

University of Tartu
Faculty of Social Sciences
Institute of Psychology

Ene Tubelt

Effects of a mental health intervention on financial well-being

Master's Thesis

Curriculum: Applied Behavioural Science (227502)

Supervisors: Leonore Riitsalu, *PhD*

Kerli Ilves, *MSc*

Tartu 2025

ABSTRACT

Financial well-being and perceived stress contribute reciprocally to each other, as well as significantly influencing overall personal well-being. Financial difficulties can exacerbate mental health problems, which in turn can worsen financial state, creating a vicious cycle. It has been shown that evidence-based, low-intensity interventions can independently improve both financial and psychological well-being. However, targeting both constructs simultaneously has not yet been explored. The aim of this thesis was to investigate whether short-term use of mindfulness-based mental health app could improve both financial well-being and perceived stress. I conducted a randomised controlled trial among working adults aged 25–55 in Estonia. Participants in the experimental group (n=68) used a free trial of the Headspace mindfulness app for 10 consecutive days, whereas the control group (n=100) listened to the TED Talks addressing general mental health topics. Financial well-being and Perceived Stress Scale scores were assessed pre-intervention, immediately post-intervention, and 30 days after the intervention. Participants in both groups showed statistically significant improvements in financial well-being and perceived stress over time, with no between-group differences. This study is the first to demonstrate promising outcomes from a short-term low-intensity intervention targeting both financial and psychological well-being concurrently, suggesting that equipping individuals with accessible mental health self-help tools could help disrupt the vicious cycle of financial stress and mental health deterioration.

LÜHIKOKKUVÕTE

Vaimse tervise sekkumise mõju rahalisele heaolule

Rahaline heaolu ja tajutav stress on vastastikku seotud ja mõjutavad oluliselt inimeste üldist isiklikku heaolu. Rahalised raskused võivad süvendada vaimse tervise probleeme, mis omakorda võivad halvendada finantsseisundit, luues nõiaringi. On leitud, et tõenduspõhised, madala intensiivsusega sekkumised võivad iseseisvalt parandada nii rahalist kui ka psühholoogilist heaolu. Mõlema konstruktsiooni samaaegset mõjutamist pole aga veel uuritud. Selle magistritöö eesmärk oli uurida, kas teadvelolekul põhineva vaimse tervise rakenduse lühiajaline kasutamine võib parandada nii rahalist heaolu kui ka tajutud stressi. Viisin läbi juhuslikustatud kontrolluuringu 25–55-aastaste töötavate täiskasvanute seas Eestis. Testgrupis osalejad (n=68) kasutasid teadvelolekul põhineva vaimse tervise rakenduse Headspace tasuta prooviversiooni 10 järjestikuse päeva jooksul, samas kui kontrollgrupis osalejad (n=100) kuulasid TED Talki loenguid, mis käsitlesid üldiseid vaimse tervise teemasid. Rahalist heaolu ja tajutava stressi skaala skoori hinnati enne sekkumist, vahetult pärast sekkumist ja 30 päeva pärast sekkumist. Mõlemas grupis paranesid nii osalejate rahalise heaolu kui ka tajutud stressi skaala skoorid aja jooksul statistiliselt oluliselt, kusjuures rühmade vahel erinevusi ei täheldatud. See uuring on esimene, mis näitab paljulubavaid tulemusi lühiajalisest madala intensiivsusega sekkumisest, mis on suunatud nii rahalisele kui ka psühholoogilisele heaolule, mis viitab sellele, et inimeste varustamine kättesaadavate vaimse tervise eneseabivahenditega võib aidata katkestada finantsstressi ja vaimse tervise halvenemise nõiaringi.

CONTENTS

Abstract	2
Lühikokkuvõte.....	2
Contents	3
Executive summary	4
Mapping the issue.....	6
Mapping the solutions	9
Solution for testing.....	10
Design of proposed intervention.....	11
Testing proposed solution: randomised controlled trial	13
Sample	13
Method of analysis	14
Results	15
Overview of perceived stress and financial well-being scores.....	15
Effects of time and group on perceived stress and financial well-being.....	16
Change in perceived stress score as mediator	18
Conclusion	19
Limitations.....	20
Acknowledgements	21
References	22
Appendix A.....	28
Perceived Stress Scale.....	28
Financial well-being scale	29
Appendix B.....	30
Non-exclusive licence to reproduce the thesis and make the thesis public	31

EXECUTIVE SUMMARY

Financial well-being and mental health are deeply interconnected, forming a cyclical relationship where financial stress worsens psychological distress, and *vice versa*. This vicious cycle can significantly impair individuals' overall well-being and contribute to broader societal inequalities. While low-intensity interventions have independently shown promise in improving either financial or mental health outcomes, no prior research has examined whether a single intervention could simultaneously target both.

This study addresses this gap by exploring whether a short-term, mindfulness-based mental health intervention can positively impact both perceived stress and financial well-being. The research is particularly relevant in today's context, where financial insecurity and mental health challenges are widespread, and accessible, scalable solutions are urgently needed.

I conducted a randomised controlled trial involving 168 Estonian adults between the ages of 25 and 55. Participants were randomly assigned to either an experimental group (n=68), which used the Headspace mindfulness app for 10 consecutive days, or a control group (n=100), which listened to TED Talks on mental health topics. Both groups completed validated questionnaires measuring perceived stress and financial well-being at three timepoints: before the intervention, immediately after, and 30 days post-intervention.

