

**FINANCIAL BEHAVIOR AND WELL-BEING OF
YOUNG ADULTS:
EFFECTS OF SELF-CONTROL AND OPTIMISM**

**University of Jyväskylä
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ABSTRACT

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<p>To help people to make better financial decisions, it is crucial to understand the factors that influence financial behavior. Similarly, to improve financial well-being, it is important to know the factors related to it. This thesis aims to investigate the roles of self-control and optimism behind financial behavior and financial well-being. Moreover, this thesis explores the possibility of an asuntosäästöpalkkio (ASP) account to work as a self-control mechanism.</p> <p>For this study, an online survey was conducted and a sample of 903 participants was gathered. The survey included questions on demographics and regarding ASP accounts, scales measuring self-control, optimism, financial behavior, financial literacy, financial anxiety and financial security. The sample consisted of young Finnish adults (aged 18-29) studying at the university of Jyväskylä.</p> <p>The findings in this thesis present self-control to be positively related to financial behavior and financial well-being. There is a significant positive relationship between optimism and financial well-being. Furthermore, financial literacy is not related to financial behavior, but it is negatively related to financial anxiety; therefore, it is positively related to financial well-being. An interesting finding was a gender effect. The results show women to have lower level of financial well-being than men. The results suggest that an ASP account could work as a self-control mechanism, since participants who had an ASP account saved more frequently than the ones without.</p> <p>In sum, the findings in this thesis highlight the significant role of psychological factors, namely self-control and optimism, behind financial behavior and well-being.</p>	
Keywords Financial behavior, financial well-being, self-control, optimism, financial literacy, asuntosäästöpalkkio, ASP, self-control mechanism	
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TIIVISTELMÄ

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<p>On tärkeää tiedostaa taloudelliseen päätöksentekoon vaikuttavat tekijät, jotta on mahdollista auttaa ihmisiä tekemään parempia päätöksiä. Samalla tavalla taloudellisen hyvinvoinnin edistämiseksi on tiedettävä hyvinvointiin vaikuttavat tekijät. Tämä tutkielma selvittää itsehillinnän ja optimismin rooleja taloudellisen käyttäytymisen ja hyvinvoinnin taustalla. Lisäksi se tutkii asuntosäästöpalkkiotilin (ASP-tili) mahdollisuutta toimia itsehillintämekanismina.</p> <p>Tutkimusta varten suoritettiin online-kysely, joka sisälsi kysymyksiä väestötiedoista, ASP-tilin tuntemuksesta ja käytöstä. Lisäksi kysely sisälsi kysymyksiä ja väittämiä, joiden avulla arvioitiin vastaajien taloudellista käyttäytymistä, taloudellista hyvinvointia, itsehillintää, optimismia ja talouslukutaitoa. Vastaajat olivat kaikki Jyväskylän yliopiston opiskelijoita, joista rajattiin iän perusteella (18-29-vuotias) 903 vastaajan otos.</p> <p>Tutkimustulokset osoittavat itsehillinnällä olevan tilastollisesti merkitsevä positiivinen yhteys taloudelliseen käyttäytymiseen ja taloudelliseen hyvinvointiin. Lisäksi optimismilla ja taloudellisella hyvinvoinnilla on selvästi positiivinen yhteys. Sen sijaan talouslukutaidolla ei ole tilastollisesti merkitsevää yhteyttä taloudelliseen käyttäytymiseen, mutta sillä on negatiivinen yhteys taloudelliseen huoleen. Näin ollen talouslukutaito korreloi positiivisesti taloudellisen hyvinvoinnin kanssa. Tutkimustulokset paljastavat myös mielenkiintoisen yhteyden sukupuolen ja taloudellisen hyvinvoinnin välillä. Naisten hyvinvointi osoittautui heikommaksi kuin miesten, vaikka taloudellisessa käyttäytymisessä ole tilastollisesti merkitsevää eroa. Tutkimustulosten mukaan vastaajat ilman ASP-tiliä säästävät harvemmin kuin vastaajat joilla on ASP-tili. Näin ollen on mahdollista, että ASP-tili toimii itsehillintämekanismina.</p> <p>Tämän tutkielman tulokset korostavat psykologisten tekijöiden (erityisesti itsehillintä ja optimismi) merkittävää roolia taloudellisen käyttäytymisen ja taloudellisen hyvinvoinnin taustalla.</p>	
Asiasanat Taloudellinen käyttäytyminen, taloudellinen hyvinvointi, itsehillintä, optimismi, talouslukutaito, asuntosäästöpalkkio, ASP, itsehillintämekanismi	
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1 INTRODUCTION

In Finland, a new peak was reached in 2016 when payment default entries rose to an all-time high of 374,200 persons and has remained high, totaling 374,100 persons in 2017 (Suomen Asiakastieto, 2018). At the same time, Finnish households have more debt compared to disposable income than ever before (Statistics Finland, 2018). Both household debt and payment default entries have been constantly rising in recent years. While over-indebtedness is known to have a negative effect on health (Blázquez & Budría, 2015), a payment default entry can create problems with renting a house, getting a job and getting loans or credit cards. To stop this development, we need to know the factors behind poor financial decision-making and poor financial behavior.

It has been suggested that poor financial behavior is caused by a lower level of financial knowledge or financial literacy. According to this approach, people make poor financial decisions because they do not know any better. This intuitive connection might be one reason why previous research has focused on financial literacy. Financial literacy relates to one's expertise and ability to make informed financial decisions (Noctor et al., 1992, cited by Kempson et al., 2017), and previous research has shown it to be related to financial behavior (e.g. Akben-Selcuk, 2015; de Bassa Scheresberg, 2013; Lusardi & Mitchell, 2007). Despite this relationship, attempts to improve financial behavior with financial education have been less effective than one might think. Fernandes et al. (2014) carried out a meta-study that showed that financial education as an intervention was able to explain only 0.1% of the variance in financial behavior. This implies that financial education—as it has been used—is an insufficient way to improve financial behavior. Moreover, Fernandes et al. (2014) state that the relationship between financial behavior and financial literacy diminishes considerably when previously omitted variables, such as psychological factors, are controlled.

If financial literacy alone is not able to explain financial behavior, it is increasingly important to search further to find these variables omitted from previous research. To create a more complete picture of how financial behavior is formed, the first aim of this thesis is to investigate the relationship between fi-

nancial behavior, self-control and optimism. Self-control has been shown to be positively related to success in life, to savings behavior (Biljanovska & Palligkinis, 2015; Liu, 2014), retirement planning (Kim et al., 2013) and credit management (Achtziger et al., 2015), but only a few studies have researched the relationship between self-control and more general financial behavior (e.g. Miotto & Parente, 2015; Strömbäck et al., 2017). In this thesis, more general financial behavior means financial behavior such as paying bills on time, ability to stick to a budget and comparing products before purchase. It is important to study more general financial behavior, since it includes the activities and decisions that people face usually in the beginning of their path to becoming a financial actor. When young adults are gaining independence, they are not making retirement plans, they do not often have money to invest and while studying, they do not often have loans other than student loans. If we know the factors affecting the financial behavior of young adults, we will have a more complete picture of the development of people's financial behavior.

In Finland, most young adults move out from their parents' home before they turn 21. In 2014, 67% of 20-year-old women and 44% of men had moved out from their parents' home, and over 90% had moved before they turned 30 (Statistics Finland, 2015). Moving out can cause a drop in quality of life depending on the situation and support from parents. Nevertheless, moving out creates a change in the lives of young adults. When this change is combined with an increased level of independence regarding financial behavior, it is important to know how young adults are coping with this phase in their lives. Hence, the second aim of this thesis is to explore factors related to the financial well-being of young adults. Since previous research has shown that optimists cope better in difficult times (Carver et al., 1993) it is relevant to consider optimism to be one of the factors affecting financial well-being. Financial well-being has not yet been widely studied, but has recently attracted more research. To the best of my knowledge, this is the first study on financial well-being in Finland.

The third aim of this thesis is to explore the *Asuntosäästöpalkkio* (ASP) scheme. It is a state-supported system that helps young adults to purchase their first home and encourages them to save for it and to save in general. It has existed since 1980 and has gone through a series of changes over the years (Alesmaa, 2015). Its popularity has been growing in recent years, and several bachelor's theses have been written about it, attempting to explain its features, its pros and cons, and also to answer questions such as how familiar adolescents and young adults are with it and whether it is beneficial for them (e.g. Abazi, 2013; Alesmaa, 2015; Tuomi, 2017). However, there were no recent academic articles found on the topic at the time of writing. Therefore, it is relevant to investigate how well known it is amongst young adults and what it offers for them. Furthermore, this thesis explores a possible benefit of an ASP account from the behavioral viewpoint, since it tries to answer the question of whether ASP accounts work as self-control mechanisms. The idea of a self-control mechanism is to help to achieve a goal that would usually require a higher level of self-control. For example, if a student cannot resist a temptation to check social

media while trying to write a thesis, one self-control mechanism could be to disconnect the internet while writing. This way, the student cannot give in to the temptation since he cannot access social media.

To be able to investigate any of these three topics mentioned above or to analyze any of the relationships, new data needed to be gathered. The sample for this research was collected through an online survey aimed at university students in Jyväskylä. The survey included basic demographic information, questions regarding ASP accounts, scales measuring self-control, financial behavior, optimism, financial well-being and basic financial literacy. To reach students from every department, e-mail lists were used. As a monetary incentive, five 30€ gift cards were shared randomly among participants. Using this method, it was possible to encourage 1,084 students to answer the survey, from which 903 participants were between the ages of 18 to 29, which formed the study sample.

In sum, this thesis investigates whether self-control, optimism and financial literacy are related to financial behavior and financial well-being, and whether an ASP account works as a self-control mechanism. The 5 hypotheses are the following: Financial behavior is positively related to (1) self-control and (2) optimism, financial well-being is positively related to (3) self-control and (4) optimism, and (5) an ASP account works as a self-control mechanism. After this introduction, the thesis covers some essential concepts, previous research and theories. Then the data and the methods used to gather it, are described. Lastly, this thesis presents the results of the study and a discussion of the results.

2 THEORETICAL FRAMEWORK AND PREVIOUS RESEARCH

It is important to understand the relevant concepts of this thesis and how they are connected to each other. To do so, one needs to know where these concepts come from and how they are developed. In this chapter, concepts of self-control, financial behavior, financial well-being and optimism are explained. Additionally, the theory explaining the connection between self-control and financial behavior is defined as well as some of the often-used theories that have been used to explain behavior.

First, the concepts of self-control and financial behavior are explained: how they are defined and studied. In this part also, some factors are pointed out, such as financial literacy, which has been demonstrated in many studies to be a significantly related to financial behavior. Second, after these major concepts are explained, some of the previous studies connecting self-control and financial behavior are presented. This part will show where the previous studies have focused and why this thesis is contributing to the less-studied aspect of financial behavior. Third, financial well-being and optimism are introduced. Finally, ASP scheme and account are explained as well as self-control mechanism and the possibility of ASP account to work as a self-control mechanism.

2.1 Self-control

Self-esteem was one of the traits researchers thought could predict success in life, making people healthier, wealthier and happier. Roy Baumeister was one of the researchers studying self-esteem, until he realized that it did not show the results he was after. Self-control, on the other hand, seems to be the trait the researchers were trying to find. Baumeister himself said: "Self-control is much more powerful and well-supported as a cause of personal success (than self-esteem). Despite my years invested in research on self-esteem, I reluctantly advise people to forget about it" (Long, 2015).

Self-control is the ability or capacity to reshape one's own response (Baumeister, 2002). This enables people to adjust their behavior and not to act according to the initial response. This can mean containing unwanted thoughts by focusing, to delay gratification by refusing to eat a piece of chocolate cake, altering emotions by maintaining a happy mood even when it is not natural or improving performances by persisting in practice (Baumeister, 2002). All of these can have a great impact on person's life. According to Tangney et al. (2004), people with a higher level of self-control should be able to perform better in different tasks. They are able to prevent—or at least, better control—distracting temptations, and prevent procrastination, and thus, use their time more efficiently. According to previous research, this leads to higher grades in school, hence, better performance. Higher grades open more possibilities to continue studies to a higher level and so make it more likely to attain a higher level of education. A higher level of education is related to higher income.

When the level of self-control is low, people might experience impulses more difficult to resist. Hence, people with higher levels of self-control should be able to control better these impulses, such as the urge to snack or to have a beverage. According to Tangney et al. (2004), when impulse regulation is weak, it is more likely that people cannot control their eating or drinking, and this can lead to overeating and alcohol abuse. Furthermore, higher levels of self-control should also help people to resist emotional impulses, such as saying harmful things when annoyed, which contributes to better relationships. Moreover, with better self-control, people can better resist the temptation of alternative partners, also contributing to better relationships. In sum, self-control helps to regulate impulses. Tangney et al. (2004) mention also a less intuitive self-control problem, in which a lack of self-control leads to too much restricted behavior, and overregulation. For example, when people try to control their eating, they restrict not only the part that would be considered overeating, but nearly all food. This can be seen, for example, in anorexia.

2.1.1 Theory

Before Baumeister even began looking for answers to success in self-esteem, the economist Robert Strotz (1955) pointed out that people seem to make different decisions at different times. In the short-term, people are less patient than in the long term; for example, if a person can choose to take 10€ today or 11€ after one month, they would choose 10€ today. However, if they can choose to take 10€ in one year or 11€ in one year and one month they would choose the latter 11€ option. In both cases, the differences between the options are the same, but while the first decision is short-term, the second is long-term. According to the basic discount utility model, people would not change their choice depending on the time, so if they prefer to get the reward earlier, they would prefer the earlier option also after one year. Even though Strotz did not replace the discount utility model by Samuelson (1937) nor did he mention self-control in the paper, he managed to create the basis for hyperbolic discounting, which explains the phenomenon called “present bias”. Formal models of hyperbolic discounting

were developed in the late '60s (Chung & Herrnstein, 1967; Phelps & Pollak, 1968). Nowadays, hyperbolic discounting and present bias are some of the first concepts to learn when studying behavioral economics (see e.g. Wilkinson and Klaes, 2012).

