

Does Self-Control Predict Financial Behavior and Financial Well-Being?

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Abstract

To better understand how people make financial decisions it is important to investigate what psychological characteristics influence individuals' positive financial behavior and financial well-being. This could yield knowledge into the mechanisms that influence desirable behavior and emotional states that ultimately could be transformed into potential targets for nudges that may have a positive impact on society more generally. In this study, we explore the effect of individual differences in self-control and other non-cognitive factors on financial behavior and financial well-being. A survey containing measures of financial behavior, subjective financial well-being, self-control, optimism, deliberative thinking and demographic variables was sent to a representative Swedish sample (n=2,063). Our findings extend the application of the behavioral lifecycle hypothesis beyond savings behavior, to include general financial behavior. People with good self-control are more likely to save money from every pay-check, have better general financial behavior, feel less anxious about financial matters and feel more secure in their current and future financial situation.

1. Introduction

It is no secret that people make bad financial decisions. We save too little for retirement (Lusardi, 1999), we overspend (Sotiropoulos & d'Astous, 2013), we do not pay our bills on time, and we sometimes buy things we regret (Abendroth & Diehl, 2006). However, we do not make bad financial decisions all the time and some of us are more or less inclined to make bad financial decisions. Moreover some of us are more or less susceptible to feeling anxiety as a consequence of our financial behavior. This behavioral heterogeneity is a challenge to one-model-fits-all theories of economic behavior and as a consequence recent research has been concerned with understanding the role of individual differences in financial behavior and financial well-being. However, previous research has mostly focused on the influence of cognitive factors such as financial literacy (Fernandes et al., 2014; Lusardi and Mitchell, 2007) and numeric skills (Lusardi, 2012) on financial behavior. Less research has focused on the influence of non-cognitive factors related to self-control and other similar constructs such as deliberativeness.¹ Here, we explore the influence of such factors on both financial behavior

¹ Borghans et al. (2008) pointed out that the usage of the words 'cognitive and non-cognitive factors' can be confusing since few abilities are devoid of cognition. Cognitive abilities are often measured using IQ tests or other tests constructed to measure complex thinking (Parise & Peijnenburg, 2016). In this paper cognitive factors are factors measured by some kind of knowledge or performance test, while non-cognitive factors are self-reported measures of personal preferences, personality, behavior, thoughts or feelings.

and financial well-being in a large scale diverse sample of the Swedish population, while controlling for financial literacy and different demographic factors.

1.1 Individual differences and financial behavior.

Self-control is typically manifested as our ability to break bad habits, resist temptations and overcome first impulses (Baumeister, 2002; Fujita et al., 2006). One way to define self-control is that it constitutes the ability of our future selves to control our current self. When self-control failure occurs, people act in a non-optimal way and they might for example procrastinate at work even though they know that they would be better off spreading the work-load over time (Ariely & Wertenbroch, 2002; Fudenberg & Levine, 2006). Such explanations of self-control failure are in line with the behavioral life-cycle (BLC) hypothesis formalized by Shefrin and Thaler (1988). According to the BLC people act as if there within every person is an ongoing conflict between a “planner” who thinks about the long-run and a “doer” who is more concerned about the current situation. The BLC further states that people’s financial behavior over the course of life is determined by their ability to control impulses and the costs connected to exercising such self-control. Depending on people’s mental accounts and how we categorize money, it is more or less costly for us to save for the future. For example, monthly income is easier to spend, and therefore more costly to save, than money set aside for retirement. The BLC is an extension of the traditional life-cycle model which assumes that people perceive money as completely fungible and that the farsighted individual rationally plans his or her life-time consumption. (Modigliani & Brumberg, 1954). Although the BLC has been hugely influential in understanding savings behavior, research is currently lacking regarding to what extent it is applicable for other types of financial behavior that extend beyond savings behavior.