Key findings include:

- Both groups showed statistically significant improvements in perceived stress and financial well-being scores immediately after the intervention and at the 30-day follow-up.
- No significant differences were found between the groups, suggesting that both mindfulness practice and general mental health awareness activities can yield beneficial outcomes.
- Financial well-being improved across all dimensions (security, freedom, and pleasure), with the intervention group showing slightly more consistent gains.
- Perceived stress was found to be a significant predictor of financial well-being changes, although it did not mediate the changes.

These results suggest that even brief, low-cost interventions can disrupt the cycle of financial and psychological stress, offering a promising avenue for scalable public health strategies.

Strengths:

- **Innovative approach:** This is the first known study to test a mental health intervention's impact on financial well-being.
- **Robust methodology:** The use of a randomized controlled trial design, validated measurement tools, and mediation analysis strengthens the reliability of the findings.
- **Accessibility and scalability:** The intervention used (Headspace) is widely available and easy to implement, making the findings highly applicable in real-world settings.

- The study was preregistered and received approval from Research Ethics Committee of the University of Tartu, which supports the transparency and ethical integrity of the research process.

Limitations:

- **Sample imbalance:** The majority of the participants were female, limiting generalizability across genders.
- **Recruitment bias:** Participants were recruited via Facebook, potentially excluding those not active on social media or less interested in mental health topics.
- **Short intervention period:** A 10-day intervention may not capture long-term behavioural changes or sustainability of effects.
- **Lack of passive or waitlist control group:** This limits the ability to isolate the intervention's effect from general engagement or placebo effects.

Despite these limitations, the study serves as a valuable pilot for future research and intervention development.

This study shows that short-term mental health interventions can help reduce stress and improve financial well-being. While the Headspace app and TED Talks had similar effects, the results support the idea that paying attention to mental health can also benefit financial well-being.

Suggestions for practitioners:

- It could be beneficial to consider including mindfulness or stress-reduction tools in financial education or support programs.
- It could be useful to encourage people to use accessible self-help tools to manage stress, which may also improve their financial well-being.

Suggestions for researchers:

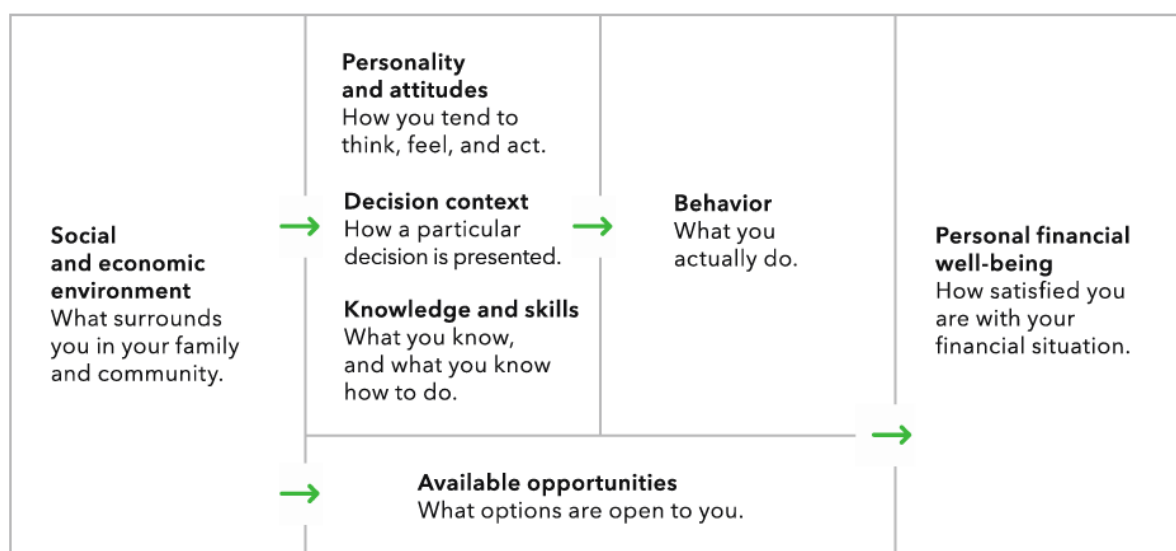
- Future studies should include more diverse participants and test longer or more varied interventions.
- It would be useful to explore how stress reduction leads to changes in financial behaviour, and whether other tools or methods might be more effective.

In summary, this study suggests that improving mental health can also support financial well-being – a connection that deserves more attention in both research and practice. Results suggest the need for further investigation into the central role of mental health constructs and the use of self-help skills in decreasing financial as well as general stress.

MAPPING THE ISSUE

Financial well-being is commonly understood as personal satisfaction with one's financial situation, and since people have different values, different factors can contribute to influencing one's financial well-being (Consumer Financial Protection Bureau, 2015). Below is shown a possible path to financial well-being, as proposed by Consumer Financial Protection Bureau (a government agency in the USA) in 2015 (see Figure 1).

Figure 1. Path to financial well-being



Source: Consumer Financial Protection Bureau, 2015.

While Figure 1 describes commonly understood path to financial well-being, it is important to note that defining the financial well-being as satisfaction with one's personal financial situation is overly simplified. Recent research has proposed that financial well-being is triadic in nature, its crucial dimensions being security (having enough money to pay bills, buy food and have savings), freedom (being able to make choices without depending on money or on the lack of it), and pleasure (treating oneself and others with "nice, feel-good" things) (Riitsalu et al., 2025).

Research has shown that financial well-being has a significant role in people's lives, influencing their mental health, relationships and overall satisfaction with life – regardless of their level of interest in their finances or how important this topic is to them (Barrafrem et al., 2024).