In 1981, Shefrin and Thaler introduced an economic theory of self-control. According to their theory, in every person there are two sides, a "doer" who goes for short-term joy, and a "planner" who considers the long-term effects of decisions. These two sides are frequently in conflict, and according to the theory, self-control determines which side wins the clash between them. This is because self-control defines the ability to resist impulses and short-term temptations. Unlike hyperbolic-discounting, where the conflict is between today's and tomorrow's preferences, this dual-self model describes two preferences at the same time. According to Thaler and Shefrin (1981), this idea of a person experiencing a conflict caused by two different preferences at the same time was not new, since Adam Smith had used a similar idea in 1759. Moreover, the idea of the dual self was commonplace outside of economics (e.g. psychology) by the 1980s (Thaler & Shefrin, 1981). Daniel Kahneman (2003) developed this idea, further calling these two selves "intuition" and "reasoning".

Kahneman and Tversky published their famous paper on prospect theory in 1979. It is noteworthy that it is the most-cited economics paper after econometrics papers. The prospect theory offers an empirically supported model to explain real-life decision making (McDermott, 1998). It offers an explanation for how people actually make decisions, rather than the normative way of explaining how people should make decisions. In prospect theory, the decision process involves two stages: editing and evaluation. In the editing, or framing phase, people edit the options for their decision (e.g., by simplifying, narrowing or using heuristics). In the evaluation phase, people evaluate the edited options. A few years later, Kahneman and Tversky wrote papers on the framing effect (Kahneman & Tversky, 1984; Tversky & Kahneman, 1981), which is a relevant factor in the editing phase of the decision-making process in prospect theory. The framing effect is an example of a bias that affects the decision-making. Tversky and Kahneman (1981) carried out the following study to demonstrate the effect:

Imagine that the U.S. is preparing for an outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimate of the consequences if the programs are as follows:

Problem 1: If Program A is adopted, 200 people will be saved. If Program B is adopted, there is $1/3$ probability that 600 people will be saved, and $2/3$ probability that no people will be saved.

Problem 2: If Program C is adopted, 400 people will die. If Program D is adopted there is $1/3$ probability that nobody will die, and $2/3$ probability that 600 people will die.

The choice is between a certain option and a risky option. In the outcomes of programs in the study, A and C have the same result and so do B and D, but

they are framed differently. This framing causes most of the participants in the first group (problem 1) to choose Program A (72%) over B (28%). However, in the second group (problem 2) more participants choose D (78%) over C (22%). According to prospect theory, most people are loss-averse, which means that people avoid losses more than they reach for the gains. Moreover, people feel more pain from a loss than joy from a gain of the same size. If people saved are seen as a gain and dead people as a loss, prospect theory is able to explain the effect. People would rather choose to gain a certain 200 than to take a risky chance to gain 600. However, when the certain option is a loss of 400, participants would rather take a risky chance to avoid the loss.

Framing and self-control (explained through the dual-self model) are two key features of the behavioral life cycle (BLC) theory that Hersh Shefrin and Richard Thaler developed in 1988. The third key feature of the behavioral life-cycle theory is mental accounting. According to the theory of mental accounting, people keep track of their money and expenses in their mind. They allocate money to different categories and use them to cover expenses accordingly. According to Shefrin and Thaler (1988), there are three main ways to categorize wealth: current income, current assets and future income. People are keener to spend money from the first category and less interested in using the money from the last category. It is more tempting for people to spend income than assets such as savings. It is also possible for people to create more categories – for example, rent, food, utilities, entertainment, etc. One key feature of mental accounting is that it makes these wealth categories non-fungible. Hence, one cannot cover the expenses in the category for entertainment with the money allocated to other categories.

Behavioral life-cycle theory was created to describe irrational (or bounded rational) behavior. BLC is extended from the life cycle theory (LC) of saving by Modigliani and Brumberg (1954/2005), but unlike LC theories, the BLC theory highlights self-control, mental accounting and framing. When the LC theory assumes that people are rational, the BLC assumes that people have dual-self conflict and that this lack of self-control can cause irrational behavior. When the LC theory assumes that people are consistent with their decisions, the BLC theory assumes that people are not because of the framing effect. When the LC theory assumes that all money is fungible, the BLC theory claims that because of mental accounting, all money is not fungible. In this way, the BLC theory manages to explain why a lack of self-control can lead to bad decisions. Hence, the BLC theory offers a theory to explain how and why self-control also affects financial behavior, and therefore, it is used in this thesis. Furthermore, the BLC theory is supported by empirical evidence (Graham & Isaac, 2002; Strömbäck et al., 2017).

2.1.2 Previous research

In discussions about self-control, the simple marshmallow experiment cannot be left without a mention. This series of studies by Mischel et al. (1972; 1989) examined delayed gratification in pre-school children. It is one of the most no-

table studies and one of the first experiments to offer empirical evidence of self-control. In one experiment, a marshmallow was placed on a table in front of a child. The experimenter promised a second marshmallow if the first marshmallow was still on the table when they come back after 15 minutes. The child could eat the marshmallow and settle for the small reward, which demonstrates lower self-control. They could also wait for the second marshmallow and go for the bigger reward, which demonstrates higher self-control. After the experiment, the children were followed for more than five decades, monitoring how self-control demonstrated in early stages of life was related to life events and outcomes as they grew up. The results showed self-control to be significantly related to success in life and revealed many benefits of self-control listed earlier, such as higher grades, higher level of education attained and tolerance for stress. This early study suggested that self-control plays an important role in human behavior, affecting people throughout their lives.

A recent study by Watts et al. (2018) revisits the marshmallow study using a bigger sample of 918 participants, while the original study included less than 90 participants. Their results do not fully support the original study. When other factors such as household income and the environment at home were considered, the explanation power of self-control decreased considerably, and alone it could not overcome economic and social disadvantages created by the home environment. However, according to Watts et al. (2018), their results imply that delayed gratification in children is still related to success in the future, but the level of this correlation depends on control variables, such as the home environment. Furthermore, they speculate that delayed gratification is not simply a part of self-control, but rather a factor itself. Hence, delayed gratification might not be the best way to measure the level of self-control.

Not to rely only on one measure, such as delayed gratification, Moffitt et al. (2011) used nine different measures to build a more reliable composite measure of self-control. In their study, the children's level of self-control was measured during the first decade of their lives by observations made by researchers, teachers and parents. When the children reached 11 years old, self-reports were also used. This sample of 1,037 children was followed for over 30 years with a retention rate of 96%. The results suggest that children who had a lower level of self-control were more likely to start smoking earlier, drop out of school or become unplanned parents as adolescents. When reaching adulthood, a lower level of self-control in early life was related to a lower level of health, such as poor physical health and substance dependence, a lower level of wealth, such as a lower income and socioeconomic status, and a higher probability of committing a crime. According to Moffitt et al. (2011), self-control predicted adult outcomes even when intelligence and social class were controlled.

Early life self-control is not only related to outcomes as an adult, but in early stages in life as well. According to Kieras et al. (2005), a higher level of self-control can predict more appropriate social behavior among children. In the study, the level of self-control was measured by tasks that required effortful control. In some tasks, children needed to be able to slow down an action, such

as drawing tasks, in which children needed to control their drawing speed when instructed to draw slowly. In other tasks, they needed to be able to restrain or start a response depending on the instructions. In one task using a pinball machine, for example, children pulled the lever and were instructed to release it only when told to do so. The social behavior was measured by monitoring the reactions of children when they received a desired present and an undesired present. Children who did better in effortful control tasks reacted similarly positively when receiving a desired present compared to an undesired present. Children that performed poorer in effortful control tasks showed more negative reactions when receiving an undesired present compared to a desired one. This suggests that children with a higher level of self-control are better able to suppress negative emotions or disappointment, hence showing better reaction.

Self-control can be measured by objective observations, as described earlier, and this is often necessary when the participants are children. However, self-control can be measured by using a scale. In this thesis, a self-control scale developed by Tangney et al. (2004) is used. Their self-control scale is not the only one in existence, since Rosenbaum developed the Self-Control Schedule (SCS) in 1980 and Brandon et al. created the Self-Control Questionnaire (SCQ) in 1990. Moreover, a self-control subscale of Gough's (1987) California Personality Inventory (CPI) has been also used. According to Tangney et al. (2004), existing measures had some limitations; for example, the SCS was not appropriate for measuring self-control among normal behavior, since it was developed to solve behavioral problems, the SCQ focused heavily on health behaviors and eating patterns and the self-control subscale of CPI included several irrelevant items. Hence, Tangney et al. (2004) developed a new scale which was created around three behaviors that emulated the ability for self-control: breaking habits, resisting temptation and maintaining good self-discipline.

Self-control affects many aspects of people's lives, and in general it is an important factor in success. Baumeister et al. (2007) compare self-control to a muscle that gets tired when used and becomes stronger when trained. This suggests that it is possible to improve the level of self-control by exercising. In addition, people can also use different self-control mechanisms to improve their behavior (Rha et al., 2006). According to Rha et al. (2006), mechanisms such as saving rules help households to improve their saving behavior. Because of these possibilities to improve behavior, self-control is an increasingly interesting factor influencing human behavior.

2.2 Financial behavior

Financial behavior is a sum of financial decisions people make frequently in their everyday life, such as when they buy a cup of coffee, make a loan payment, transfer money to a savings account or sell stocks. These kinds of single acts or behavioral categories, such as management of cash, credit, savings and invest-

ments can be used to define financial behavior (Xiao, 2008; Dew & Xiao, 2011). According to Xiao (2008), "Financial behavior can be defined as any human behavior that is relevant to money management".

According to Xiao (2008), when defining financial behavior, it is important to focus on the behavior itself and not on the outcome that follows; for example, saving money is a behavior while having savings is an outcome. Moreover, when behavior is defined properly, it should include action, target, context and time (Ajzen & Fishbein, 1980). For example, a person saves money (action) that she inherited (context) and deposits it into her bank account (target) all at once (time). When measuring financial behavior, it is important to know that different methods of measuring give different information; for example, if a person saves money regularly, more information is gathered when also asked the amount they save and how often this happens. Furthermore, data from the participants is often gathered through self-reporting rather than through observations. Self-reporting is a cost- and time-efficient way to get the data, but the answers can almost never be confirmed, and they always depend on the perception of the participant (Xiao, 2008).

Early research on financial behavior was called "research on family resource management", since households were the focus of the research rather than individuals (Fitzsimmons et al., 1993). Family resource management can be divided into two areas: management of financial resources, such as expenditures, and management of human resources, such as time spent on household activities (Israelsen, 1990). This thesis focuses on financial resources rather than human resources, since the aim is to study financial behavior. Quantitative methods were rarely used in the early years of family resource management research in the '30s and '40s and the early studies often focused on income and expenditures (Israelsen, 1990).

According to Israelsen (1990), major world events have shaped the focus of research on family resource management. During the Great Depression in the '30s and the Second World War in the '40s, when consumer products were scarce, and money was tight, research focused on areas such as income, expenditures, financial management, living standards and savings. Income, expenditures and financial management have remained the focus of research, more or less, since the 1930s. In the '50s, households faced a new environment, when the US economy was booming, and consumers suddenly faced a problem of choice. Research began to focus on areas like budgeting, life satisfaction and women's employment. In the '60s, the spotlight of family resource management shifted to retirement planning and baby boomers, including how teenagers manage their money. Studies on women's employment became stronger in the '60s and continued through the '70s and '80s when a growing number of women joined the labor force (Israelsen, 1990).

Deacon and Firebaugh published a book called "Family Resource Management: Principles and applications" in 1981 and a second edition in 1988. According to them, family resource management includes planning and implementing—for example, first defining the demand and evaluating the assets, and

then regulating the actions (Deacon et al., 1988). Even with this guide to family resource management, according to Fitzsimmons (1993), researchers often focused only on a narrow view of financial behavior, such as retirement planning (McKenna et al., 1988) or credit card payments (Ethridge, 1982) rather than on more general financial behavior. Even though these narrow views, and even single acts such as paying bills, are part of financial behavior, they are unable to describe the behavior as a whole.

According to Fitzsimmons (1993), to measure more general financial behavior, researchers have developed different scales trying to capture the essential aspects needed. Many early scales were incomplete and too often missing validity testing (e.g. the 17-item Management Procedures Scale by Justins, 1978, or the 15-item Money Management Skills Measure by Barrow, 1983). In 1993, Fitzsimmons et al. tested a total of 23 items, selected based on the framework created by Deacon and Firebaugh (1988). From those 23 items, 20 were used earlier alone or in subgroups in some of 18 studies investigated, and a further three items were added. As a result, they developed two scales: a four-item frequency of financial management scale and a six-item frequency of financial problems scale, to measure financial behavior. This study by Fitzsimmons et al. (1993) is one of the seven studies examined by Dew and Xiao (2011) when developing the Financial Management Behavior Scale (FMBS). Dew and Xiao (2011) added eight more studies that used a financial behavior scale to their study.

2.2.1 Theory

When studying financial behavior, some perspective is gained by knowing some of the theories that attempt to explain human behavior. Several attitude behavior theories, such as the theory of reasoned behavior (Ajzen & Fishbein, 1980), the theory of planned behavior (Ajzen, 1991), theory of trying (Bagozzi & Warshaw, 1990), and theory of self-regulation (Bagozzi, 1992) are often used. The theory of reasoned behavior explains that the final behavior is affected by intention. Hence, according to this theory it is more likely that a person saves money if their intention is to save money. The intention is affected by subjective norm and person's attitude towards the final behavior. Subjective norm represents what the person thinks other people feel about the final behavior. The theory of planned behavior is an extension of the theory of reasoned behavior, and an effect of perceived control was added to the theory. Perceived control affects both intention and the final behavior. It means how person perceives the difficulty level of the final behavior, that is, how easily a person believes they can succeed.