The ability to control impulses is undoubtedly a key factor for long-term success in many areas of life. In the seminal work on self-control by Mischel et al. (1972) pre-school children were presented with the simple marshmallow test, in which they could either eat a small snack right away or wait 15 minutes and get a larger snack. Around 67 % of the children in the original study failed to resist temptation and ate the small snack, indicating a lower level of self-control. Mischel followed the children in the original sample for more than five decades tracking how the ability to exercise self-control at an early age was correlated with various life outcomes as the children grew into adults. The results were striking. Children who were successful in resisting temptation and delayed gratification were more successful in almost every outcome measured. They had higher SAT scores, educational attainment, sense of self-worthiness and ability to cope with stress. Additionally, they were less likely to be addicted to drugs and had lower body mass index (BMI). (Mischel et al., 1989) Similarly Moffitt et al. (2011) measured nine different aspects of self-control, including impulsive aggression and hyperactivity, among children in New Zealand. At the age of 32 years the people who had shown good self-control as children had better physical health, higher socioeconomic status, were more likely to be home-owners and have retirement plans and were less likely to have committed a crime. Duckworth and Seligman (2005) performed a longitudinal study where eight-grade students either had to self-report their self-control or perform an IQ-test. Self-control was a better predictor than IQ when predicting final grades, high school selection, school attendance and hours spent doing homework.

For studies that have explored the link between self-control and financial behavior, most have focused on specific financial decisions such as retirement planning or credit use. Achtziger et al. (2015) found

that people with low self-reported self-control are more likely to engage in compulsive shopping while Gathergood (2012) found that people with self-control problems in the financial domain are more likely to suffer from credit withdrawals and unforeseen expenses on durables leading to over-indebtedness. It has also been shown that people's savings behavior is affected by their self-control. According to Biljanovska and Palligkinis (2015), households with self-control problems due to lack of planning, monitoring or commitment, have lower wealth accumulation and Choi et al. (2011) found that people with low self-control are less likely to save enough money for retirement. Rha et al. (2006) used data from a survey of a representative American sample in order to test how self-control mechanisms such as saving goals, foreseeable expenses and saving rules affect households' savings behavior. They found that households with saving rules are more likely to save than households without such rules and also that specific saving goals generally increase the probability of saving. On the contrary, Ballinger et al. (2011) found in experiments that neither self-control nor four different kinds of impulsive behavior affect savings behavior when taking cognitive abilities, such as working memory into account. Thus, the relationship between self-control and financial behavior is still inconclusive.

Fewer studies have explored the link between self-control and broader, more general, measures of financial behavior. One of few studies that have investigated a more general set of financial behaviors is Miotto and Parente (2015). They used qualitative as well as quantitative methods to investigate how personal characteristics, including self-control and propensity to plan for the future, affect low-middle class households' financial management. According to their study, individuals with higher self-control and tendencies to plan for the future also manage their finances better. However, their sample contained only 165 lower-middle class female consumers of a retail company in São Paulo. Thus, there is a need for large scale surveys covering more general samples.

1.2 Individual differences and financial well-being

A related topic that has been underexplored in the previous literature is how the ability to control impulses links to feelings of anxiety regarding one's own financial situation. Financial well-being is often treated as an objective measure where certain financial decisions are defining features of what constitutes financial well-being. However, an equally important aspect of financial well-being is how people subjectively feel about their financial situation. To what extent do people feel anxiety concerning the many decisions and uncertainties involved in financial decision making? Moreover do people with self-control problems feel more anxiety concerning their own financial behavior irrespective of their own financial situation? To our knowledge, no previous research has been done to examine the effect of self-control on financial well-being.

In addition to self-control, two other psychological constructs that might influence financial behavior and financial well-being are optimism and the tendency to think deliberatively. People who are moderate optimistic are more likely to save more, work harder and retire later. However, extremely optimistic people demonstrate worse financial behavior. (Puri & Robinson, 2007) Optimism has also been shown to be associated with general well-being and may be an important aspect of financial well-being as well. Depressed individuals are more prone to pessimistic thoughts about the future and suffer to a greater extent from pessimism bias than non-depressed individuals. (Strunk et al., 2006) Not only optimism, but also intuitive thinking, which can be seen as the opposite of deliberative

thinking, has been associated with behavioral biases in decision making. Klaczynski et al. (1997) showed that faith in intuition was significantly related to heuristic judgments as described by Kahneman et al. (1982). Furthermore, Thoma et al. (2015) found that professional financial traders tend to engage in deliberative thinking to a greater extent than non-financial traders, and also that they use fewer heuristics in decision-making. Thus it is interesting to also explore to what extent these psychological constructs, which are related to self-control, are linked to financial behavior and financial well-being.

