	0,253	0,201	0,306	0,209	0,107	0,455	0,276	1	0,403	0,322	0,428	0,418	0,285
score_d4	0,194	0,158	0,259	0,22	0,076	0,368	0,39	0,403	1	0,314	0,349	0,32	0,334
score_p4	0,193	0,182	0,296	0,222	0,109	0,327	0,233	0,322	0,314	1	0,389	0,396	0,308
score_p5	0,205	0,144	0,325	0,246	0,082	0,378	0,255	0,428	0,349	0,389	1	0,392	0,292
score_p6	0,234	0,238	0,339	0,282	0,115	0,403	0,275	0,418	0,32	0,396	0,392	1	0,254
score_p7	0,113	0,131	0,187	0,219	0,067	0,297	0,195	0,285	0,334	0,308	0,292	0,254	1

Table 8. KMO and Bartlett's test

<b>Kaiser-Meyer-Olkin</b>	<b>Measure of sampling adequacy</b>	0.893
<b>Bartlett's test of sphericity</b>	<b>Approx. chi-square</b>	2294.134
	<b>df</b>	78
	<b>Sig.</b>	0.000

Table 9. Total variance explained

	<b>Initial eigenvalues</b>			<b>Extraction sums of squared loadings</b>		
	<b>Total</b>	<b>% of variance</b>	<b>Cumulative %</b>	<b>Total</b>	<b>% of variance</b>	<b>Cumulative %</b>
<b>1</b>	4.114	31.645	31.645	4.114	31.645	31.645
<b>2</b>	1.218	9.368	41.013			
<b>3</b>	0.967	7.440	48.454			
<b>4</b>	0.887	6.822	55.275			
<b>5</b>	0.820	6.311	61.586			
<b>6</b>	0.812	6.244	67.830			
<b>7</b>	0.701	5.393	73.223			
<b>8</b>	0.671	5.164	78.387			
<b>9</b>	0.647	4.975	83.361			
<b>10</b>	0.571	4.394	87.756			
<b>11</b>	0.564	4.337	92.093			
<b>12</b>	0.545	4.192	96.285			
<b>13</b>	0.483	3.715	100.000			

## E.2 Factor analysis present looking questions

Table 11. Descriptive statistics

	Mean	Std. Deviation	Analysis N
<b>Toek01</b>	4.12	1.505	1136
<b>Toek02</b>	3.60	1.526	1136
<b>Toek03</b>	3.76	1.540	1136
<b>Toek04</b>	3.76	1.577	1136
<b>Toek05</b>	4.51	1.360	1136
<b>Toek06</b>	3.45	1.464	1136
<b>Toek07</b>	4.90	1.436	1136
<b>Toek08</b>	4.21	1.343	1136
<b>Toek09</b>	3.25	1.421	1136
<b>Toek10</b>	3.80	1.443	1136
<b>Toek11</b>	3.72	1.459	1136
<b>Toek12</b>	3.68	1.416	1136

Figure 8. Correlation matrix

	toek01	toek02	toek03	toek04	toek05	toek06	toek07	toek08	toek09	toek10	toek11	toek12
toek01	1	0,665	-0,329	0,049	0,144	0,265	0,316	0,34	-0,126	-0,095	-0,192	-0,128
toek02	0,665	1	-0,456	-0,04	0,078	0,299	0,283	0,372	-0,164	-0,172	-0,282	-0,16
toek03	-0,329	-0,456	1	0,28	0,169	-0,131	-0,199	-0,243	0,385	0,363	0,454	0,331
toek04	0,049	-0,04	0,28	1	0,34	0,098	0,035	-0,02	0,171	0,171	0,199	0,197
toek05	0,144	0,078	0,169	0,34	1	0,104	0,21	0,149	0,071	0,145	0,129	0,19
toek06	0,265	0,299	-0,131	0,098	0,104	1	0,212	0,358	-0,03	-0,19	-0,142	-0,1
toek07	0,316	0,283	-0,199	0,035	0,21	0,212	1	0,441	-0,134	-0,022	-0,166	-0,081
toek08	0,34	0,372	-0,243	-0,02	0,149	0,358	0,441	1	-0,077	-0,082	-0,173	-0,079
toek09	-0,126	-0,164	0,385	0,171	0,071	-0,03	-0,134	-0,077	1	0,446	0,459	0,337
toek10	-0,095	-0,172	0,363	0,171	0,145	-0,19	-0,022	-0,082	0,446	1	0,492	0,387
toek11	-0,192	-0,282	0,454	0,199	0,129	-0,142	-0,166	-0,173	0,459	0,492	1	0,536
toek12	-0,128	-0,16	0,331	0,197	0,19	-0,1	-0,081	-0,079	0,337	0,387	0,536	1

Table 12. KMO and Bartlett's test

<b>Kaiser-Meyer-Olkin</b>	<b>Measure of sampling adequacy</b>	0.787
<b>Bartlett's test of sphericity</b>	<b>Approx. chi-square</b>	3568.728
	<b>df</b>	66
	<b>Sig.</b>	0.000

Table 13. Total variance explained

	<b>Initial eigenvalues</b>			<b>Extraction sums of squared loadings</b>		
	<b>Total</b>	<b>% of variance</b>	<b>Cumulative %</b>	<b>Total</b>	<b>% of variance</b>	<b>Cumulative %</b>
<b>1</b>	3.451	28.758	28.758	3.451	28.758	28.758
<b>2</b>	2.150	17.919	46.677			
<b>3</b>	1.090	9.084	55.760			
<b>4</b>	0.907	7.557	63.317			
<b>5</b>	0.897	7.471	70.788			
<b>6</b>	0.700	5.833	76.621			
<b>7</b>	0.598	4.981	81.602			
<b>8</b>	0.518	4.318	85.920			
<b>9</b>	0.487	4.057	89.978			
<b>10</b>	0.481	4.009	93.987			
<b>11</b>	0.414	3.450	97.437			
<b>12</b>	0.308	2.563	100.000			