The theory of trying consists of more variables than the theories of reasoned or planned behavior. One important variable in the theory of trying is past behavior. According to the theory, the intention to try leads to trying. Attitude toward success, expectation of success, attitude toward failure, expectation of failure, attitude toward the process and subjective norms regarding trying all affect intention. Furthermore, the frequency of past trying affects both intention

to try and trying. Finally, how recently the person has last tried also affects trying. Even though attitude has been shown to be connected to behavior (e.g., attitude towards money is positively connected to financial behavior, Akben-Selcuk, 2015), these three theories mentioned above do not include self-control. Hence, according to these models, two persons with different levels of self-control should still end up with the same behaviors.

Bagozzi (1992) recognized the shortcomings of these three theories: the inability to explain the relationship between attitudes and intentions. Because past behavior seemed to be a strong predictor of intentions and behavior, Bagozzi (1992) stated that desire is the factor mediating the effect of attitude. He developed the theory of self-regulation, in which desire is the mediator between attitude and intention. Bagozzi explains the self-regulation process as monitoring, evaluation and coping activities that transform attitudes and subjective norms into intentions, and intentions into behaviors. Even though self-regulation is a larger concept than self-control alone, self-control is an important element in the process of self-regulation. In sum, the path of development of the presented theories highlights the increased attention given to self-control and self-regulation as determining factors in human behavior.

2.2.2 Previous research

Too often it has been shown that people are not always good at making financial decisions. To improve, how people make decisions, we need to know the factors behind the process of decision-making (Strömbäck et al., 2017). Earlier research has focused heavily on our cognitive abilities when attempting to determine factors affecting financial behavior (e.g. Chen & Volpe, 1998; Lusardi & Mitchell, 2007). Cognitive ability can be described as “any ability that concerns some class of ... task in which correct or appropriate processing of mental information is critical to successful performance” (Carroll, 1993, p.10). Cognitive ability is often equated with intelligence, which has been described as the “ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, [and] to overcome obstacles by taking thought” (Neisser et al., 1996, p. 77). Non-cognitive abilities are often called “soft skills” or “personality traits”. According to Borghans et al. (2008), personality traits can be defined as “patterns of thought, feeling and behavior”.

A cognitive ability that relates to expertise and the ability to make informed financial decisions is called “financial literacy” (Noctor et al., 1992, cited by Kempson et al., 2017). Numeracy is another skill closely connected to financial decision-making, according to previous research. It is the capability for making sense of and managing basic numerical concepts and probabilities (Peters et al., 2006). Lusardi (2012) analyzed studies and surveys on the effect of numeracy and financial literacy on financial decision-making in the United States and other countries. Her findings suggest that numeracy and financial literacy are a strongly related to financial decision-making. The study also points out a worrying result of a low numeracy level and highlights the im-

portance of raising it. De Bassa Scheresberg (2013) made a similar worrying discovery from a large sample of approximately 4,500 young adults. He studied the relationship between financial literacy and financial behavior. In his study, financial behavior was formed from three parts: usage of high-cost lending, short-term savings (buffer) and having a retirement plan. While financial literacy is positively connected with financial behavior, the level of basic financial knowledge was low among most young adults. Furthermore, the level of education did not seem to secure a high level of financial literacy. This is also supported by results from a study by Mandell and Klein (2009). Their results suggest that high school students who took a personal financial management course neither had a higher level of financial literacy later nor better financial or savings behavior.

Education offered by schools seems to play a controversial role on how financially literate people become. Schools do not necessarily focus enough on financial education, like a targeted intervention could. Nevertheless, attempts to improve financial behavior with financial education as an intervention have not produced desired results. A meta-analysis including 201 previous studies carried out by Fernandes et al. (2014) revealed financial education as an intervention to have only a small connection with financial behavior, as the intervention was able to explain only 0.1% of the variance in financial behavior. Furthermore, previous research on financial behavior has suffered from omitted variables such as psychological factors. When these omitted variables are controlled, the relationship between financial literacy and financial behavior diminishes (Fernandes et al., 2014). However, two years later, Kaiser and Menkhoff (2016) performed a meta-analysis including 126 studies on this matter and discovered that financial education is significantly related to financial literacy and financial behavior. According to them, financial education targeted to improving financial literacy works well in schools. It is directly related to financial literacy and an indirectly to financial behavior. However, the relationship between financial literacy and financial behavior is so small that financial behavior should be targeted directly rather than through financial literacy. Furthermore, their results also suggest that the impact of financial education is smaller among people with low income and in lower-income areas. Different studies have shown financial education programs to have a positive effect on children's financial literacy (Sherraden et al., 2011), financial behavior (Go et al., 2012) and savings behavior (Kalwij et al., 2017). However, according to Kaiser and Menkhoff (2016), there are areas that are more difficult to affect with these interventions, such as debt management. Hence, the effect of financial education depends on many different things, such as target group, target behavior, quality of education and the timing of the education which Fernandes et al. (2014) call "just-in-time" and Kaiser and Menkhoff (2016) call a "teachable moment". In sum, the effect of financial education on financial behavior is often less significant than expected.

School is not the only place to learn financial behavior. Home and parental teaching can reach children before they reach school age or before they enter the

workplace. Akben-Selcuk (2015) measured Turkish college students' financial behavior based on three factors. The respondents were asked about their savings behavior, about whether they paid bills on time, and about whether they had a budget and how well they managed to stick to their budget. Akben-Selcuk's (2015) study shows that financial literacy has a positive effect on students' financial behavior on all three factors measured. Furthermore, parental teaching of finance and a non-cognitive factor, attitude towards money, demonstrated a positive effect on all three factors measured as well. Shim et al. (2010) studied the roles of parents, work and education on financial learning, and they also reported the role of parental teaching of finance to be relevant. Even when work experience and financial education during high school were combined, the role of parental teaching remained greater.

The role of financial literacy has not been widely researched in Finland, but it has been noticed nevertheless. Pellinen (2009) and Pellinen et al. (2011) have studied the financial capability of customers investing in mutual funds in Finland. They found that customers using internet as a service channel were financially more capable than the ones using a bank branch as a service channel. Maunu and Tenhunen (2010) mentioned a lack of financial literacy as one of the factors related to poor financial decision-making when discussing retirement savings from the point of behavioral economics. The research project "Toimijat, kanavat ja tavat nuorten taloudellisen osaamisen edistämiseksi" (TOKATA) touches on financial literacy when studying the financial skills of young people in Finland. The main goal of their research project was to find ways to improve young people's understanding of how important a role financial matters play in their lives (see Peura-Kapanen & Lehtinen, 2011; Lehtinen, 2012 and Rajas & Uusitalo, 2012). In 2013 Kalmi wrote about financial literacy and its criticism emphasizing the connection between financial literacy and financial behavior, simultaneously recognizing the challenges of financial education to significantly improve financial behavior. The first study on financial literacy in Finland was conducted in 2014 by Kalmi and Ruuskanen (published 2017). They studied financial literacy and retirement planning in Finland and found a statistically significant positive relationship between retirement planning and financial literacy, when measured by an extended financial literacy index. The three-item simple financial literacy scale failed to show a statistically significant relationship between financial literacy and retirement planning. Moreover, Kalmi and Ruuskanen (2017) report an interesting gender difference, showing that among women, there is a positive relationship between financial literacy and retirement planning, but not among men. Now that Finnish households have more debt than ever before (Statistics Finland, 2018), combined with a high number of people with payment default entries (Suomen Asiakastieto, 2018), financial literacy has gained more attention. One sign of this is a booklet entitled "Talouselämä 2020-luvulla" on financial literacy published by the Bank of Finland (2018).

In sum, when it comes to financial education, parental teaching seems to be an effective way to improve financial behavior. The success of financial edu-

cation as an intervention depends on several factors, such as timing. Previous research has focused extensively on financial literacy, while leaving some relevant factors out of the models. When these omitted variables, such as psychological factors are controlled, the relationship between financial literacy and financial behavior diminishes. This highlights the importance to identify and study other factors behind financial behavior. If the financial education interventions on financial literacy are inefficient to improve financial behavior, perhaps we should consider interventions on other factors behind financial behavior.

2.3 Self-control and financial behavior

As presented in earlier chapters, research on financial behavior has often focused on cognitive abilities, such as financial literacy, even though it has been suggested that adding non-cognitive abilities—psychological factors—diminishes the relationship between financial literacy and financial behavior. It had also been suggested several times that self-control plays a crucial role in success in life. This chapter explores some of the previous research connecting self-control and financial behavior.

In some studies on financial behavior, a self-control measure is included despite not being the main focus in the study. For instance, in the study by van Rooij et al. (2012), self-control was included but measured by only one question. The findings showed positive relationship between self-control and savings behavior, while the main focus was the connection between financial literacy and savings behavior. However, there are studies where self-control is the main focus of interest. Pirouz (2009) conducted a study in the US to investigate the effects of culture on self-control and financial behavior. Her findings suggest that cultures with a higher level of self-control also had a higher level of savings behavior. Because of the ability to restrict impulses, spending was restrained, resulting in a higher level of savings behavior. With the purpose of researching the connection between self-control and retirement savings, Kim et al. (2013) analyzed data from the Survey of Consumer Finance from 1995 to 2007. In their study, they measured self-control in different ways, such as: health condition problems, credit attitude problems, savings decision problems and planning horizons. Their results suggest that self-control problems with health conditions and savings decisions were related to a lower probability of having a decent retirement. Furthermore, longer planning horizons were connected to a higher probability of having a decent retirement. Problems with self-control were studied also by Biljanovska and Palligkinis (2015), who examined the effect of self-control failure on wealth. They found a strong negative relationship between that self-control failure and household wealth, and a positive relationship between self-control failure and financial anxiety. The link between self-control and savings behavior was also noted by Liu (2014) using data from German households from 2005 to 2009. Liu (2014) used proxies of self-control from the

data to create a self-control measure. She reports a positive relationship between self-control and savings behavior such as a higher level of total savings, emergency funds, financial assets and total assets. Furthermore, she suggests that financial advice is more useful for people with lower self-control than for people with high self-control.

As previously mentioned, according to the BLC hypothesis, the lack of self-control makes people weaker to resisting impulses. Hence, self-control problems can lead to compulsive buying, which, besides negatively relating to savings behavior, is also positively connected with the amount of debt (Achtziger et al., 2015). Achtziger et al. (2015) measured self-control with an 11-item subscale of the self-control scale (Tangney et al., 2004), compulsive buying with the German Addictive Buying Scale (Neuner et al., 2005; Scherhorn et al., 1990) and debt by asking the participants about their current situation. Achtziger et al. (2015) state that compulsive buying mediated the negative connection between self-control and debt. This suggests that a lack of self-control leads to a higher level of compulsive buying, which leads to more debt accumulation. Furthermore, the study suggests that women are more likely to be compulsive buyers, and that age is positively correlated with self-control. Income had no significant effect on compulsive buying or debt. Letkiewicz (2012) had similar results when she studied the relationship between self-control, financial literacy and financial behavior. According to her study, self-control was related to all five financial outcomes: net worth, illiquid assets, liquid assets, credit card debt and negative financial events such as usage of payday loans or late payments on a loan. Financial literacy was related only to illiquid and liquid assets. Moreover, Letkiewicz (2012) used an interaction term (self-control*financial literacy) which was related to net worth and illiquid assets. These results suggest that financial literacy moderates the effect of self-control on net worth. Results also showed that women had a lower level of net worth, fewer liquid and illiquid assets, more credit card debt and were more likely to experience a negative financial event.

As mentioned earlier, financial behavior is constructed from everyday decisions. However, previous research has often focused only on the effects on savings, compulsive buying or debt. More general financial behavior has not been widely researched. Furthermore, self-control has often been measured by only one or a few questions, or by using different proxies, instead of scales built for this purpose. In the study by Miotto and Parente (2015), self-control was measured with a scale, and the measurement for financial behavior was not focused on only one area of financial decisions, but on more general financial behavior. According to their study, people with lower self-control have poorer financial management than people with higher self-control. However, the study suffers from a relatively small sample size (165 female participants). A Swedish study with a bigger sample ($n = 2,063$) by Strömbäck et al. (2017) used partially the same scales when measuring self-control and financial behavior. Their results demonstrated self-control to have a positive effect on savings behavior and also more general financial behavior. In the study, financial literacy was

also included, and the findings showed a statistically significant positive connection between financial literacy and financial behavior.

To sum up, there is a significant positive connection between self-control and financial behaviors, according to previous research. At the same time, the significance of financial literacy diminishes when new psychological factors such as self-control are added to the models. Because the role of financial literacy behind financial behavior has been challenged, it is essential to include it when studying the factors behind financial behavior.

2.4 Optimism

Carver et al. (2010) stated, "Optimists are people who expect good things to happen to them; pessimists are people who expect bad things to happen to them". Previous research has shown that optimism seems to affect many aspects of people's lives. According to Carver et al. (1993), optimists are better at coping with problematic times than pessimists. In their study, they interviewed women with breast cancer during different stages of treatment. The first interview was at the time of diagnosis, second was after surgery, and the following three took place every three months. The study suggested that the more optimistic patients faced the reality as it was and were able to see the situation as positively as possible. In contrast, the more pessimistic patients were in denial and often felt like giving up. Optimism was related to coping both before surgery and after it (Carver et al., 1993).

Generally, people might think that optimists overlook risks, but according to Carver et al. (2010), optimists seem to be more aware of the risks. The study by Radcliffe and Klein (2002) showed that optimism was related to awareness and knowledge about heart-attacks among adults. Being aware of risks offers assistance in decision-making, and in financial decisions, it is helpful to avoid unnecessary risks. Furthermore, optimism has been found to promote both mental and physical health (Carver et al., 2010) and even longer life (Giltay et al., 2004).