1.3 Aim of the present research

The main aim of this study is to investigate if self-control predicts financial behavior and financial well-being. Following the BLC we predict that self-control will be positively associated with general financial behavior and additionally that it will predict financial well-being. This study will contribute to the existing literature on self-control, and financial behavior in three important ways. First, this study is unique since it examines several cognitive and non-cognitive individual differences related to financial decision making. Thus this study simultaneously considers financial literacy and self-control in models predicting financial outcomes. Secondly we explore the influence of self-control and other non-cognitive factors on a wide range of financial behaviors rather than just one single financial behavior. Finally, we also explore how self-control and other non-cognitive factors relate to anxiety and perceived security associated with a person's financial situation.

2. Method

2.1 Sample and procedure

A web-based survey administrated by CMA Research was sent in May 2016 to a diverse sample of the adult Swedish population (aged 20 to 75). In total 2,063 respondents (1,048 females and 1,015 males, mean age of 49 years) received a small monetary compensation for completing it. The sample was fairly representative to the general population in Sweden with regards to income and education. Sample characteristics are shown in Table 1.

Table 1. Descriptive statistics for all respondents

	Study Sample (n=2,063)
<i>Age</i>	
All respondents, mean	49.2
20-39 years old, n (%)	644 (31.2)
40-59 years old, n (%)	769 (37.3)
60-75 years old, n (%)	649 (31.5)
<i>Sex</i>	
Female, n (%)	1,048 (50.8)
<i>Income per household / month*</i>	
0-14,999 SEK, n (%)	300 (14.6)
15,000 - 44,999 SEK, n (%)	1,127 (54.7)
> 45,000 SEK, n (%)	634 (30.8)
<i>Education</i>	
Middle school	266 (12.9)
Secondary preuniversity education	902 (43.7)
University or vocational education less than 3 years	310 (15.0)
University education, at least 3 years	585 (28.4)

*Income was reported as the household's monthly income before tax.

2.2 Questionnaire

Most other studies (e.g. Gathergood, 2012; Lusardi, 2012; Rha et al., 2015) have measured financial behavior on a one-item scale, usually related to savings behavior. In this paper we instead used the first twelve items of Dew and Xiao's (2011) Financial Management Behavior Scale (FMBS) where the subjects were asked to rate how often they have engaged in the stated behaviors during the last six months. The scale ranged from 1 (not at all) to 5 (always) and total average scores on the Financial Management Behavioral Scale ranged from 1.5 to 5 ($M = 3.44$; $SD = 0.65$). The scale was translated into Swedish and the option "not applicable" was added to three of the questions (item 4 to 6). The low mean value of item 6 "Maxed out the limit on one or more credit cards" is due to the fact that 785 subjects responded not applicable, which was coded as 1. Item 2 "Paid all your bills on time" had the highest mean, 4.56, indicating that most respondents pay their bills on time. Table 2 shows all the items included in the FMBS including descriptives obtained from the present sample.

To measure financial well-being we used two separate scales, one measuring anxiety related to financial decisions and one measuring perceived security in one's current and future financial situation. To measure financial anxiety the same four items as Fünfgeld and Wang's (2009) used to measure anxiety about money matters were included in the survey. For example, respondents were asked to indicate to what extent they felt "anxious about financial and money affairs". The three questions included to measure financial security have, to our knowledge, never been used together before and

included statements such as “I feel confident about my financial future”. All questions can be found in Table 2. For both scales, the respondents were asked to indicate to which extent they agree to the statements presented with scale options ranging from 1 (not at all) to 5 (completely agree).

Table 2. Dependent variables

	Mean	St. Dev.	Range
Financial management behavioral scale*, $\alpha = .65$			
1 Comparison shopped when purchasing a product or service	3.86	1.00	1-5
2 Paid all your bills on time	4.56	0.84	1-5
3 Kept a written or electronic record of your monthly expenses	3.54	1.34	1-5
4 Stayed within your budget or spending plan	2.98	1.50	1-5, N/A
5 Paid off credit card balance in full each month	3.20	1.87	1-5, N/A
6 Maxed out the limit on one or more credit cards	1.60	1.03	1-5, N/A
7 Made only minimum payments on a loan	2.50	1.34	1-5
8 Began or maintained an emergency savings fund	3.23	1.41	1-5
9 Saved money from every paycheck	3.54	1.40	1-5
10 Saved for a long term goal such as a car, education, home, etc.	3.10	1.41	1-5
11 Contributed money to a retirement account	2.90	1.56	1-5
12 Bought bonds, stocks, or mutual funds	2.53	1.45	1-5
FMBS average	3.44	0.65	1.5-5
Financial anxiety, $\alpha = .68$			
1 I get unsure by the lingo of financial experts	3.14	1.12	1-5
2 I am anxious about financial and money affairs	2.88	1.08	1-5
3 I tend to postpone financial decisions	2.51	1.18	1-5
4 After making a decision, I am anxious whether I was right or wrong	2.70	1.12	1-5
FA average	2.81	0.80	1-5
Financial security, $\alpha = .91$			
1 I feel secure in my current financial situation	3.27	1.28	1-5
2 I feel confident about my financial future	3.05	1.30	1-5
3 I feel confident about having enough money to support myself in retirement, no matter how long I live	2.75	1.36	1-5
FS average	3.03	1.20	1-5