There is evidence of causal effects on financial issues – debt and other financial worries –, and some mental health problems – depression and anxiety (Meltzer et al., 2013) –, supported by systematic literature reviews (Guan et al., 2022). The reverse is also true – research has found that psychological factors also affect financial well-being (van Raaij et al., 2023). For example, recent research done in United Kingdom has shown that mental health problems make it more difficult for people to handle their day-to-day finances, with financial strain also causing rising stress levels and hence growing worries with mental health (James & Lymer, 2023). This in turn forms a so-called vicious cycle (James & Lymer, 2023), which is also shown in Figure 2 below.

Figure 2. The cycle of financial difficulties and mental health problems



Source: Money and Mental Health Policy Institute, 2019.

While Figure 2 maps the broader cycle between financial difficulty and mental health problems, in my thesis I focus on a specific aspect within that cycle: the role of perceived stress and its relationship to financial well-being. The problematic behaviour identified here is not a harmful action *per se*, but rather the lack of action – the lack of handling the issues, taking care of one’s mental health, and reducing stress.

It is important to clarify that financial well-being and financial stress, while related, are not the same. Financial well-being refers to a broader, more holistic state of financial security, confidence, and satisfaction with one’s financial situation. In contrast, financial stress specifically describes the emotional strain or anxiety caused by financial difficulties. (Sorgente et al., 2023) Confusing these two concepts can obscure the nature of the problem being addressed, which in this case is not financial hardship itself, but the psychological response to it – particularly the lack of coping behaviour in response to perceived stress.

One might argue that next to depression and other mental health issues that can be diagnosed, stress – especially perceived stress – might be of a smaller importance. However, it would not be reasonable to underestimate the role of perceived stress in people’s lives – research has shown that perceived stress is a common problem in general population and is related to the onset of many other mental health problems (Ionescu et al., 2021; Wiegner et al., 2015; Zhang et al., 2021). This means that stress plays an important role in people’s lives, and that notion is valid also when it comes to financial problems and mental health.

As researchers have pointed out, more longitudinal (and I would suggest also experimental) studies are needed to understand how financial stress and depression are connected, and how this link might differ between groups (Guan et al., 2022; Riitsalu et al., 2025). This could help create better support systems to stop the above-described vicious cycle. This cycle doesn’t just affect individuals – it can also make social inequality worse. People in difficult financial situations often have worse health and less access to help, especially if support is expensive. Researchers have found that getting regular social or emotional support can lower the chances of facing financial difficulties due to medical costs, showing

how important support networks can be (Jung et al., 2024). It has also been shown that strong emotional reactions to small daily stressors can lead to mental and physical health problems even many years later (Charles et al., 2013; Leger et al., 2018). All of this suggests that financial stress and how people cope with it are not just personal issues, but also important for public health and fairness in society.

However, what could be done to break this vicious cycle? In the next chapter I will explore a couple of interventions that have been conducted in other countries and propose a possible solution for testing.

MAPPING THE SOLUTIONS

The problem mapping in the previous chapter highlighted a key insight: to effectively address the cycle of financial difficulties and mental health problems, interventions should ideally target both psychological and financial well-being simultaneously. The core issue identified was not just financial hardship or mental illness alone, but the lack of coping behaviour in response to perceived stress – particularly when financial strain is involved. With this in mind, the following section explores existing interventions that have addressed either financial or psychological well-being. First, I look at interventions that focus on improving financial behaviour and knowledge. Then, I examine one that aims to reduce stress and support mental health. Finally, I propose a combined solution that integrates both aspects into a single, testable intervention.

In 2019 scientists carried out a study where they tested if and how using a mobile app affects mental health of nonprofessional caregivers in Spain (Ferré-Grau et al., 2021). This was done in a format of randomised controlled trial (RCT), where control group received standard help meant for them and the test group used a free program TIVA¹. The intervention period was 28 days and the results showed that mobile app-based interventions could improve mental health of the target group, i.e., non-professional caregivers in this instance. (Ferré-Grau et al., 2021) Intervention like TIVA could be **possible solution No. 1**. While this is not the target group of my study, it would be possible to carry out a similar study based on this research design.

In 2018 in the United States of America, a study where the usage of Calm app² was tested on college students was carried out. This was done in RCT format and intervention lasted for eight weeks. Control group participants were added to the waitlist and were asked not to be engaged in any mindfulness-based activities. Results showed that using the Calm app had positive impact on participants' mental health. (Huberty et al., 2019) This could be **possible solution No. 2**, since this research design has shown positive results and Calm is also one of the most popular and widely used mental health app in the market.

However, these solutions were based on solely tackling the mental health component. There is also research on influencing financial well-being. For example, a quasi-experiment (Netemeyer et al., 2024) carried out with college students in three different groups showed that financial education, i.e., improving one's financial knowledge, improves financial behaviour and subsequently financial well-being. Therefore, providing better financial education could be **possible solution No. 3**. If this educational programme includes financial planning skills, then it could be even more beneficial, since previous research has

¹ TIVA is a Spanish „Program to Promote Positive Mental Health through the App "Cuidadoras crónicas" (Chronic Caregivers)" (Ferré-Grau et al., 2020). TIVA is an onion-shaped character that guides the user through the program and evolves through the activities (Ferré-Grau et al., 2020); the app is available upon registration for caregivers in Spain. App's website is located at <https://www.cuidadorasronicos.com/>.

² Calm is a research-based mobile app which is designed to help its users manage their mental health issues, for example improve their sleep and handle stress; it is available for Android and Apple device users and it is paid service with free trial available (Calm, 2023). Calm's website is located at <https://www.calm.com/>.

shown that better financial planning skills are likely to contribute to higher satisfaction with one's life (Hanna & Lindamood, 2010) and improve financial well-being (Lown, 2011).