In Finland, there is a saying that a pessimist will not be disappointed. According to Stanton and Snider (1993), this is not accurate. Their study showed that optimism was associated with subjective well-being, as optimists reported a better mood than pessimists after a positive diagnosis from a breast cancer biopsy and after surgery. This means that optimists were less disappointed than pessimists. Many of the studies on optimism are done in medical contexts, as they offer a good environment for demonstrating the effects of optimism before and after results are received and surgeries are performed. However, there are also other contexts in which optimism has shown to have an effect. Brissette et al. (2002) studied young adults starting college. Their study demonstrated that students with higher optimism were less stressed towards the end of the first year and felt stronger social support than less optimistic students. According to MacLeod and Conway (2005), it included not only a feeling of stronger social

support, but optimists also had larger social networks. Moreover, optimists are less likely to drop out of school (Solberg Nes et al., 2009). Hence, optimists are better able to build socioeconomic resources, such as a higher level of education and higher income.

There are numerous positive effects of optimism on people's lives. However, optimism can also create problems such as gambling. Gibson and Sanbonmatsu (2004) found that optimists might not realize when to stop gambling and may keep on playing even after receiving poor results. Even among individuals without a gambling problem, optimists would be more likely to develop one. Conclusions of this study are limited by the context of gambling. However, if optimists have a tendency to not know when to stop doing something that keeps returning poor outcomes, this could be problematic for financial behavior.

Optimism has shown to be connected with various aspects of well-being in people's lives. Furthermore, because of the connection between optimism and gambling problems, it is worth exploring whether optimism is negatively connected also with financial behavior. Therefore, it is crucial to include optimism in the model when investigating the factors behind financial behavior, and especially behind financial well-being.

2.5 Financial well-being

One main reason to promote better financial decisions is the well-being it can create for people. Financial well-being has been defined in many different ways in previous research, and according to Porter and Garman (1993), it was initially interpreted as overall happiness. In many studies, it has been used as an objective measure, such as income, assets, consumption or financial status (Ferguson et al. 1981; Porter & Garman, 1993). A reanalysis of the World Bank's study by Kempson et al. (2017) revealed that people considered financial well-being to be mostly an objective measure. For people who are living in mid- or high-income countries, financial well-being is defined as "The extent to which someone is able to meet all their current commitments and needs comfortably, and has the financial resilience to maintain this in the future" (Kempson et al., 2017). They listed four key features of financial well-being after investigating several definitions of financial well-being. These features were: having control over daily finances, having the ability to deal with a financial shock, being able to stick to a budget, and being financially free to make decisions that enable one to enjoy life. These features were used to develop a measurement scale for financial well-being. The final three main components of the scale were: meeting commitments, feeling comfortable and resilience for the future. From the three components, "feeling comfortable" is inspired by subjective measures, while the other two focus more on objective measures.

In this thesis, financial well-being is measured as a subjective measure, which is just as important as an objective one (Strömbäck et al., 2017). Some

items in the survey still gathered information about objective measures of financial well-being, such as income, student loans and student aid. Both objective and subjective measures have good qualities. Objective measures are more concrete and clear, while subjective measures offer a more thorough description of an individual's financial well-being (Taft et al., 2013). Subjective measures focus more on an individual's perception of their financial situation, such as satisfaction with income or with financial status (George, 1993).

Strömbäck et al. (2017) used financial well-being as a subjective measure in their study as well. Financial well-being was measured by assessing financial anxiety and financial security. According to Fünfgeld and Wang (2009), anxiety is related to procrastination. Anxiety makes people feel uncertain about themselves and their decisions, which leads them to delay financial decisions. Postponing decisions is particularly harmful for savings. Anxiety is also connected to regret over decisions, which might lead to cancelling financial decisions that are already made. In many situations, this behavior can be costly. A study mentioned in chapter 2.3 by Biljanovska and Palligkinis (2015) suggested a negative correlation between self-control and financial anxiety through procrastination. To measure the second part of financial well-being—financial security—Strömbäck et al. (2017) created a three-item scale. In this thesis, financial anxiety and financial security will be the measures for financial well-being.

As was stated earlier, it is important to know the factors influencing financial behavior to improve the choices people make. The same applies to financial well-being. It is important to study where financial well-being comes from. After all, one reason to improve decision making and behavior is to promote well-being.

2.6 ASP account as self-control mechanism

2.6.1 ASP scheme

According to Vesanen (1987), the reduction of rental housing and higher levels of rent in the '70s made it increasingly difficult for young adults to find an affordable rental place to live in Finland. Longer courses of study, student loans and a lower level of income also made it difficult to buy a house. Furthermore, the ratio of small apartments decreased during the '70s. It was also speculated that this unfavorable situation among young adults might have affected the ability and willingness to have children. To tackle the problem, the Finnish Ministry of the Interior set up two work groups during 1978-1979 to investigate how to make it easier for young adults to buy their first home. The work of these groups created the framework for the *asuntosäästöpalkkio* (ASP) scheme. A temporary law for ASP was set and the first ASP accounts were opened in 1981. In 1982, a law for interest subsidies was set and the first ASP loans were made. The ASP scheme was made permanent in 1984. The goals for the ASP scheme

were to increase the ability of young adults to buy a house and get them interested in saving for a house and saving in general.

The ASP scheme works in many ways like any other plan to buy a house. Future first-home buyers need to save some money to be eligible to borrow the rest from a bank. However, there are some key features in the ASP scheme. First, the potential homebuyer needs to open an ASP account and begin to save. When they open the account, they also make a savings agreement with a bank in which they set a savings goal for the account, a date to achieve the goal and agree on additional interest payments on the savings. When opening the account, a minimum deposit of 150€ is required. There are limits on how to save to an ASP account. To be able to get an ASP loan, the individual needs to have saved in an ASP account for eight calendar quarters. There is a minimum 150€ deposit and maximum 3,000€ deposit to the ASP account each quarter. Deposits can be made in the most convenient way for each individual, for example, daily, monthly or randomly, as long as the amount deposited in each quarter is between 150€ and 3,000€. It is also possible not to make deposits in some quarters and then continue later. To encourage young people to save, there is an annual interest on ASP accounts. Currently this interest is 1%, which in the current interest rate environment with negative Euribor rates, is higher than any other account can offer in Finland. If an individual fulfills the conditions to get an ASP loan and uses the money on an ASP account to purchase a house, they will receive an additional interest payment of 2-4% (e.g. Nordea Bank 4%, OP Financial Group at least 2%) on the account for the year the account was opened and the following five years.

Normally, banks in Finland consider the collateral value of a house to be close to 75% (e.g. Nordea Bank 75%, OP Financial Group 70%) of the purchase price, which means that the homebuyer needs to have savings to cover the missing 25%. To get an ASP loan, the homebuyer needs to save only up to 10% of the purchase price. The 15% gap in collateral is guaranteed by the state, but only up to 50,000€, which is the maximum guarantee. This state guarantee is also possible to get without an ASP scheme. However, outside of an ASP scheme, the state guarantee costs 2.5% of the guaranteed amount and it guarantees the gap only up to 85%. Hence, with an ASP scheme, the homebuyer can get a bigger guarantee for free. Another feature of an ASP loan is interest subsidy for the first 10 years. This helps the debtor in loan payments if interest rates rise, covering 70% of the interest rate costs exceeding 3.8%. The loan amount for the interest subsidy is limited (Helsinki 180,000€, Espoo, Vantaa, Kauniainen 145,000€, the rest of Finland 115,000€), but it is possible to get an additional ASP loan without interest subsidy alongside the one with interest subsidy feature. The state guarantee is not free for the additional ASP loan.

Even though the goal was to make the ASP scheme simple and clear, over the years it has been through several changes, such as expanding the age limits or extending the duration of the loan to fit the current situation. Currently, age limits for the ASP scheme range from 15 to 39 years and the maximum loan duration is 25 years. In the current low-interest rate environment, 1% interest on

an ASP account is more attractive than in the earlier stages of the ASP scheme. At the same time, low interest rates have made interest subsidies less attractive. Changes in the ASP scheme, in the interest rate environment and in housing loan regulations combined with the economic situation at the time might be able to explain partly why the popularity of ASP scheme has varied. ASP loans gained popularity since the beginning, from 1982 until 1993 at its peak, which totaled over 60,000 loans and over 2 billion euros. After 1993, the popularity declined and in 2010 there were fewer than 10,000 loans, totaling less than 400 million euros. After 2010, the popularity started to increase again. According to the State Treasury (Valtionkonttori, 2017), one reason for the increase was a 3,000€ bonus on top of the additional interest which an individual could get when taking out a new ASP loan between 2009 and 2011. There was an increase in new ASP accounts from 2,365 in 2008 to 14,458 in 2009. In 2017, the number of loans reached a new high of over 3.5 billion euros, and during the first half of the year, 17,666 new ASP accounts were opened. This regained popularity makes ASP scheme an interesting aspect of young adults' savings behavior.

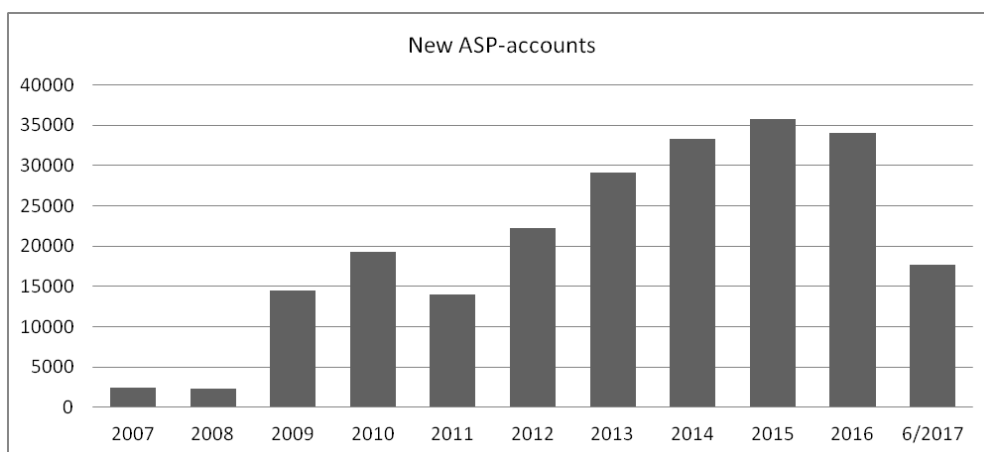


FIGURE 1 New ASP accounts

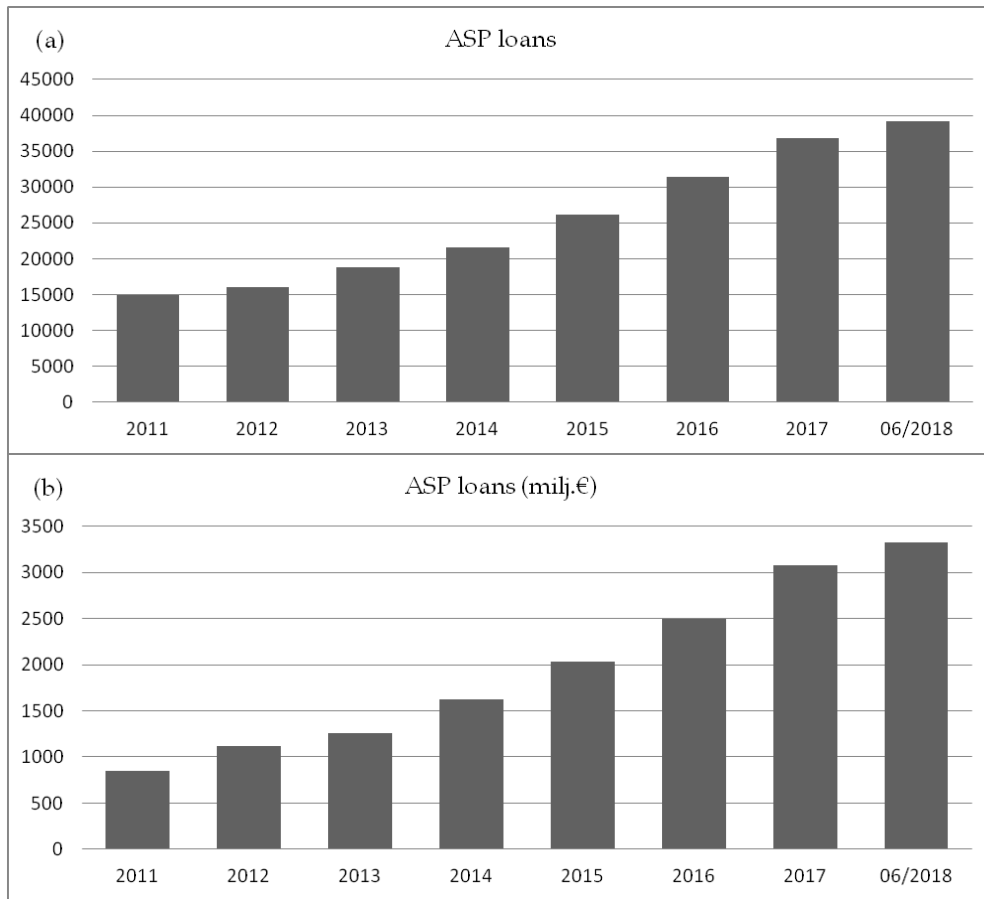


FIGURE 2 (a) Number of ASP loans and (b) amount of ASP loans in millions of euros

2.6.2 Self-control mechanisms

In this thesis, the self-control mechanisms can be defined as strategies to improve a behavior related to self-control without improving self-control itself. Rha et al. (2006) explored the effectiveness of self-control mechanisms on savings behavior. They used savings goals such as saving for retirement or a purchase, foreseeable major expenses, and savings rules such as saving regularly by putting money aside from a salary or spending a regular income and saving additional income. The effects of these different mechanisms varied. From the three mechanisms, foreseeable major expenses had the smallest impact on the likelihood to save. The impact of the savings goals varied depending on the goal, for example, goals of saving for retirement and purchase improved a household's likelihood to save, but education as a savings goal decreased the likelihood to save. The results by Rha et al. (2006) suggest that having savings rules is the most efficient mechanism to increase the likelihood to save.