* Item 6 and 7 were reversed before calculating the aggregated mean value

Additionally, the questionnaire contained a number of scales measuring individual differences such as self-control, optimism and deliberate thinking. These scales were used as predictor variables in the regressions and neither had any specific a priori connection to the financial domain;

Self-control was measured through a shorter version of Tangney et al.'s (2004) Brief Self-Control Scale, which is a general measure of self-control, and the four items from Antonides et al.'s (2011) Short-

Term Future Orientation Scale. Tangney et al.'s original scale consists of 13 items, however, we chose to only include five of them in our survey. Although our version of the scale is shorter the Cronbach's alpha is still 0.73, which indicates that the scale has an acceptable internal consistency. Table 3 shows the five items measuring self-control that were included in our survey as well as the mean value of the answers and the range within which all answers were. Compared to Tangney et al.'s (2004) sample, our sample has a greater spread with several respondents scoring either 1 or 5. The average person in our sample scores marginally higher on the self-control scale than Tangney et al.'s sample, 3.17 compared to 3.07. The Short-term Future Orientation Scale measures the respondents' preferences for focusing on the short-term and neglecting the future and contains statements like "I live more for the day than for the day of tomorrow". The internal consistency of the Short-term future orientation scale is 0.65. An exploratory factor analysis showed that these two scales measure the same underlying construct and therefore they were merged into one scale in this paper.

Optimism was measured through five of the eight items included in Scheier and Carver's (1985) Life Orientation Scale. The statements used were as followed: "In uncertain times, I usually expect the best". Although this scale was shortened the internal consistency was kept high with a Cronbach alpha of 0.77. To measure the subjects' deliberativeness, two items from Pachur and Spaar's (2015) Unified Scale to Assess Individual Differences in Intuition and Deliberation (USID) were used, "Developing a clear plan is very important to me" and "I like to analyze problems". The questions have a correlation of 0.62.

Additionally the subjects were asked to answer four questions measuring their financial literacy. To measure financial literacy we used the same questions as for example van Rooij et al. (2012) have used. In the regressions, financial literacy is expressed as the number of correct answers on the financial literacy test. Hence, a higher score indicates that the respondent has a better knowledge of simple financial concepts such as compound interest rate and inflation.

Table 3. Independent variables

Self-control, $\alpha = .76$			
	Mean	St.dev.	Range
<i>Tangney et al. (2004) *</i>			
1 I have a hard time breaking bad habits	3.11	1.12	1-5
2 I get distracted easily	2.98	1.10	1-5
3 I'm good at resisting temptation	3.04	1.08	1-5
4 I do things that feel good in the moment but regret later on	2.60	1.00	1-5
5 I often act without thinking through all the alternatives	2.48	1.06	1-5
<i>Antonides et al. (2011)</i>			
1 I only focus on the short term	2.23	1.11	1-5
2 The future will take care of itself	2.97	1.15	1-5
3 I live more for the day of today than for the day of tomorrow	2.43	1.14	1-5
4 My convenience plays an important role in the decisions I make	3.25	1.02	1-5
Self-control average	3.23	0.63	1.125-5
Optimism**, $\alpha = .77$			
	Mean	St.dev.	Range
1 In uncertain times, I usually expect the best	3.10	1.01	1-5
2 If something can go wrong for me, it will	2.73	1.08	1-5
3 I'm always optimistic about my future	3.20	1.06	1-5
4 I hardly ever expect things to go my way	2.80	1.12	1-5
5 I rarely count on good things happening to me	2.84	1.13	1-5
Optimism average	3.19	0.78	1-5
Deliberative thinking, $\alpha = .62$			
	Mean	St.dev.	Range
1 Developing a clear plan is very important to me	3.36	0.96	1-5
2 I like to analyze problems	3.48	1.10	1-5
Deliberative thinking average	3.42	0.88	1-5