Solution for testing

While each of the three approaches described above offers valuable insights, they also highlight a clear gap: none of them address both mental health and financial well-being simultaneously. The TIVA and Calm app interventions focus solely on improving mental health, while the financial education programme targets financial behaviour without addressing the psychological factors that often underlie financial stress. Their strengths lie in their targeted effectiveness, but their limitations reveal the need for a more integrated approach. Since there does not appear to be any evidence in scientific literature that anyone has tried to test if and how mental health intervention could affect financial well-being, this is the solution I propose.

Systematic reviews have shown that mindfulness-based practices have positive impact on the mental health of people with depression symptoms (Chi et al., 2018). For example, mindfulness-based stress reduction (MBSR) has shown good or satisfactory results on reducing stress level of young people (Chi et al., 2018) and very good results on working age adults – completing the program reduces their depression, anxiety and perceived stress levels (Li & Bressington, 2019), although according to systematic reviews significant long-term (up to six months) effect has not yet been observed (Galante et al., 2021).

There has also been research on the impact of reducing stress levels by obtaining independent stress reduction techniques. For that kind of independent, unsupervised self-help mobile phone apps are used, among other means. One of the most used mobile apps, which is also based on scientific research, is mental health and well-being app Headspace³ (O'Daffer et al., 2022). Research done around the world on the impact of using this app to improve people's mental health shows that even short-term practicing of MBSR techniques has positive impact on reducing, for example, depression symptoms (Flett et al., 2019; Howells et al., 2016). While mindfulness-based techniques have demonstrated positive effects on mental health, and given that the problem map presented in the previous chapter illustrates the interconnectedness of mental and financial well-being, it appears promising to explore whether such techniques could also support improvements in financial well-being.

Based on the meta-analysis mentioned above (Li & Bressington, 2019), which showed that even short-term intervention can have a positive effect on mental health, and considering that above-mentioned mobile app Headspace is readily available for a trial period and fairly easy to use, I designed and conducted an RCT where participants in test group used the Headspace app. It is important to note, however, that while Headspace is based on mindfulness, the idea here is not to concentrate on that particular method (tool). The

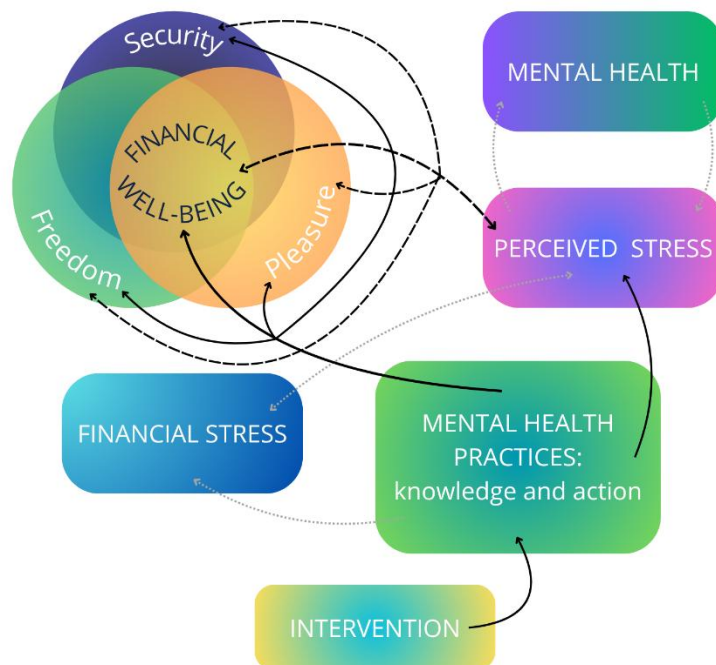
³ Headspace is a well available mobile app designed to support mental health through guided mindfulness and meditation practices. It offers a range of features including stress management tools, sleep aids, and therapeutic content, and has been widely adopted globally, with over 70 million downloads as of 2022. The app is frequently used as a self-directed intervention for stress and anxiety, and its content is informed by both traditional mindfulness practices and contemporary psychological research. (Lee, 2023; Headspace, 2025) Headspace's website is located at <https://www.headspace.com/>.

broader goal is to focus on root cause – regulating emotions and controlling stress – regardless of the psychological method or tool that proves to be useful.

Design of proposed intervention

Figure 3 presents a conceptual model (a solution map). The model proposes that participation in the intervention provides individuals with both knowledge about mental health practices and a motivational nudge to engage in them. These practices are hypothesised to directly enhance financial well-being and its dimensions – security, freedom, and pleasure – as well as reduce perceived stress. In turn, lower levels of perceived stress are expected to further contribute to improvements in financial well-being, functioning as a mediating mechanism. While the model also acknowledges potential side effects – such as reduced financial stress and improved mental health – these outcomes were not directly assessed in the present study.