Hoch and Loewenstein (1991) divide self-control mechanisms into two categories: the ones that lower the temptation and the ones that overcome it. Regarding the first category, it includes mechanisms such as postponement, which might be usage of a pre-fixed date for a purchase or to have a rule not to buy something at first sight to lower the impulsivity. Savings rules can have similar pre-fixed dates and principles of behavior. As for the second category

(to overcome the temptation), Hoch and Loewenstein (1991) list mechanisms such as precommitment and time binding. An example of precommitment can be entering a coffee shop with just enough money for a coffee hence being unable to purchase a pastry. Similarly, some savings products foster the costumers' precommitment by making it inconvenient to withdraw the money (e.g. before due date). In time binding strategy the idea is to overcome the temptation by focusing on the delayed reward such as a savings goal. Hoch and Loewenstein (1991) are able to offer theories to explain why savings rules and goals work as self-control mechanisms. Furthermore, savings rules and goals can include more than one feature to make them work as self-control mechanisms.

Not only are self-control mechanisms useful, but people want to use them to improve results. Ariely and Wertenbroch (2002) studied whether students were willing to make costly deadlines for themselves to avoid procrastination. In the first study, participants were split into two groups. The first group of students could choose to make deadlines for three papers they needed to write. Only 27% of the students made all deadlines at the last possible date. Most of the students made earlier deadlines, even though missing the deadline resulted in a penalty that lowered their grade. However, the grades were poorer than in the second group of students, who had evenly spread out deadlines for the papers, which they could not influence. In the second study, participants formed three groups: one in which students could again choose their deadlines, another for which deadlines were evenly spread out and a third group in which there were no deadlines before the last date. In this study, participants needed to find errors in three texts and return the finished texts. A monetary reward was created, earning 0.10 dollars per error correctly detected and subtracting one dollar as a penalty per one day of delay. Students with no deadlines found the least errors and had the most delays, and therefore earned the least money. Students who could choose their deadlines did better at detecting errors and avoiding delays, but students who had evenly spread out deadlines did even better. In sum, people are willing to make costly deadlines, and therefore create self-control mechanisms, to improve their results. External deadlines work more efficiently than self-imposed ones. Hence, an efficient self-control mechanism should include externally determined features.

Since the ASP account has features of a self-control mechanism, it is interesting to investigate whether it works as one. First, ASP accounts have clear savings goals: a sum which is agreed upon when opening the account, and a house to purchase. Second, it has savings rules. The saver needs to save between 150€ and 3,000€ every quarter to earn a saver quarter, and eight quarters are needed to get an ASP loan. Third, savings quarters, as deadlines, are external. However, the deadlines are not costly in the same sense they were in the study by Ariely and Wertenbroch (2002). Still, missing a quarter delays the purchase of a house, which can be seen as a cost, but no money is lost. Only if the account is cancelled, is the additional interest lost, but there is no cost for missing a deadline. In sum, ASP accounts create a savings goal and saving rules, which can be considered self-control mechanisms.

3 RESEARCH AIMS AND HYPOTHESES

This thesis is motivated by the current discussion over the increasing household debt and payment default entries in Finland. Increasing financial literacy is often suggested to help people. Previous research has demonstrated a relation between financial literacy and financial behavior. However, it has been shown that this connection diminishes when new psychological factors are added. To help people make better financial decisions and improve their financial well-being, it is crucial to know the factors behind them. Therefore, this thesis investigates whether self-control, optimism and financial literacy are related to financial behavior and financial well-being among young adults, and whether an ASP account works as a self-control mechanism. The 5 hypotheses are the following:

- 1) There is a positive relation between financial behavior and self-control
- 2) There is a positive relation between financial behavior and optimism
- 3) There is a positive relation between financial well-being and self-control
- 4) There is a positive relation between financial well-being and optimism
- 5) ASP account works as a self-control mechanism

The goal of this thesis is to offer information of the factors behind general financial behavior and well-being among young adults. Ideally the information could offer support to develop ways to help people to improve their financial behavior and well-being. Additionally, this thesis aims to complement previous research and provide guidance for future research on financial behavior and well-being.

4 DATA AND RESEARCH METHOD

4.1 Data

The data for the study was collected by an online survey (appendix). Information was collected about demographic background, financial behavior, financial well-being, self-control, optimism, financial literacy and information related to ASP accounts and savings. The language of the survey was Finnish. The link for the survey was sent to each department's mailing list at the University of Jyväskylä, and the goal was to reach as many students as possible. Those who answered had a possibility of winning a 30€ gift card with five total gift cards. There was no age limit to answer this survey, but later it was decided to focus on young adults and limit the age of the sample from 18 to 29. Hence, the final sample size is 903 participants. Descriptive statistics of the sample are represented in Table 1.

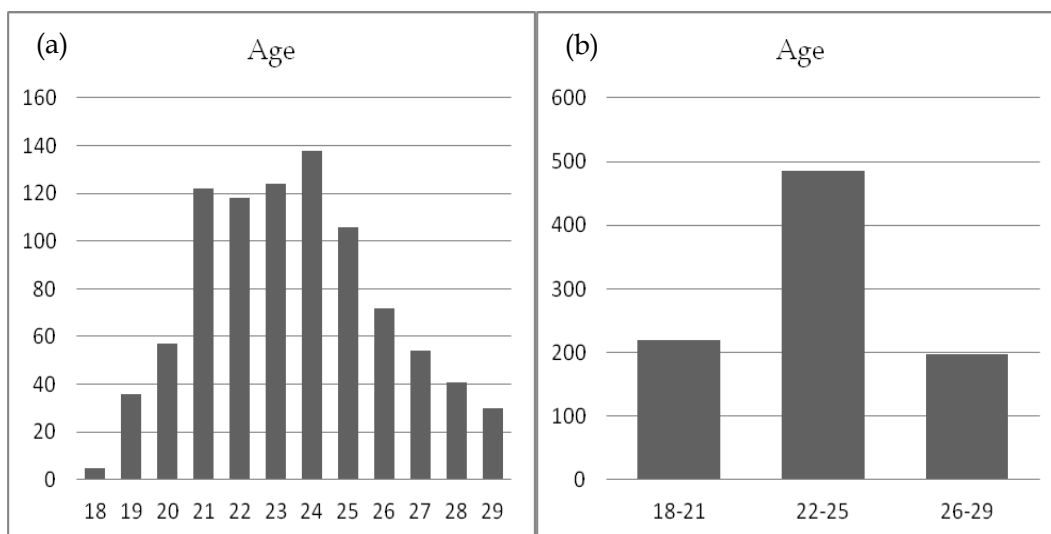


FIGURE 3 (a) Age of sample and (b) age groups

TABLE 1 Descriptive statistics

Descriptive statistics	n = 903
Female, n (%)	546 (60.5)
Mean age	23.5
No income, n (%)	125 (13.8)
Mean income, €	6,978
Student loan, n (%)	523 (57.9)
Mean student loan, €	5,344
Support from parents, n (%)	144 (16.0)
+ somewhat, n (%)	547 (60.6)
Support from state, n (%)	716 (79.3)
JSBE ^a , n (%)	166 (18.4)
Humanities and Social Sciences, n (%)	49 (5.4)
Information Technology, n (%)	206 (22.8)
Education and Psychology, n (%)	79 (8.7)
Mathematics and Science, n (%)	200 (22.2)
Sport and Health Science, n (%)	207 (22.9)

^a Jyväskylä School of Business and Economics
(4 students studying in two departments)

TABLE 2 Dependent variables

Financial behavior, Cronbach's alpha = 0,64	Mean	Sd	Range
Comparison shopped when purchasing a product or service	4.28	0.68	1-5
Paid all your bills on time	4.67	0.63	1-5
Kept a written or electronic record of your monthly expenses	2.45	1.21	1-5
Stayed within your budget or spending plan	3.54	0.97	1-5
Began or maintained an emergency savings fund	3.55	1.22	1-5
Saved money from those months when working (e.g. summer job)	4.05	1.24	1-5
Saved for a long term goal such as a car, education, home, etc.	3.01	1.51	1-5
Scale average	3.65	1.31	
Bought bonds, stocks, or mutual funds	1.79	1.24	1-5
Financial anxiety, Cronbach's alpha = 0,76	Mean	Sd	Range
I get unsure by the lingo of financial experts	2.75	1.10	1-5
I am anxious about financial and money affairs	3.09	1.16	1-5
I tend to postpone financial decisions	2.72	1.10	1-5

After making a decision, I am anxious whether I was right or wrong	2.70	1.05	1-5
I get unsure when taking care of matters in a bank or in KELA	2.48	1.19	1-5
Scale average	2.75	1.14	
<hr/>			
Financial security, Cronbach's alpha = 0,74	Mean	Sd	Range
I feel secure in my current financial situation	3.33	1.12	1-5
I feel confident about my financial future	3.39	1.09	1-5
I feel confident about having enough money to support myself in retirement, no matter how long I live	2.89	1.15	1-5
Scale average	3.21	1.14	

TABLE 3 Independent variables

Self-control ^a , Cronbach's alpha = 0,86	Mean	Sd	Range
I am good at resisting temptation	3.20	1.06	1-5
I have a hard time breaking bad habits	3.04	1.04	1-5
I am lazy	2.82	1.20	1-5
I say inappropriate things	2.26	1.06	1-5
I do certain things that are bad for me, if they are fun	3.21	1.10	1-5
I refuse things that are bad for me	3.37	0.93	1-5
I wish I had more self-discipline	3.29	1.21	1-5
People would say that I have iron self- discipline	3.22	1.03	1-5
Pleasure and fun sometimes keep me from getting work done	2.38	1.19	1-5
I have trouble concentrating	2.90	1.09	1-5
I am able to work effectively toward long-term goals	3.60	0.92	1-5
Sometimes I can't stop myself from doing something, even if I know it is wrong	2.34	1.11	1-5
I often act without thinking through all the alternatives	2.44	1.00	1-5
Scale average	3.28	1.12	
<hr/>			
Optimism ^b , Cronbach's alpha = 0,80	Mean	Sd	Range
In uncertain times, I usually expect the best	3.36	0.98	1-5
If something can go wrong for me, it will	2.32	0.96	1-5
I'm always optimistic about my future	3.45	0.95	1-5
I hardly ever expect things to go my way	2.52	1.03	1-5
I rarely count on good things happening to me	2.59	1.08	1-5
Scale average	3.48	1.01	

^a Items 2, 3, 4, 5, 7, 9, 10, 12 and 13 were reversed before calculating the mean value of the scale.

^b Items 2, 4 and 5 were reversed before calculating the mean value of the scale.

4.2 Method

In this thesis, a quantitative study method was used, because the goal of the study was to investigate the relationships between variables, rather than discover new variables. The online survey was composed using demographic variables such as age and gender, and scales to measure different features, such as self-control and optimism. The included variables will be presented below.

4.2.1 Demographics

When asked about their gender, participants were given the options: "Female", "Male", "Other" and "refuse to answer". Gender was coded as a dummy variable (1=female, 0=male, 0=other and 0=refuse to answer). Age (see Figures 3a/b) was coded as an ordinal variable (1=18 to 21, 2=22 to 25, 3=26 to 29). It demonstrated better explanation power in the models compared to real age or age dummy (0=24 or younger, 1=25 or older). Income refers to the participant's estimate of their yearly income on top of the student aid. In the models, income is in thousands of euros, change of one unit in income means change of 1,000 euros in yearly income. The survey also asks how participants feel they are supported financially by parents. They could answer "yes", "no" or "somewhat". These options to answer could have been developed further, since it is highly subjective how participants perceive the received financial support; for example, with two individuals who receive the same amount of support from parents, one could answer "yes" while the other one answered "somewhat". Because the answer "somewhat" covers such a large range of options, it is not possible to use this variable as an ordinal. Hence, the variable "Support from parents" was coded as a dummy variable in the models (1=yes or somewhat and 0=no). "Support from parents 2" is an alternative coding of the variable "support from parents" (1=yes and 0=somewhat or no) and was used in the models for financial security. Student aid and student loans are also dummy variables (1=yes and 0=no), as was each department. Education of parents was measured with a scale from basic education (1) to doctoral degree (6) with also an option of "I do not know". This scale was made by following the description of the Finnish education system by the Ministry of Education and Culture of Finland (2016).

4.2.2 Self-control

To measure self-control, the Brief Self-Control Scale (Tangney et al., 2004) was used. The scale includes 13 items measuring how participants perceive their self-control. The scale uses a Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). Nine of the items are reversed, such as "I have hard time breaking bad habits", meaning that disagreeing demonstrates better self-control. These items were reversed before calculating the measure for self-control.

4.2.3 Financial behavior

The revised Financial Management Behavior Scale (FMBS) (Dew and Xiao, 2011) was used to measure financial behavior. In the survey, respondents reported how often they have done the stated behaviors over the previous six months, using a Likert scale ranging from 1 (never) to 5 (always). Of the first 12 items in the scale, only 8 were used in the survey, because some of the questions in this scale were not relevant for most of the students. For that reason, two items about credit card usage, one about loan payments and one about retirement savings were excluded. Moreover, it was decided afterwards that the item “You have bought stocks or funds” should be excluded from the general financial behavior measure but reported separately (see Table 4) as financial behavior and investments (FB+inv.).

There are two main reasons why the item “You have bought stocks or funds” might not be a good measure for good student financial behavior. The first is the length of the commitment. Buying stocks or funds is a more long-term commitment than putting some money aside. If one is forced to pull out the money and sell the stocks at an inconvenient time, it might lead to losses. While studying and living in uncertainty about the next job opportunity, purchasing volatile stocks and funds might not be wise. The second reason is individual risk preference. If an individual is risk-averse, they might not feel comfortable entering the stock market, even if they could make the long-term commitment. They might still save the money long-term to different instruments, such as savings accounts or bonds. In sum, among students, this item might not be the best measure of good financial behavior. Furthermore, one item that was still included was measuring whether participants had saved long-term. Therefore, if a student invested in stocks long-term, it would still be counted. For these reasons, the item “You have bought stocks or funds” is not considered to reflect general financial behavior of an average student in this study.