* Item 1, 2, 4 and 5 were reversed before calculating the aggregated mean value

** Item 1, 2, 4 and 5 were reversed before calculating the aggregated mean value

2.3 Estimation strategy/ Analysis

To evaluate the effects of different psychological constructs on financial behavior and financial well-being a series of OLS-regressions were run. Our main specification is:

$$Y_i = \beta_0 + \beta_1'X_i + \beta_2SC_i + \beta_3Opt_i + \beta_4Del_i + u$$

Where Y is the outcome variable of interest, which means that it can be either savings behavior, general financial behavior, financial anxiety or perceived financial security. SC is the self-control measure, Opt is the optimism measure, Del is the measure of deliberative decision making, and i is the index for the individuals of our sample. Vector X includes all control variables (income, age, sex, educational attainment and level of financial literacy). Previous research has shown that these

variables influence financial behaviors. (Achtziger et al., 2015; Biljanovska & Palligkinis, 2015; Fernandes et al., 2014) We chose to divide income into three categories; the respondents with a household income of less than 15,000 SEK/month were categorized as low income households and respondents with a household income of at least 45,000 SEK/month were categorized as high income households.

Table 4 shows the correlations between the three independent variables of interest, self-control, optimism and deliberative thinking. The three constructs are positively correlated. However, the correlations are not high enough to cause multicollinearity problems in the regressions.

Table 4. Correlations between the independent variables

	Self-control	Optimism	Deliberative thinking
Self-control	1.000		
Optimism	0.262	1.000	
Deliberative thinking	0.109	0.109	1.000

3. Results

3.1 Do people behave in accordance with the behavioral life-cycle hypothesis?

To test if the reported financial behavior is supportive of the BLC, we first test if self-control has a positive effect on how people save (“Have you during the last six months saved money from every paycheck?”). We model the relationship between self-control and savings behavior using OLS regressions with robust standard errors, including the control variables income, age, sex, education and financial literacy. As predicted by the BLC, and shown in Table 5, level of self-control affects to what extent people report that they have consecutively saved money during the last six months. Moreover, income level and age have a significant negative effect on savings behavior.

Looking at our additional exploratory variables, level of optimism and to what extent people are prone to deliberative thinking (model 2 and 3), we see that both optimism and deliberative thinking have positive effects on savings behavior independent of self-control and the other control variables. According to life-cycle models, older people save less since pensioners in general use their savings rather than save more for the future. Our results are in line with this hypothesis, even though the effect of age is rather small. Financial literacy, income and sex (females saved more) have a positive effect on savings behavior.

Table 5. OLS-regression on the association between self-control and savings behavior

VARIABLES	(1) Saved	(2) Saved	(3) Saved	(4) Saved
Self-control	0.521*** (0.050)			0.451*** (0.051)
Optimism		0.289*** (0.042)		0.202*** (0.042)
Deliberative thinking			0.191*** (0.037)	0.143*** (0.036)
Age	-0.007*** (0.002)	-0.005** (0.002)	-0.001 (0.002)	-0.008*** (0.002)
Female	0.183*** (0.062)	0.189*** (0.062)	0.191*** (0.062)	0.201*** (0.061)
Education	0.054* (0.030)	0.069** (0.031)	0.062** (0.031)	0.031 (0.030)
Financial literacy	0.160*** (0.028)	0.150*** (0.028)	0.143*** (0.029)	0.130*** (0.028)
Observations	2,062	2,062	2,062	2,062
R-squared	0.142	0.114	0.104	0.161

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.2 Self-control and financial behavior

To test if it is possible to generalize the BLC to include not only savings behavior, but a broader concept of good financial behavior, we include the respondents' mean value of all questions in the Financial Management Behavioral Scale in our analyses. First, we split the sample at the median level of self-control and compare the two groups' self-reported financial behavior. Individuals scoring 3.2 or lower on the self-control scale are classified as having low self-control (48.5%), the rest as having high self-control (51.5%). People with low self-control have an average score of 3.27 on the Financial Management Behavioral Scale while people with high self-control have an average score of 3.61, indicating that people with high self-control have better financial behavior. A t-test shows that the difference in mean scores between the two groups is statistically significant [$t(2,061) = -12.338, P < .001$].