Figure 3. Proposed solution map

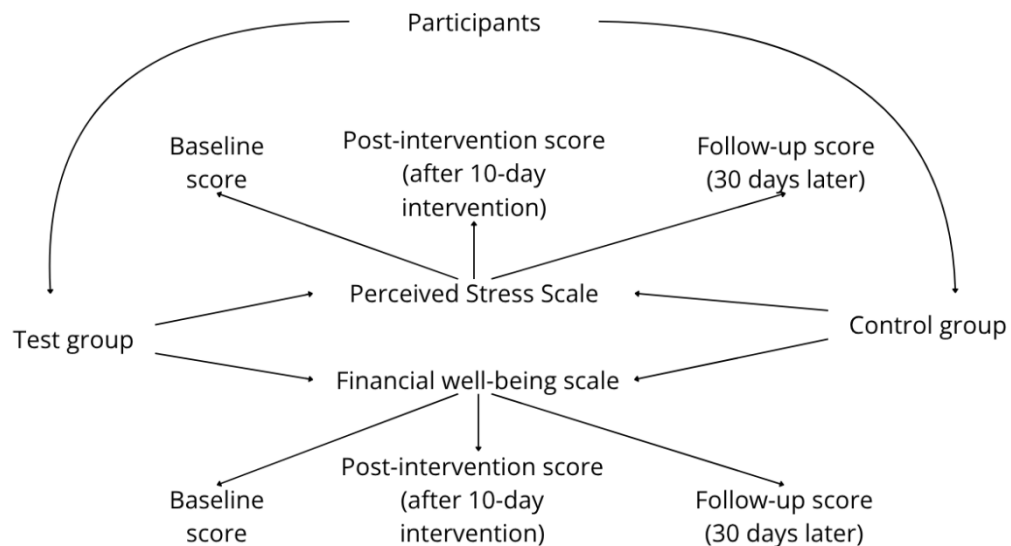


The aim of the RCT was to assess whether using the mindfulness app Headspace for 10 consecutive days could reduce perceived stress and improve financial well-being, and whether these effects persisted 30 days post-intervention. Additionally, I further investigated the associations between the changes in perceived stress levels and financial well-being. Participants in the test group used Headspace’s “Reduce stress” module, completing both morning and afternoon exercises totalling about 25–35 minutes daily. The control group listened to TED Talks on mental health, selected from a curated list to match the time commitment of the test group. Both groups completed the same questionnaires at three points: before the intervention, immediately after, and 30 days later.

Participants were recruited via Facebook, targeting Estonian and English-speaking residents of Estonia aged 30–45. English proficiency was necessary as both Headspace and TED Talks are in English. The goal was to recruit 200 participants per group. Perceived stress was measured using a validated 10-item Estonian version (Perend, 2022) of the

Perceived Stress Scale (Cohen et al., 1983), while financial well-being was assessed using a 9-item validated financial well-being scale (Riitsalu et al., 2025). Both scales are provided in Appendix A for reference. All data collection and communication were managed through the University of Tartu's LimeSurvey platform, ensuring secure data handling. Figure 4 gives schematic overview of the RCT design.

Figure 4. The schematic overview of the RCT design



Prior to conducting the experiment, I preregistered it on the Open Science Framework (OSF) platform: <https://osf.io/gr5p9/>. I also applied for approval from the Research Ethics Committee of the University of Tartu. For this, I had to prepare questionnaires and Facebook advertisement text, as well as an informed consent form where I had to specify details like how many times I plan to contact my participants, and, most importantly, data protection and withdrawing consent terms. I received the approval on March 15, 2024, approval No. 387/T-15.

Among everyone who participated until the end (i.e., completed the third questionnaire), five gift certificates from a reputable Estonian retail store (Kaubamaja) were drawn.

TESTING PROPOSED SOLUTION: RANDOMISED CONTROLLED TRIAL

I conducted the RCT in Spring 2024, after receiving the approval from Research Ethics Committee. A Facebook campaign for recruiting the participants was launched on March 27. During the process of RCT, it became clear that several people were opting out, especially in the test group (more about my sample below). Therefore, I made changes in recruitment logic, and new Facebook campaign was launched on April 29. Throughout the stages of RCT, I monitored the responses I received and sent guidelines about next stages in accordance with my planned schedule and participant's submission. The last participant submitted their third stage response on June 28th.

Sample

My initial goal was to recruit people between 30 and 45 years of age, and 200 participants for both test and control group. However, it became evident during the process, that my goal to reach 200 participants for both groups seemed unachievable. Therefore, I broadened the age range and, in the end, people between 25 and 50 years of age were targeted via Facebook AdCentre.

Initially, 805 persons gave their informed consent to participate in the research and filled in the first stage questionnaire. Then I conducted quasi-randomisation by numbering the participants in the order of their consent to participate in the study, and by sorting each odd-numbered participant into the test group and even-numbered participant into the control group. After participants were grouped and received their respective tasks, some people decided not to partake in my study any longer. This occurred mostly in the test group. I also received some feedback from (former) participants – some people didn't want to download an extra app, some people were afraid that they will have to pay for it, and some people were not interested in mindfulness-based practices.

After the end of third stage, 68 participants remained in the test group, and 100 participants in the control group (see also Table 1). Since men were not particularly interested in participating in this study – which also seems to be quite common for mental health research (Kohl et al., 2013; Patel et al., 2003) – I did not run gender-specific analyses (except for mediator analysis where gender was included as one of the covariates). I also asked if participant's income had changed during the process, but since for most people it remained the same, I did not include this information in my analysis.

Table 1. General overview of study participants

	N	Gender		Age					Income during the study period			
		N/A	Male	Female	Min	Max	Mean	Median	SD	De-creased	Remained the same	In-creased
Test group	68	1	4	63	25	48	37.22	38	6.176	5 (7%)	53 (78%)	10 (15%)
Control group	100		4	96	30	49	37.18	39	4.448	4 (4%)	86 (86%)	10 (10%)

Method of analysis

First, I made some general observations about the collected data. I calculated perceived stress scores for each participant, and also calculated financial well-being scores – overall, and separately security, freedom and pleasure components – for each timepoint measured.

For the main analysis, since there are dependent groups on multiple timelines and observations are interdependent, I analysed collected data with two-way repeated measures ANOVA (RMANOVA). The goal of executing RMANOVA analysis was to establish if the intervention had any impact on reducing perceived stress and/or financial well-being.