4.2.4 Optimism

Optimism was measured by the Life Orientation Scale (Scheier & Carver, 1985). It uses Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). From the eight items, only five were used, because the reduced scale had previously shown a high internal consistency (see e.g., Strömbäck et al., 2017). In this study, Cronbach’s alpha was 0.80, meaning good internal consistency.

4.2.5 Financial well-being

Financial well-being was measured through financial anxiety using a four-item scale (Fünfgeld & Wang, 2009) and financial security with three items (Strömbäck et al., 2017). A further item “I get unsure when taking care of matters in a bank or in Kela” was added. This is close to one item measuring financial anxiety “I get unsure by the lingo of financial expert”, but students might not face the lingo of financial expert. However, for students, Kela (the state-

supervised independent social insurance institution, which offers student aid), might be the more common place to take care of financial matters. Both the financial anxiety and security scales use a Likert scale from 1 (Strongly disagree) to 5 (Strongly agree).

4.2.6 Financial literacy

The level of financial literacy was measured through five basic literacy questions (van Rooij et al., 2012). They include questions about numeracy, interest compounding, inflation, time value of money and money illusion. There were also 11 advanced-level questions to further measure financial literacy, but these questions were not included in the survey. However, only the basic questions might have been too easy, since 32.3% of the participants got all questions right and 70.0% got 4 or 5 questions right. See distribution of answers in Figure 4.

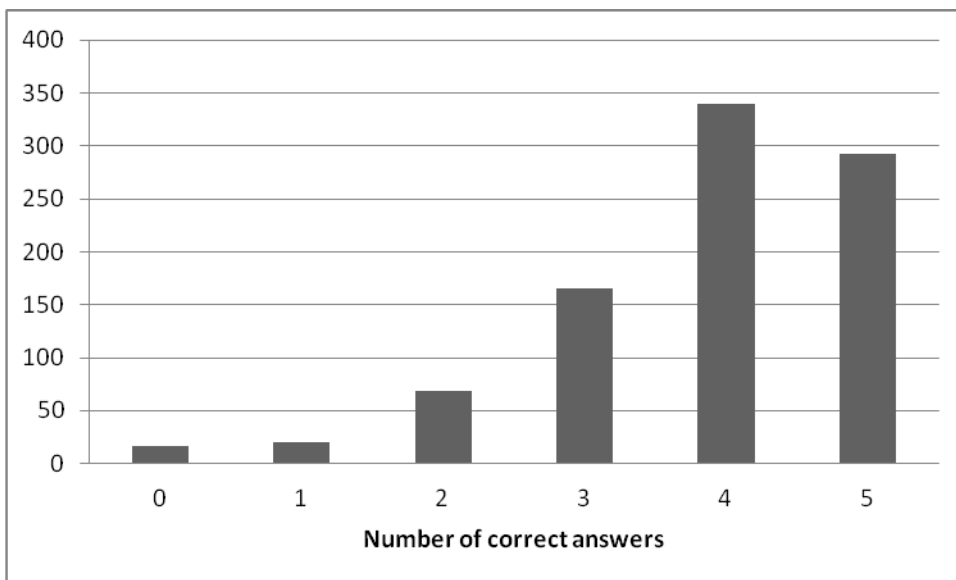


FIGURE 4 Financial literacy of sample

4.2.7 Regression analysis

To explore the connections between the different variables and financial behavior and financial well-being, ordinary least squared (OLS) error regression models with robust standard errors were used. All the models are as follows:

$$Y_i = \beta_0 + \beta_1 \text{Self-control}_i + \beta_2 \text{Optimism}_i + \beta_3 \text{Financial literacy}_i + \beta_4 X_i + u_i$$

Y is the dependent variable “financial behavior”, “financial security” or “financial anxiety”. “Self-control”, “Optimism” and “Financial literacy” are all independent variables. X includes all the control variables used in the models. The control variables (age, sex, income) were chosen based on previous research on financial behavior and financial well-being, and some new ones were added

based on the student's environment (support from parents, student aid, student loans and university department).

4.2.8 ASP account as a self-control mechanism

The survey collected quite basic information concerning ASP savings. Firstly, there were questions about whether participants knew what an ASP scheme or ASP account was. This is relevant information to know before trying to figure out why some people have ASP account, and some do not. After that, questions followed asking whether participants had an ASP account at the moment and whether they save in it regularly. The last questions regarding ASP savings in the survey asked whether participants had an ASP account but cancelled it or used it to buy a house, and whether participants are planning to open an ASP account once they graduate.

Despite some limitations of the survey, it offers enough data to test whether ASP account works as a self-control mechanism. The idea of a self-control mechanism is to improve a behavior without improving self-control itself, while self-control is related to this underlying behavior. In this case, the behavior would be long-term saving. To measure the long-term savings behavior, there is one item in the financial behavior scale "how often during last six months have you saved for a long-term goal, e.g. a home or a car" that fits this purpose. Ideally there would be more than one item to measure long-term saving, but in this case it is necessary to rely on a single item.

Previous research has shown that self-control is related to savings behavior. Hence, the first hypothesis here is that there is a relationship between self-control and item measuring savings behavior. After testing the first hypothesis, the sample needed to be narrowed down only to participants who knew about ASP account (answered "yes"). Obviously, participants who do not know about ASP account do not have one. Next the narrowed-down sample ($n = 567$) is split in two: participants with an ASP account ($n = 268$) and participants without an ASP account ($n = 299$). This makes it possible to analyze which factors are related to savings behavior, and what the differences are between the group with an ASP account and the group without it.

5 RESULTS

5.1 Financial behavior and financial well-being

To investigate the relationship between self-control and financial behavior, the sample was split in half. The first half included participants with lower-than-average self-control and the second half with higher-than-average self-control. The box plot (Figure 5) demonstrates a significant relationship between lower levels of self-control and poorer financial behavior, as well as the connection between higher levels of self-control and better financial behavior. The difference between the groups is statistically significant as shown by Welch's t -test, $t(874.92) = -9.223, p < 0.001$.

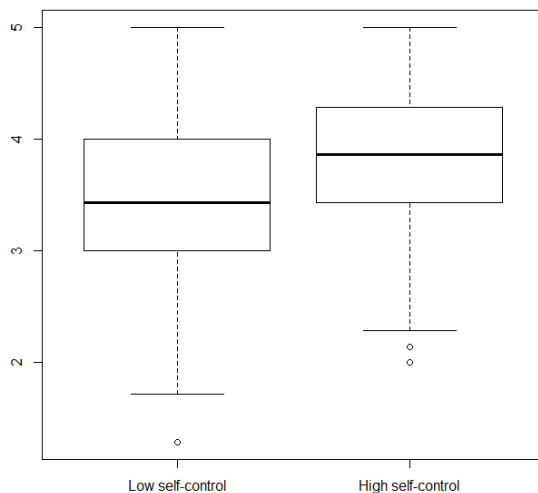


FIGURE 5 Financial behavior by self-control level

Self-control, income and student loans are significantly (p -value $< .01$) correlated with financial behavior (Table 4). Self-control and income are both posi-

tively correlated, and student loans are negatively correlated. Age is significantly correlated with financial behavior (p -value $< .01$). According to the models, older participants' financial behavior is poorer. Other factors do not show a significant relationship.

TABLE 4 OLS regressions on the relationship between self-control, optimism, financial literacy and financial behavior

Variable	(1) FB	(2) FB	(3) FB	(4) FB	(5) FB + inv.
Self-control	0.335*** (0.033)			0.337*** (0.035)	0.305*** (0.035)
Optimism		0.104*** (0.031)		-0.001 (0.031)	0.012 (0.031)
Financial literacy			0.015 (0.021)	0.019 (0.020)	0.028 (0.020)
Female	0.020 (0.046)	0.005 (0.049)	0.026 (0.050)	0.033 (0.048)	-0.032 (0.048)
Age	-0.090*** (0.035)	-0.070* (0.037)	-0.076** (0.036)	-0.091*** (0.035)	-0.097*** (0.035)
Income	0.016*** (0.003)	0.016*** (0.003)	0.017*** (0.003)	0.016*** (0.003)	0.015*** (0.003)
Support from parents	-0.041 (0.044)	-0.057 (0.046)	-0.057 (0.046)	-0.040 (0.044)	-0.045 (0.044)
Student aid	-0.028 (0.063)	-0.040 (0.067)	-0.025 (0.067)	-0.025 (0.064)	-0.036 (0.064)
Student loan	-0.140*** (0.044)	-0.224*** (0.046)	-0.217*** (0.045)	-0.138*** (0.044)	-0.107** (0.044)
Observations	903	903	903	903	903
R-Squared	0.181	0.090	0.079	0.182	0.174

Robust standard errors in parentheses

All models include control variables for departments

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

The box plot in Figure 6a shows that a low level of self-control is related to higher financial anxiety, whereas the box plot in Figure 6b shows that a low level of self-control is related to lower financial security. Welch's t -tests show that the difference is statistically significant in both figures, respectively $t(877.79) = 7.430, p < 0.001$, and $t(887.95) = -5.592, p < 0.001$.

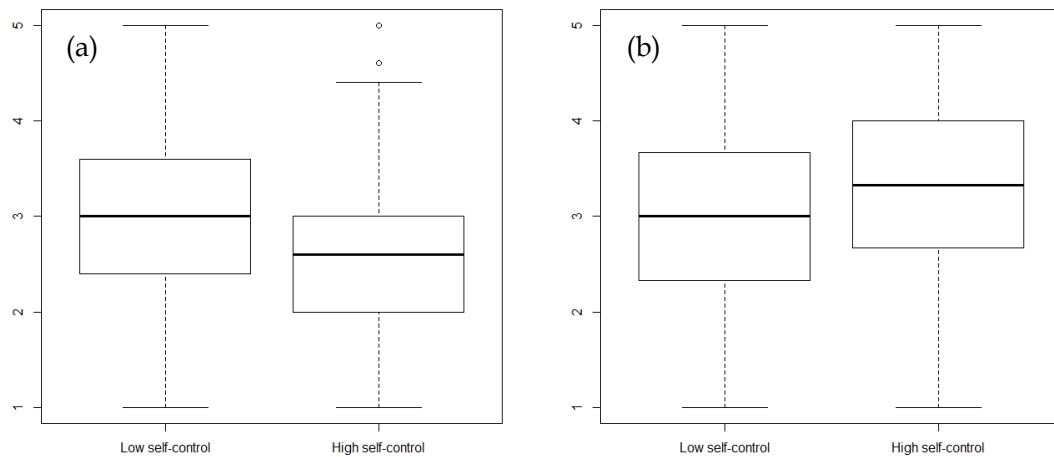


FIGURE 6 (a) Financial anxiety and (b) financial security by self-control level

The box plot in Figure 7a shows that a low level of optimism is related to higher financial anxiety, whereas the box plot in Figure 7b shows that a low level of optimism is related to lower financial security. Welch's t -tests show that the difference is statistically significant in both figures, respectively $t(856.66) = 8.395, p < 0.001$, and $t(845.90) = -9.536, p < 0.001$.

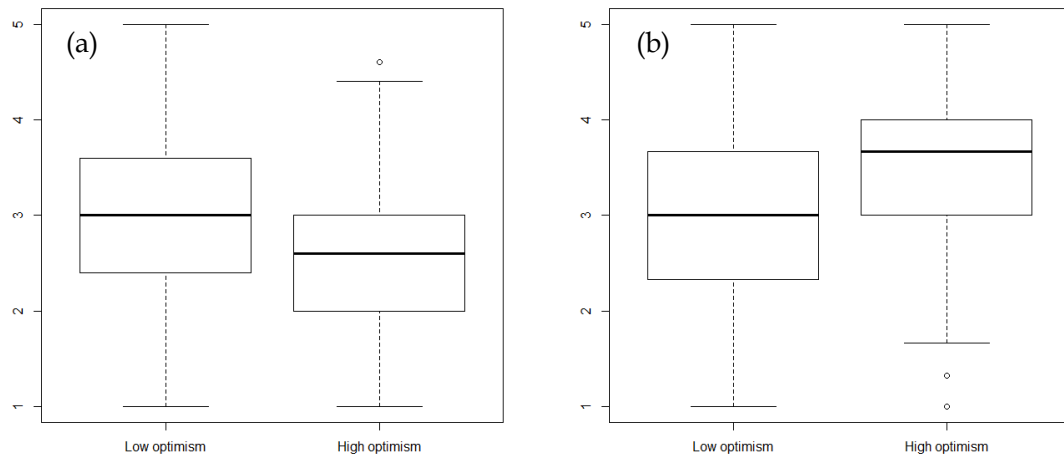


FIGURE 7 (a) Financial anxiety and (b) financial security by optimism level

The first part of financial well-being measured is financial anxiety. The box plots above demonstrate the significant relationship of self-control and optimism to financial anxiety. They are both negatively correlated with financial anxiety, also when other variables are controlled (Table 5). Among self-control and optimism, other variables seem to be significantly connected with financial anxiety as well. Gender is a significant (p -value $< .01$) factor explaining financial anxiety, even when departments are controlled. Furthermore, departments also

are significantly related to financial anxiety. Participants studying in departments such as humanities and social sciences, education and psychology, mathematics and science or sport and health sciences are more likely to have higher levels of financial anxiety. The results also show a statistically significant (p -value $< .01$) negative relation between financial literacy and financial anxiety.