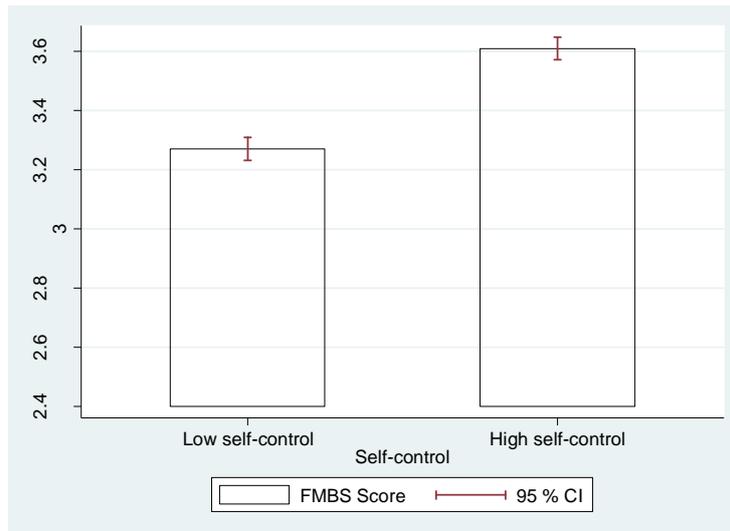


Figure 1. Good financial behavior by self-control level

We model the relationship between self-control and financial behavior using OLS regressions with robust standard errors. Once again the control variables income, age, sex, educational attainment and financial literacy are included. Table 6 shows the marginal effects of self-control, optimism and intuitive thinking when regressed one at a time, as well as all together, on financial behavior. The results are similar to those obtained from the regression on savings behavior. As expected, self-control has a positive effect on general financial behavior, even though the effect is smaller (0.236, p-value < 0.01) when explaining general financial behavior than savings behavior. The same is true for optimism, while the effect of deliberative thinking is unchanged. High financial literacy and high income have positive effects on good financial behavior, while there is no difference between the sexes when it comes to financial behavior. There is a small, but significantly positive effect of age on financial behavior.

Table 6. OLS-regression on the association between self-control and good financial behavior

VARIABLES	(1) FMBS	(2) FMBS	(3) FMBS	(4) FMBS
Self-control	0.282*** (0.023)			0.236*** (0.023)
Optimism		0.155*** (0.018)		0.103*** (0.017)
Deliberative thinking			0.169*** (0.015)	0.144*** (0.015)
Age	0.003*** (0.001)	0.004*** (0.001)	0.006*** (0.001)	0.003*** (0.001)
Female	0.029 (0.027)	0.032 (0.027)	0.038 (0.027)	0.043* (0.026)
Education	0.040*** (0.013)	0.048*** (0.013)	0.036*** (0.013)	0.020 (0.013)
Financial literacy	0.114*** (0.012)	0.109*** (0.012)	0.096*** (0.012)	0.090*** (0.012)
Observations	2,062	2,062	2,062	2,062
R-squared	0.239	0.200	0.218	0.290

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.2 Self-control and financial well-being

Additionally, we are interested in whether self-control affects financial well-being. First of all we want to investigate if there is a difference in financial well-being only based on the respondents' reported self-control. Once again we split the sample into two groups, respondents with self-control scores of 3.2 or lower (48.5%), and respondents with a score of 3.4 or higher (51.5%). Figure 2 shows that people with low self-control are more anxious about financial matters than people with high self-control, mean score of 3.05 and 2.57 respectively. A t-test shows that the difference is statistically significant [t (2061) = 14.187, P < 0.001].