Finally, I conducted a mediation analysis to examine whether changes in perceived stress scores explained changes in overall financial well-being. I also tested whether perceived stress mediated changes in each financial well-being component across different time intervals. As covariates, I also included group, gender, and age. Mediation analysis is used “to establish the extent to which some putative causal variable, X, influences some outcome, Y, through one or more mediator variables” (Hayes, 2022). For this analysis I used the PROCESS macro (version 4.2; Model 4 with 5,000 bootstrap samples) for SPSS developed by Andrew F. Hayes. PROCESS is an “observed variable OLS and logistic regression path analysis modelling tool. It is used for estimating direct and indirect effects in single and multiple mediator models” (Hayes, 2025). In this analysis, the independent variable (X) is a group indicator, represented as a dummy variable that distinguishes between test and control group. The mediator (M) is the change in perceived stress scores over a specific time interval (I-II, II-III, or I-III). The dependent variable (Y) is the change in financial well-being – or one of its subdimensions – measured over the same time frame. For calculating change scores, I subtracted the earlier score from the later score (for example, 2nd measurement score minus 1st measurement score). Since Perceived Stress Scale score and financial well-being score have different directions – if calculated change score for Perceived Stress Scale were negative, it would mean improvement, because the lower the score the better, and for financial well-being it’s *vice versa* – I multiplied calculated change scores for Perceived Stress Scale by -1 so that all improvements are shown as positive value and interpreting PRPROCESS results would be more intuitive. I tested if a change in perceived stress score acts as mediator in twelve models.

For my analyses, I used MS Excel and SPSS.

To ensure smoother reading experience, I have used abbreviations shown here-below.

Abbreviations:

PSS – perceived stress score

FWB – financial well-being

FWB sec – security measure of FWB scale

FWB fre – freedom measure of FBW scale

FWB ple – pleasure measure of FWB scale

Roman numerals show measuring stage/timepoint:

I – 1st measurement (before intervention)

II – 2nd measurement (immediately after 10-day intervention)

III – 3rd measurement (30 days after II PSS-10/FWB)

For example, “II FWB fre” shows the freedom component score of the financial well-being scale in the 2nd measurement, i.e., immediately after 10-day intervention.

Results

Below (Table 2) is an overview of all measured scores which were used in the analysis that follows in the subsections of this chapter.

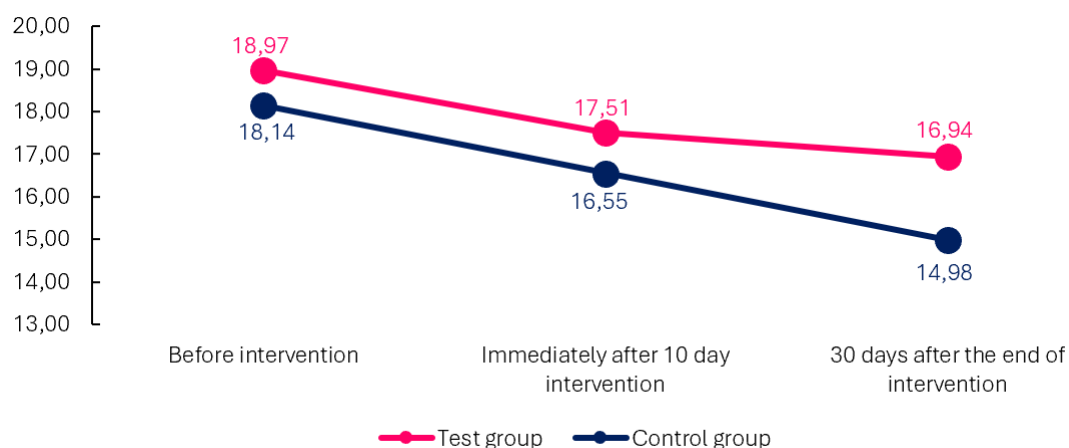
Table 2. Measured scores from RCT

Group	Measuring time	Score				
		PSS	FWB	FWB sec	FWB fre	FWB ple
Test group	I	18.97	3.06	3.33	2.29	3.54
	II	17.52	3.30	3.49	2.62	3.79
	III	16.94	3.31	3.56	2.68	3.69
Control group	I	18.14	3.06	3.26	2.41	3.52
	II	16.55	3.25	3.33	2.70	3.73
	III	14.98	3.24	3.31	2.71	3.70

Overview of perceived stress and financial well-being scores

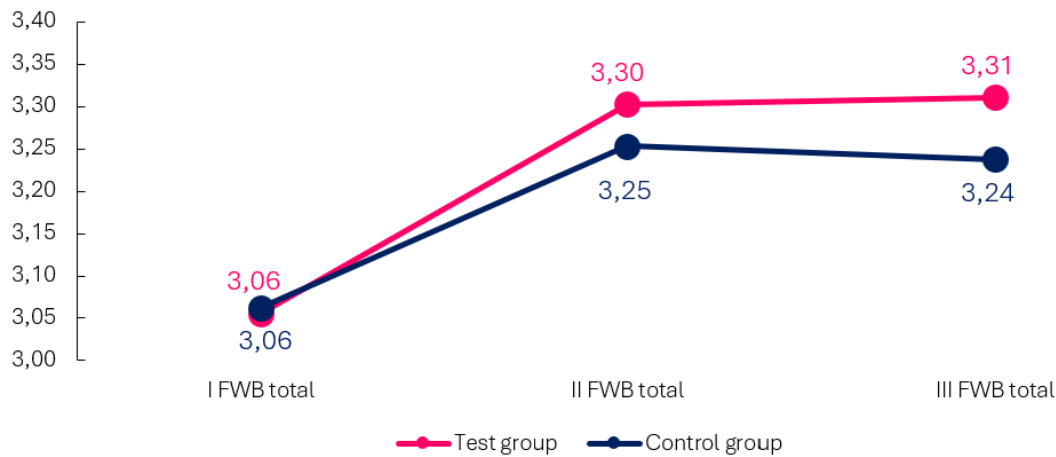
Initial observations showed that for PSS, participants’ stress scores were lower after both using the Headspace app and listening to TED Talks (see Figure 5). I also observed that the most straightforward improvement appeared among control group participants.