TABLE 5 OLS regressions on the relationship between self-control, optimism, financial literacy and financial anxiety

Variable	(1) FA	(2) FA	(3) FA	(4) FA
Self-control	-0.481*** (0.040)			-0.350*** (0.041)
Optimism		-0.424*** (0.036)		-0.316*** (0.036)
Financial literacy			-0.082*** (0.026)	-0.076*** (0.023)
Female	0.378*** (0.056)	0.395*** (0.057)	0.323*** (0.062)	0.364*** (0.055)
Age	0.030 (0.042)	-0.004 (0.043)	0.033 (0.045)	0.005 (0.041)
Income	-0.010** (0.004)	-0.009** (0.004)	-0.016*** (0.004)	-0.007* (0.004)
Support from parents	0.093* (0.054)	0.093* (0.055)	0.079 (0.057)	0.094* (0.051)
Study aid	-0.127 (0.077)	-0.106 (0.079)	-0.194** (0.082)	-0.116 (0.074)
Study loan	-0.111** (0.053)	0.004 (0.054)	-0.035 (0.057)	-0.078 (0.051)
Observations	903	903	903	903
R-Squared	0.226	0.230	0.125	0.288

Robust standard errors in parentheses

All models include control variables for departments

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

TABLE 6 OLS regressions on the relationship between self-control, optimism, financial literacy and financial security

Variable	(1) FS	(2) FS	(3) FS	(4) FS
Self-control	0.408*** (0.050)			0.252*** (0.051)
Optimism		0.483*** (0.040)		0.420*** (0.044)
Financial literacy			0.063** (0.031)	0.049* (0.028)
Female	-0.363*** (0.069)	-0.379*** (0.063)	-0.330*** (0.075)	-0.355*** (0.069)
Age	-0.261*** (0.052)	-0.240*** (0.048)	-0.253*** (0.055)	-0.235*** (0.050)
Income	0.026*** (0.005)	0.023*** (0.005)	0.030*** (0.005)	0.020*** (0.005)
Support from parents 2	0.184** (0.088)	0.159** (0.081)	0.144 (0.092)	0.184** (0.085)
Student aid	0.186* (0.096)	0.145* (0.087)	0.249** (0.101)	0.167* (0.093)
Student loan	-0.055 (0.066)	-0.156*** (0.060)	-0.146** (0.069)	-0.089 (0.064)
Observations	903	903	903	903
R-Squared	0.172	0.228	0.116	0.250

Robust standard errors in parentheses

All models include control variables for departments

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

The second part of financial well-being measured is financial security. The box plots (Figures 6b and 7b) demonstrate also the significant effect of self-control and optimism on financial security. Like financial anxiety, financial security is also strongly correlated with gender, showing female participants feeling less financially secure and more financially anxious. In the case of financial security, financial literacy, student loans or departments are not significant factors in the models. Income has a significant (p -value $< .01$) effect also on financial security. Financial support from parents has no significant effect on reducing financial anxiety, but makes participants feel more financially secure. "Support from parents" is a dummy variable (1=yes, 0=no or somewhat), as is "support from parents 2" with a different coding (1=yes or somewhat, 0=no), as explained earlier in the research methods. The models were run also with ordinal variable (3=yes, 2=somewhat and 1=no), but it had no significant effect on any dependent variables and the explanation power of the models was slightly weaker. Age is also a significant (p -value $< .01$) factor to explain financial securi-

ty, and according to the models, older age lowers the feeling of financial security.

5.2 ASP savings behavior

First to test was the hypothesis that there is a relationship between self-control and savings behavior (item 7 of financial behavior scale used in the survey). Model (1) (see Table 7) shows that the difference between self-control and savings behavior is statistically significant (p -value $< .01$). Hence, self-control is related to savings behavior item and the hypothesis holds. This model was run with the whole sample, including participants who did not know what an ASP account was.

Second, the sample was narrowed down to only participants who knew what an ASP account was (i.e. answered “yes” to the question). Then, the new sample was divided into two groups. Participants without an ASP account formed the first group “no ASP” and participants with an ASP account formed the second group “ASP”. This made it possible to compare these groups and find differences between them. The first variable to compare between the groups was the item measuring savings behavior. The box plot in Figure 8a shows how participants with an ASP account saved more often compared to participants without an ASP account, $t(557.16) = -11.356$, $p < 0.001$ (Welch’s t -test).

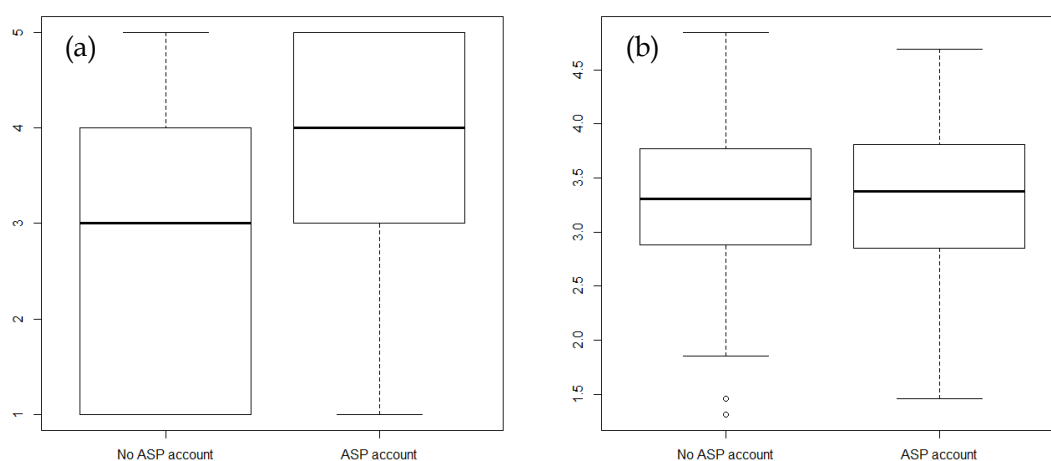


FIGURE 8 (a) Savings behavior and (b) level of self-control among participants without ASP account and the participants with ASP account

If self-control could explain this difference in savings behavior between the two groups, group “ASP” should also have a higher level of self-control. However, the box plot in Figure 8b reveals no significant difference in self-control between the groups, $t(550.42) = -0.219$, $p = 0.8268$ (Welch’s t -test). In

sum, there is no statistically significant difference in the level of self-control between the groups, but the participants with an ASP account save more often. There were four more variables which showed statistically significant differences between the groups: financial behavior, gender, age and mother's education level. The mean of financial behavior was 0.25 higher in group "ASP". The mean age among participants without ASP account was 23.67 and 24.09 among the participants with ASP account, which is less than half a year difference. 50.17% of the participants without ASP account had mothers with higher education compared to 60.07% of the participants with ASP account. There were 56.52% women in group "no ASP", and 68.66% in group "ASP". There was no statistically significant difference between groups in financial literacy, optimism, income or financial well-being.

TABLE 7 OLS regressions on the relationship between independent variables and savings behavior among all participants (1), participants without ASP account (2) and the ones with ASP account (3)

Variable	All (1) Saving	No ASP (2) Saving	ASP (3) Saving
Self-control	0.353*** (0.096)	0.783*** (0.178)	0.201* (0.107)
Optimism	0.139* (0.084)	0.136 (0.142)	-0.039 (0.103)
Financial literacy	0.031 (0.054)	-0.040 (0.101)	0.069 (0.063)
Female	0.042 (0.132)	-0.742*** (0.225)	0.510*** (0.158)
Age	-0.025 (0.096)	-0.126 (0.175)	0.097 (0.113)
Income	0.037*** (0.009)	0.027* (0.014)	0.009 (0.009)
Support from parents	0.013 (0.123)	0.137 (0.211)	-0.056 (0.136)
Student aid	-0.126 (0.175)	-0.435 (0.302)	0.176 (0.194)
Student loan	-0.203* (0.122)	-0.166 (0.222)	-0.143 (0.142)
Observations	903	299	268
R-Squared	0.099	0.193	0.039

Robust standard errors in parentheses

All models include control variables for departments

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

The OLS model was used to investigate which variables can explain the changes in savings behavior within the groups. In group “no ASP” – in which participants did not have ASP account – self-control and gender were significantly (p -value $< .01$) correlated with savings behavior. Self-control was positively connected, and female gender was negatively connected with savings behavior. In group “ASP”, in which participants had an ASP account, only gender was significantly (p -value $< .01$) related to savings behavior and it was the opposite than before (i.e. being a female was positively related to savings behavior). Furthermore, self-control was not significantly connected with savings behavior in group “ASP”.

6 DISCUSSION

If we want to help people to improve their financial behavior and well-being, we must know the factors behind them. This thesis set an aim to explore some of the factors behind financial behavior and financial well-being, focusing mainly on relationships involving self-control and optimism. Moreover, this thesis explored the possibility of an ASP account to work as a self-control mechanism. For that purpose, an online survey was conducted, gathering a sample of 903 participants.

Mischel et al. (1972) had previously shown in their studies on delayed gratification how a higher level of self-control at an early age affects one's future life. Several other studies have continued to demonstrate the significance of self-control on various aspects of life. This thesis adds to that collection of studies. There are not yet a lot of studies providing information about the effects of self-control on more general financial behavior or on financial well-being. Strömbäck et al. (2017) offered valuable insight to this topic in their study, which showed self-control to be significantly related to financial behavior and well-being. While their study sample is a representation of the Swedish population, the sample in this thesis consists only of young adults in Finland, and therefore offers an alternative point of view to the topic.

The results of the study show that self-control has a significant positive connection with financial behavior. These findings are in line with the BLC hypothesis. People with a higher level of self-control are more likely to save money more frequently and stick to a budget. Such behavior helps to build wealth and makes people more prepared for the future. These results are in line with previous research suggesting that people with higher self-control are more likely to save more (Pirouz, 2009), more likely to have a decent retirement (Kim et al., 2013), less likely to be compulsive buyers (Achtziger, 2015), less likely to have poor financial management (Miotto & Parente, 2015) and more likely to have better financial behavior in general (Strömbäck et al., 2017). Additionally, this thesis shows that lower self-control is linked to poorer financial behavior already at a young age and while still a student. Hence, this thesis complements the previous research on general financial behavior. At the same time, it high-

lights the importance of self-control as an influence on financial behavior. The results support the hypothesis (1) showing that self-control is positively related to financial behavior. Besides self-control, this thesis explores the relationship between optimism and financial behavior, which has not been widely researched. In this study, optimism is shown to have a positive connection with financial behavior, but the effect diminishes when self-control is controlled, therefore, hypothesis (2) is not met and optimism is not related to financial behavior. This suggests that having an optimistic feeling and good expectations about the future is not related to how one prepares for it (e.g. by saving). This is not in line with previous research on the relationship between optimism and financial behavior (e.g. Strömbäck et al., 2017).

In this study, no significant relationship between financial literacy and financial behavior was found. This lack of relationship was not due to a diminished effect of psychological factors such as self-control, since financial literacy is not related to financial behavior even when self-control and optimism are not controlled. This suggests that even with a high level of basic financial literacy, people might make poor financial decisions. They might be unable to save even when they know that compounding interest would help them to create more wealth over time. These results do not support the majority of previous research on financial literacy. Even though financial literacy is not related to financial behavior, it is negatively related to financial anxiety. Hence, more financially literate people are less likely to feel worried over financial matters.

Both self-control and optimism are negatively related to financial anxiety and positively to financial security. People with higher levels of optimism or self-control do not only worry less over financial matters, but they also feel more secure about their financial future. Hence, both optimism and self-control are positively related to financial well-being; therefore, the results support both hypotheses (3 and 4) and the previous research.

The ASP scheme has been around for a long time in an attempt to encourage young adults to save for a home and to save in general. The study sample in this thesis fits the target group of the ASP scheme, and as its popularity is again increasing, it should be recognized as a relevant financial product for young adults in Finland. The ASP account has features of self-control mechanisms, such as saving goals and saving rules, which have improved household savings, according to previous research (e.g. Rha et al., 2006). The results indicate that an individual who has an ASP account is more likely to save more frequently for a long-term goal. Hence, it is improving the behavior it intended to by getting young adults interested in saving for a house and saving in general. Based on the results, it is difficult to say if it is the saving goal, the saving rules, or something else that makes people save more often. However, having an ASP account does improve the savings behavior without improving self-control itself, which makes an ASP account work as a self-control mechanism. The results support the hypothesis (5), the previous research and underline an important feature that ASP accounts provide for young adults, especially ones suffering from poorer self-control.

Gender turned out to be an interesting variable in this thesis. Among the participants with an ASP account, women were likely to save more frequently than men, but among the ones without an ASP account, women were likely to save less. In the whole sample, gender is not related to general financial behavior, but it is related to financial well-being. Even when having similar financial behavior, being a female was related to a higher level of financial anxiety and a lower level of financial security. There are plenty of gender inequalities in the world, but it is noteworthy that these participants are all university students in Finland, which is the third-highest-scoring country in gender equality according to the Global Gender Gap Report 2017 (World Economic Forum, 2017). Still, gender differences are nothing new. Strömbäck et al. (2017) reported similar findings that female gender was not related to general financial behavior but was negatively related to financial well-being. Kalmi and Ruuskanen (2015) reported financial literacy to be positively related to retirement planning among women, but not among men. However, this thesis does not support some previous research that suggested women were more to be likely compulsive buyers (Achtziger et al., 2016) or more likely to encounter a negative financial event (Letkiewicz, 2012). The results in this thesis suggest that women and men are equally good when it comes to financial decisions, but for some reason, women worry more about their finances and do not feel as secure about their financial future.

6.1 Limitations

Despite the promising results of this thesis, there are some limitations that should be acknowledged and taken into consideration when interpreting its results. For instance, it is important to remember that the scale measuring financial behavior in this thesis is modified because the sample was formed from students. A more detailed analysis of these changes and the reasons for them was made in the methods section. There are some limitations these changes might have caused. Items concerning loan payments and credit card usage do not measure general financial behavior of students, since these behaviors are relatively rare for them. However, some students can have credit cards or loans other than a student loan. This could lead to different measures of financial behavior in certain cases; for example, if a participant only struggled with these items, the modified financial management behavior scale (FMBS) would be unable to measure it. Hence, the participants' financial behavior scores might be inflated. In future studies, it is recommended to add questions related to ownership of loans and credit cards, to better describe the financial situation of the university students. Similarly, the items in the financial behavior could have been kept, while allowing the participants to skip the question if it does not apply to their situation.

Although these omitted items might create some limitations, they are most likely marginal. First, participants would need to have a credit card or another

type of loan than a student loan, but based on the average income of the sample, most of the participants do not have access to these kinds of financial products. Second, the credit function of the card needs to be used. However, some of the few might not use the credit function of the card but rather just the debit function. Third, the measure would be different if only omitted items were not in line with the rest of the behavior. As long as the values of the omitted items are in line with the measured behavior, they would not make a difference. Furthermore, previous research shows that self-control has a positive connection with good loan and credit card management. Since the results in this thesis show the positive relationship between self-control and good financial behavior, it is likely that the omitted items would have only a limited effect on the results concerning self-control.