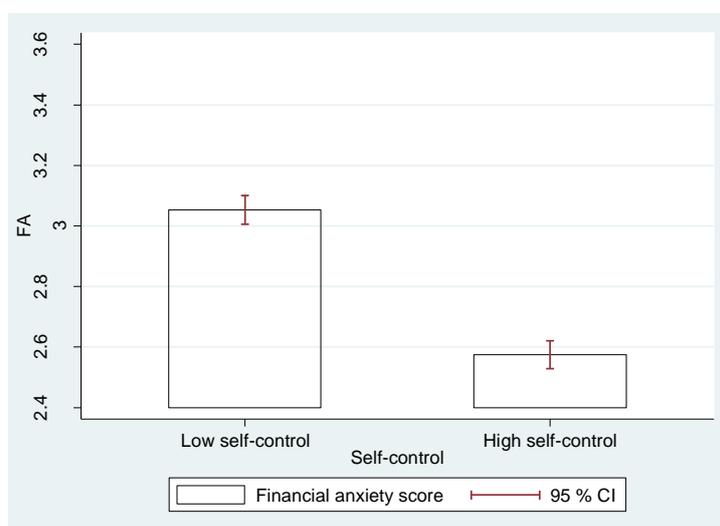


Figure 2. Financial anxiety by self-control level

In Figure 3 the relationship between self-control and financial security can be observed. People with low self-control are more likely to feel unconfident about their current and future financial situation than people with high self-control. The average person with low self-control scores 2.78 on the financial security scale, while the average person with high self-control scores 3.27. A t-test shows that the difference between the two groups is statistically significant [$t(2061) = 9.482, P < 0.001$].

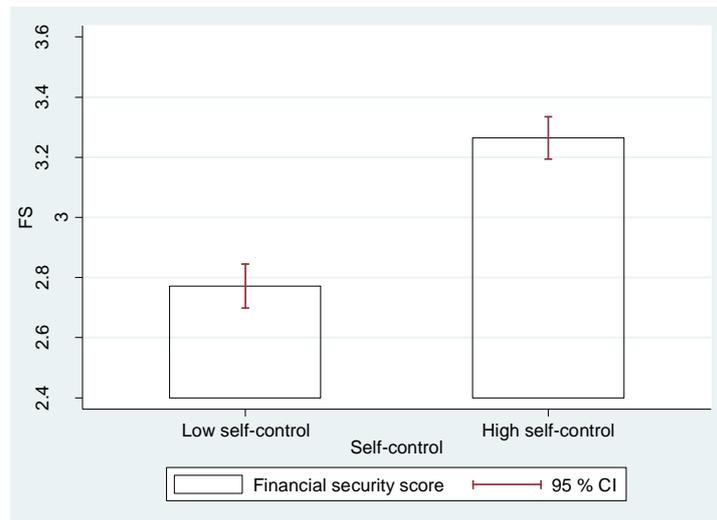


Figure 3. Financial security by self-control level

To investigate if these differences persist when controlling for other variables, we model the relationship between self-control and financial well-being (financial anxiety and financial security respectively). Income, age, sex, education and financial literacy are included as control variables. The results are robust, people with good self-control were less anxious about financial matters and more secure in their current and future financial situation.

Looking at our additional exploratory variables, level of optimism and to what extent people are prone to deliberative thinking, we see that optimism has a negative effect on financial anxiety but a positive effect on financial security independent of self-control and the other control variables. Deliberative thinking has a positive effect on financial security (model 8), while it does not significantly affect financial anxiety (model 4). Income level has a positive effect on financial security, but does not affect financial anxiety when self-control, optimism and deliberative thinking are included. Financial literacy and sex, do affect both aspects of financial well-being, but have greater impact on perceived security than they have on financial anxiety.

Table 7. OLS-regression on the association between self-control and financial well-being

VARIABLES	(1) FA	(2) FA	(3) FA	(4) FA	(5) FS	(6) FS	(7) FS	(8) FS
Self-control	-0.454*** (0.028)			-0.378*** (0.028)	0.380*** (0.042)			0.229*** (0.040)
Low income	0.088* (0.052)	0.012 (0.051)	0.104* (0.057)	0.013 (0.048)	-0.613*** (0.073)	-0.486*** (0.068)	-0.607*** (0.073)	-0.472*** (0.066)
High income	-0.116*** (0.035)	-0.048 (0.035)	-0.110*** (0.037)	-0.063* (0.033)	0.553*** (0.050)	0.455*** (0.048)	0.549*** (0.050)	0.468*** (0.047)
Age	-0.002** (0.001)	-0.003*** (0.001)	-0.007*** (0.001)	0.001 (0.001)	0.009*** (0.002)	0.007*** (0.001)	0.014*** (0.002)	0.006*** (0.001)
Female	0.167*** (0.034)	0.157*** (0.034)	0.171*** (0.037)	0.157*** (0.032)	-0.204*** (0.049)	-0.185*** (0.046)	-0.194*** (0.050)	-0.174*** (0.045)
Education	-0.013 (0.016)	-0.018 (0.016)	-0.035** (0.018)	-0.002 (0.015)	0.055** (0.024)	0.047** (0.022)	0.054** (0.024)	0.019 (0.022)
Financial literacy	-0.079*** (0.016)	-0.063*** (0.016)	-0.082*** (0.017)	-0.064*** (0.015)	0.136*** (0.022)	0.107*** (0.021)	0.116*** (0.023)	0.088*** (0.021)
Optimism		-0.387*** (0.023)		-0.328*** (0.022)		0.584*** (0.030)		0.533*** (0.030)
Deliberative thinking			-0.027 (0.024)	0.023 (0.020)			0.199*** (0.030)	0.145*** (0.028)
Observations	2,062	2,062	2,062	2,062	2,062	2,062	2,062	2,062
R-squared	0.203	0.212	0.087	0.290	0.258	0.349	0.241	0.374