Figure 5. PSS in each measurement stage



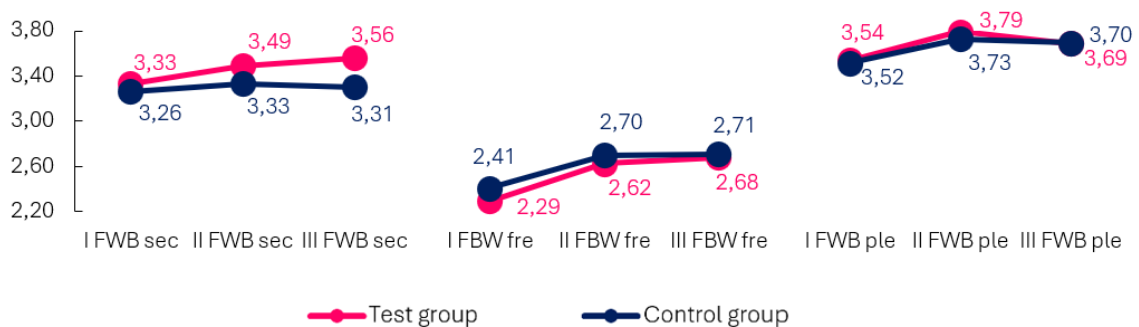
As already observed, average stress levels among test group participants before intervention were higher than among control group participants. However, total score for FWB measures (sec, fre, ple) were the same for participants in both groups, which means the starting point in the context of FWB measures was the same for both groups (see Figure 6).

Figure 6. FWB total scores in each measurement stage



Observing the data in more detail, it is evident (Figure 7) that in test group, FWB ple had higher average scores throughout the study than other aspects. This means that people in both groups were quite confident about being able to spend some money on themselves from time to time and do the things they enjoy. FWB sec had slightly lower scores than FWB ple, but they were still quite high (max score would have been 5.0). This means people felt confident they had enough money for both everyday expenses and unexpected expenses, and they felt secure about their financial future. People were somewhat more concerned about their financial freedom (FWB fre scores were lower than for other aspects). This means they were not so optimistic about having enough money for doing the things they want, and perceive that their life choices are somewhat dictated by money.

Figure 7. Scores of FWB dimensions in each measurement stage



Effects of time and group on perceived stress and financial well-being

A series of two-way repeated measures ANOVAs were conducted to examine the effects of group (intervention vs. control) and time (baseline, post-intervention, and 30-day follow-up) on PSS and FWB, including its dimensions: security, freedom, and pleasure. Since the assumption of sphericity was violated (Mauchly’s test, $p < .05$), multivariate tests were used, which provide robust results without relying on this assumption.

For PSS, a significant main effect of time was found, $F(2, 165) = 7.405, p = .001$, indicating that PSS scores changed across timepoints. Bonferroni-adjusted pairwise comparisons showed significant decreases in PSS scores from baseline to post-intervention ($p = .025$)

and from baseline to follow-up ($p < .001$). However, there was no significant time and group interaction, $F(2, 165) = 1.453$, $p = .237$, and no significant main effect of group, $F(1, 166) = 0.466$, $p = .496$, suggesting that changes in stress levels over time occurred regardless of group assignment. Descriptively, both groups showed a decrease in PSS scores over time, with the control group decreasing from $M = 18.14$ ($SD = 8.12$) at baseline to $M = 14.98$ ($SD = 8.61$) at follow-up, and the intervention group from $M = 18.97$ ($SD = 7.13$) to $M = 16.94$ ($SD = 8.34$).

For total FWB scores, a significant main effect of time was observed, $F(2, 165) = 8.358$, $p < .001$, indicating that overall financial well-being changed across timepoints. Bonferroni pairwise comparisons showed significant increases from baseline to post-intervention ($p = .001$), which remained stable at follow-up. There was no significant time and group interaction, $F(2, 165) = 1.549$, $p = .215$, and no main effect of group, $F(1, 166) = 0.595$, $p = .442$, suggesting that improvements in financial well-being occurred similarly in both groups. Mean FWB scores increased slightly over time in both groups, with the control group rising from $M = 3.06$ ($SD = 1.06$) to $M = 3.24$ ($SD = 1.16$), and the intervention group from $M = 3.06$ ($SD = 0.97$) to $M = 3.31$ ($SD = 0.95$).

For the FWB sec, a significant main effect of time was found, $F(2, 165) = 15.457$, $p < .001$, indicating changes in perceived financial security over time. Increases from baseline to post-intervention and follow-up were significant ($p < .05$). No significant time and group interaction was found, $F(2, 165) = 0.468$, $p = .627$, and no main effect of group, $F(1, 166) = 0.116$, $p = .733$, was observed. Both groups showed improvements in FWB sec, with the control group increasing from $M = 3.26$ ($SD = 1.20$) to $M = 3.31$ ($SD = 1.29$), and the intervention group from $M = 3.33$ ($SD = 1.24$) to $M = 3.56$ ($SD = 1.11$).