Even if it is unlikely that omitted variables would have made a big difference to the relationship between financial behavior and self-control, they might partly explain why financial literacy and optimism were not significantly related to financial behavior. If financial literacy and optimism are more connected with the excluded items, such as loan and credit card management or stock market and fund investments, the results might have been different. Another reason explaining the lack of relationship between financial literacy and financial behavior might be the measure itself. Only the basic financial literacy questions in the survey were used and 70% of the participants got four or more questions correct out of five, causing a possible ceiling effect. By using the additional 11 advanced questions, the financial literacy measure would have been different. Financial literacy could have been measured also with a different scale, such as three core items measuring the understanding of interest rates, inflation, risk and diversification used by Kalmi and Ruuskanen (2015). However, their study suffered from a similar issue, since there seemed to be no statistically significant relationship between these three core items and retirement planning. Only when including more difficult questions by using an extended financial literacy index, the relation was statistically significant.

There are some limitations related to the design of the survey. Two questions lacked a perfect option for some participants, which forced them to choose the closest fit. First, if for example, a participant has an ASP account at the moment, in one question they need to answer "No, I have not had an ASP account" in the past, since the other options are "Yes, but I used the money to buy a house" and "Yes, but I cancelled it". Second, if the participant already used the money from the ASP account to buy a house, in the last question, they need to choose the option "No, I am not going to open an ASP account". This answer does not really reflect the position of the participant. However, when these limitations are acknowledged in the analysis, they do not affect the conclusion. Moreover, the options given for most of the items regarding ASP savings are "yes", "somewhat" and "no", which causes another limitation. This is because the answer is participant's perception, and furthermore, the option "somewhat" covers all the options between yes and no. Hence, the specific frequency of savings, level of knowledge and euros saved remains unknown.

Data was self-reported via an online survey. In self-reported data, it is possible for participants to misunderstand questions or influence results in other ways, such as trying to answer what they think would be the desired answers, causing social desirability bias. Students participating might have had more interest in the topic, and hence were overrepresented, causing sampling bias. This thesis might also suffer from omitted variable bias, even when many aspects of demographics and personal characteristics were controlled. One such variable, for example, to add in future studies, could be attitudes towards money. One possibly relevant factor to know would have been if the participant still lives with their parents. This could affect the financial well-being of a young adult. To further investigate this matter, future studies should collect data on the living situation. Furthermore, results can be generalized only into a certain degree, since the sample is strictly Finnish university students from 18 to 29 years old studying at the University of Jyväskylä. Future study should be conducted with a more heterogeneous sample.

6.2 Conclusion

This thesis investigated the factors behind general financial behavior and financial well-being of young adults in Finland. When following the path guided by previous research and this thesis, future studies on financial behavior should include self-control in their models. According to previous research, self-control has been shown to be a significant factor related to many aspects of life from early ages. Now this thesis connects self-control to early financial behavior and financial well-being. Without controlling self-control, there is a risk for omitted variable bias, which might lead to biased results and incorrect conclusions. The results also support the BLC hypothesis that suggests that, depending on self-control, our decisions are made by the myopic doer or farsighted planner.

Financial literacy has been explored as a possible variable sustaining financial behavior. Often people want to improve the public's financial literacy to help them make better financial decisions and improve their financial behavior. However, the effect of financial literacy on behavior seems to be smaller when new variables are considered and, consequently, its role has been challenged. Hence, one aim of the thesis was to explore relations of variables other than financial literacy, but still include financial literacy in the models. The results do not give clear answers on the role of financial literacy behind financial behavior, but rather continue to challenge it, since there is no significant relationship. One reason for a lack of significant results might be the limitations caused by the basic scale. Therefore, future studies should use advanced or extended versions of financial literacy measures. They include more questions and more difficult questions, and therefore, help to avoid the possible ceiling effect.

If we want to help people to make better financial decisions and improve financial behavior, we need to consider other approaches alongside the attempts improving financial literacy. Especially since some areas, such as debt

management, are more difficult to affect through financial education intervention. Since self-control is a significant factor related to financial behavior, improving self-control or encouraging the use of self-control mechanisms could be some of the other options. Since the results of this thesis suggest that an ASP account can work as a self-control mechanism, it could be one way to approach the problem of poor financial behavior. In this study, the level of knowledge about an ASP account was 62.8% and only 29.7% had one. One way to help young adults to save more could be to increase their knowledge about ASP accounts. However, just like increasing financial literacy might not improve financial behavior, an increase in knowledge might not increase usage on its own. Another option could be to make an ASP account a default option for young adults. For example, when people turn 18, they would get an ASP account automatically and would receive the opening deposit directly from the state. With this kind of a plan, young adults are not passively left out. They need to actively determinate their account if they wish not to have one. This thesis cannot provide an answer for how to develop the ASP scheme itself further; for that, more research is needed.

Besides improving financial behavior, there is a general interest in improving financial well-being. During early adulthood, individuals move out of their family's house, gain independence, and start making increasing numbers of financial decisions. It is, therefore, important to investigate the factors behind financial well-being in this period when quality of life might drop. Even though financial literacy is not related to financial behavior in this study, it is related to financial anxiety. This relationship is interesting given that financial literacy interventions are commonly applied with the goal of improving financial behavior. Hence, even if they do not improve financial behavior substantially, they might improve financial well-being. Since self-control and optimism are related to financial well-being, improvements through them should be considered as well. Connected to financial well-being is also the gender difference. The results of this thesis show that gender is not related to financial behavior, but it is related to financial well-being. However, this thesis cannot answer why women are more worried about their finances and feel less secure about their financial future. Hence, to improve women's financial well-being, further research is needed.

In sum, this thesis complements previous research by showing that self-control is significantly related to financial behavior and well-being of young university students. The findings show also optimism to be related to financial well-being and point out a gender difference in financial well-being that needs further research. Moreover, it offers interesting findings on the ASP account's role as a self-control mechanism, hence offering an option to improve savings behavior of young adults in Finland. This study challenges the role of basic financial literacy (when financial literacy is measured with basic or simple scale including only a few items) behind general financial behavior but supports its role behind financial well-being.

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APPENDIX

Survey (in Finnish)

Tervetuloa vastaamaan kyselyyn, joka koskee yliopisto-opiskelijoiden taloudellista käyttäytymistä, päätöksentekoa ja hyvinvointia.

Kyselyn tavoitteena on etsiä vastausta seuraaviin kysymyksiin:

- Mitkä tekijät vaikuttavat taloudelliseen käyttäytymiseen ja hyvinvointiin?
- Millä tavalla ne ilmenevät taloudellisessa käyttäytymisessä?

Vastauksenne käsitellään ehdottoman luottamuksellisesti, ja vastausten tulokset julkaistaan ainoastaan yhteenvetomuodossa. Vastaaminen vie noin 10-15 minuuttia.

Kiitos vastauksestanne!

1. Ikä*
2. Sukupuoli*
 - a. Mies
 - b. Nainen
 - c. Muu
 - d. En halua vastata
3. Tiedekunta*
4. Saan tällä hetkellä opintotukea*
 - a. Kyllä
 - b. Ei
5. Tuloni tukien lisäksi vuodessa noin (euroa)*
6. Vanhempani tukevat minua taloudellisesti opintojeni aikana*
 - a. Kyllä
 - b. Jonkin verran
 - c. Ei
7. Vanhempien koulutustaso, isä tai muu
 - a. Perusaste
 - b. Keskiaste
 - c. Alin korkea-aste
 - d. Alempi korkeakouluaste
 - e. Ylempi korkeakouluaste
 - f. Tutkijakoulutus
 - g. En tiedä
8. Vanhempien koulutustaso, äiti tai muu
 - a. Perusaste

- b. Keskiaste
 - c. Alin korkea-aste
 - d. Alempi korkeakouluaste
 - e. Ylempi korkeakouluaste
 - f. Tutkijakoulutus
 - g. En tiedä
9. Minulla on opintolainaa noin (euroa)*
10. Kuinka usein olet viimeisen kuuden kuukauden aikana:
1=En koskaan, 2= Harvoin, 3=Joskus, 4=Usein, 5=Aina*
- a. Vertailnut tuotteita tai palveluita ennen ostopäätöstä
 - b. Maksanut kaikki laskut ajallaan
 - c. Pitänyt kirjaa kuukausittaisista kuluista
 - d. Pysynyt budjetissa
 - e. Säästänyt pahanpäivän varalle
 - f. Jättänyt rahaa säästöön niiltä kuukausilta kun olet ollut töissä esim. kesätöissä
 - g. Laittanut rahaa säästöön pidemmän tähtäimen hankintoja varten (esim. koti, auto)
 - h. Ostanut osakkeita tai merkinnyt rahastoja
11. Tiedän mikä on asuntosäästöpalkkio (ASP)-järjestelmä*
- a. Kyllä
 - b. Jotenkin
 - c. En
12. Tiedän mikä on ASP-tili*
- a. Kyllä
 - b. Jotenkin
 - c. En
13. Minulla on ASP-tili*
- a. Kyllä
 - b. Jotenkin
 - c. En
14. Minulla on ollut ASP-tili*
- a. Kyllä, mutta käytin tilivarat ensiasuntoon
 - b. Kyllä, mutta lopetin tilin kesken
 - c. Ei
15. Säästän säännöllisesti ASP-tilille*
- a. Kyllä
 - b. Jokseenkin
 - c. En
16. Aion avata ASP-tilin kun valmistun*
- a. Kyllä
 - b. En
 - c. Minulla on jo

17. Kuinka seuraavat väittämät mielestäsi kuvaavat sinua?

1=Täysin eri mieltä, 5=Täysin samaa mieltä*

- a. Pankkineuvojen ammattikieli saa minut epävarmaksi
- b. Raha-asiat huolestuttavat minua
- c. Minulla on tapana lykätä taloudellisia päätöksiä
- d. Päätökseni jälkeen olen epävarma oliko päätös oikea vai väärä
- e. Asiointi pankissa tai KELAssa saa minut epävarmaksi
- f. Tunnen oloni turvalliseksi nykyisessä taloustilanteessani
- g. Tunnen oloni itsevarmaksi taloudellisen tulevaisuuteni suhteen
- h. Tunnen oloni itsevarmaksi siitä, että minulla on riittävästi rahaa eläkepäivien varalle, riippumatta siitä miten pitkään elän

18. Kuinka seuraavat väittämät mielestäsi kuvaavat sinua?

1=Täysin eri mieltä, 5=Täysin samaa mieltä*

- a. Epävarmoinakin aikoina odotan yleensä parasta lopputulemaa
- b. Jos joku voi mennä kohdallani pieleen, se yleensä menee
- c. Suhtaudun tulevaisuuteen aina optimistisesti
- d. Oletan yleensä, että asiat eivät mene toivomallani tavalla
- e. Lasken harvoin sen varaan, että hyviä asioita tapahtuisi minulle

19. Kuinka seuraavat väittämät mielestäsi kuvaavat sinua?

1=Täysin eri mieltä, 5=Täysin samaa mieltä*

- a. Olen hyvä vastustamaan kiusauksia
- b. Minulla on vaikeuksia muuttaa huonoja tapojani
- c. Olen laiska
- d. Sanon sopimattomia asioita
- e. Teen välillä asioita, jotka eivät ole minulle hyväksi, jos ne ovat hauskoja
- f. Kieltäydyn asioista, jotka eivät ole hyväksi minulle
- g. Toivon, että minulla olisi enemmän itsekuria
- h. Voisi sanoa, että minulla on hyvä itsekuri
- i. Hauskanpidosta johtuen en saa joskus töitä tehdyksi
- j. Minulla on vaikeuksia keskittyä
- k. Pystyn työskentelemään tehokkaasti kohti pitkántähtäimen tavoitteita
- l. Joskus en voi estää itseäni, vaikka tietäisin tekeväni jotain väärää
- m. Teen asioita usein ennen kuin olen pohtinut kaikkia vaihtoehtoja

20. Sinulla on 100 euroa säästötilillä, jonka korko on 2% vuodessa. Kuinka paljon sinulla on rahaa kyseisellä säästötilillä 5 vuoden jälkeen, jos jätät 100 euroa kasvamaan korkoa?*

- a. Yli 102 euroa
- b. Tasan 102 euroa
- c. Alle 102 euroa
- d. En tiedä

21. Sinulla on 100 euroa säästötilillä, jonka korko on 20% vuodessa. Et nosta missään vaiheessa pääomaa (100 euroa) tai kertynyttä korkotuottoa. Kuinka paljon sinulla on yhteensä tilillä 5 vuoden jälkeen?*
- Yli 200 euroa
 - Tasan 200 euroa
 - Alle 200 euroa
 - En tiedä
22. Kuvittele, että säästötilisi vuosikorko on 1% ja inflaatio on 2% vuodessa. Kuinka paljon voit ostaa tilivaroilla vuoden jälkeen?*
- Enemmän kuin tänään
 - Saman verran kuin tänään
 - Vähemmän kuin tänään
 - En tiedä
23. Ystäväsi saa tänään 10000 euron perinnön ja hänen veljensä saa 10000 euron perinnön kolmen vuoden päästä tästä päivästä. Kumpi on rikkaampi perinnöstä johtuen?*
- Ystäväni
 - Ystäväni veli
 - He ovat yhtä rikkaita
 - En tiedä
24. Kuvittele, että vuonna 2020 tulosi on tuplaantunut ja kaikki hinnat ovat myös tuplaantuneet. Kuinka paljon voit ostaa vuonna 2020?*
- Enemmän kuin tänään
 - Yhtä paljon kuin tänään
 - Vähemmän kuin tänään
 - En tiedä
25. Jos haluat osallistua lahjakorttien arvontaan, lisää sähköpostiosoitteesi