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4. Discussion

At the heart of behavioral and experimental economics is the goal to better understand behavior through observation so that economic models can be improved. However, despite the predictions of classical economics, the researcher is often confronted with a great deal of behavioral heterogeneity. One way to approach this heterogeneity is to acknowledge that decision makers differ from each other in fundamental ways and these differences contribute to the differences in observed financial behavior. The aim of this paper was to better understand the heterogeneous non-cognitive processes that underlie financial behavior and financial well-being, with a specific focus on self-control.

4.1 Main findings

Self-control influences people's financial behavior as well as their subjectively perceived financial well-being. People with good self-control are more likely to regularly save money from their pay-checks, which means that they are better prepared to manage unforeseen expenses and more likely to have enough money for their retirement. This finding is in line with the behavioral life-cycle hypothesis and previous research (Ameriks et al., 2007; Bijanovska & Palligkinis, 2015; Rha et al., 2006). When we expanded the analysis from savings behavior to general financial behavior, we could observe that self-control has a positive effect on general financial behavior as well. This holds even when controlling for other variables, such as financial literacy and income, which previously have been shown to affect financial behavior.

Apart from being positively associated with good financial behavior, self-control affects both aspects of financial well-being (financial anxiety and perceived financial security) that we are interested in. It has a positive effect on financial security while affecting financial anxiety negatively. Thus, we can conclude that self-control has a positive effect not only on financial behavior but also on financial well-being. For a better understanding of this finding, future studies should investigate if self-control has an immediate effect on financial well-being or if the effect comes from good self-control leading to better financial behavior, which has a positive effect on financial well-being.

This study has shown that high levels of self-control predicts good financial behavior and financial well-being, however there are other non-cognitive factors such as optimism and deliberative thinking that seem to influence a person's financial behavior and financial well-being as well. People who are more optimistic demonstrate better financial behavior, are less anxious about financial matters and more confident about their financial situation. People scoring high on the optimism scale have a more positive view of their life and assume to a greater extent than others that good things will happen to them. People who assume that good things will happen to them are probably less likely to worry about the future. A person scoring high on the deliberative thinking scale are more likely to make plans and analyze problems which has a positive effect on financial behavior and perceived financial security. However, we find no evidence of deliberative thinking affecting financial anxiety.

Self-control, optimism and deliberative thinking are three unrelated factors that affect financial behavior and financial well-being. Several previous studies have looked at these constructs separately or only studied the effect of financial literacy on financial behavior which might lead to biased results. Future studies should look even more closely into which cognitive and non-cognitive skills that

influence people's behavior and their well-being. This is crucial knowledge if we want to be able to nudge people into making better financial decisions and decisions that increase their well-being.

4.2 Limitations

Some limitations should be noted. First, the survey is based on self-reported data so it might be biased due to social desirability issues. People might want to present themselves as more normal when it comes to certain financial and/or psychological behaviors. Another potential limitation that occurs when dealing with self-reported data is that the results might be influenced by people misunderstanding the questions or knowingly or unknowingly giving inaccurate information. Although we have included more personal characteristics than several other studies, there is still a possibility that our results suffer from omitted variable bias. Joshi and Fast (2013) showed for example that people with perceived power in their work place have higher life-time savings, even when controlling for income and socioeconomic status.

4.3 Conclusion

The BLC states that self-control has a positive effect on savings behavior. The results of our study are in line with this model, but they also show that self-control has a positive effect on general financial behavior, which indicates that self-control has an even greater effect on financial behavior than the BLC suggests. Additionally, people with good self-control suffer from less anxiety connected to financial matters and are more secure and confident in their current and future financial situation. Apart from the impact of self-control on financial behavior and financial well-being, we have found that the two related constructs of optimism and deliberative thinking also affect financial behavior and financial well-being. This is a first step on the road to understand the underlying factors of the heterogeneous financial behaviors observed among decision makers.

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