A significant main effect of time was found for the FWB fre subdimension, $F(2, 165) = 7.78$, $p = .022$, suggesting that participants' sense of financial freedom changed over time. Increase from baseline to post-intervention was significant ($p < .05$). However, no significant time and group interaction was observed, $F(2, 165) = 0.04$, $p = .961$, and no main effect of group, $F(1, 166) = 0.594$, $p = .442$, was found. The control group's scores increased from $M = 2.41$ ($SD = 1.07$) to $M = 2.71$ ($SD = 1.18$), while the intervention group's scores increased from $M = 2.29$ ($SD = 1.02$) to $M = 2.68$ ($SD = 1.01$).

For the FWB ple subdimension, a significant main effect of time was found, $F(2, 165) = 15.111$, $p < .001$, indicating that participants' enjoyment related to financial well-being changed over time. Increases from baseline to post-intervention and follow-up were significant ($p < .05$). There was no significant time and group interaction, $F(2, 165) = 0.468$, $p = .627$, and no main effect of group, $F(1, 166) = 0.238$, $p = .626$. Both groups showed increases in pleasure scores, with the control group rising from $M = 3.52$ ($SD = 1.20$) to $M = 3.70$ ($SD = 1.24$), and the intervention group from $M = 3.54$ ($SD = 1.02$) to $M = 3.69$ ($SD = 0.99$).

Overall, these findings suggest that while both groups experienced improvements in perceived stress and financial well-being over time, these changes were not significantly influenced by group assignment, indicating that the observed benefits may reflect general trends or external factors rather than the specific effects of the intervention.

Change in perceived stress score as mediator

Multiple mediation models were used to examine whether changes in perceived stress mediated the intervention's effects on different dimensions of financial well-being across various time intervals. This approach allows for a more detailed understanding of when and how mediation may occur within specific outcome domains. Mediation analyses were conducted using PROCESS for SPSS (Model 4) with 5,000 bootstrap samples. Gender and age were included as covariates but were not significant in any model ($p > 0.05$). To facilitate interpretation and highlight temporal patterns, the 12 mediation models were grouped by measurement intervals (III, II–III, and I–III), allowing for a clearer comparison of how changes in PSS relate to changes in FWB across different phases of the study.

Across the I–II models, PSS significantly predicted changes in all FWB domains. The standardized regression coefficients ranged from $\beta = 0.03$ to 0.05 , with all p -values $< .01$. However, none of the indirect effects were statistically significant, as all 95% confidence intervals included zero (e.g., for FWB total: $\beta = 0.005$, 95% CI $[-0.083, 0.081]$). The explained variance (R^2) ranged from 6.27% (FWB sec) to 17.19% (FWB total), with F -statistics between $F(4, 163) = 2.73$ and $F(4, 163) = 8.46$. The strongest model fit was observed for FWB total ($R^2 = .1719$, $F = 8.46$, $p < .001$).

In the II–III models, PSS again significantly predicted changes in all FWB outcomes ($\beta = 0.02$ – 0.03 , p -values ranging from $.001$ to $.006$). However, similar to the I–II models, none of the indirect effects were significant (e.g., for FWB sec: $\beta = 0.018$, 95% CI $[-0.016, 0.072]$). The models explained between 4.89% and 9.95% of the variance in FWB outcomes, with F -statistics ranging from $F(4, 163) = 2.10$ to $F = 4.50$. The best-fitting model was for FWB total ($R^2 = .0995$, $F = 4.50$, $p = .0018$).

The I–III models showed the strongest overall effects. PSS significantly predicted changes in all FWB domains ($\beta = 0.03$ – 0.06 , all $p < .001$). However, none of the indirect effects reached significance (e.g., for FWB pleasure: $\beta = 0.054$, 95% CI $[-0.065, 0.198]$). The explained variance was highest among all time frames, ranging from 9.20% (FWB sec) to 20.56% (FWB pleasure), with F -statistics up to $F(4, 163) = 10.55$. The model for FWB pleasure had the strongest fit ($R^2 = .2056$, $F = 10.55$, $p < .001$).

Although none of the models demonstrated statistically significant mediation effects, the consistent and robust direct associations between PSS and the domains of FWB across all time frames underscore the importance of PSS as a key factor in well-being trajectories. The models explained meaningful proportions of variance – particularly in the I–III interval – highlighting the relevance of longitudinal changes in PSS. A detailed table summarising mediation analyses is provided in the Appendix B for reference.

Conclusion

The aim of this study was to explore whether a short-term mindfulness-based mental health intervention could improve both perceived stress and financial well-being. This was based on the problem mapping, which highlighted the reciprocal relationship between financial and psychological well-being and the need for integrated interventions.

First, the results showed that both the Headspace intervention and the TED Talk control condition were associated with improvements in financial well-being and perceived stress over time. However, there were no statistically significant differences between the groups. This means that while participants improved, I cannot attribute these changes to the Headspace intervention specifically. The improvements may reflect general trends or other external factors not controlled for in this study.

Second, the analysis showed that perceived stress was a significant predictor of financial well-being across all timeframes. This supports earlier findings in the literature (Guan et al., 2022; James & Lymer, 2023; Meltzer et al., 2013) that psychological factors are closely linked to financial outcomes. However, mediation analysis revealed that changes in stress did not statistically explain the changes in financial well-being. This suggests that while stress and financial well-being are related, the mechanisms linking them are complex and likely involve additional factors.

Third, although both groups showed improvements in financial well-being dimensions (security, freedom, and pleasure), these changes were not significantly different between groups. This contradicts the initial hypothesis that the Headspace intervention would outperform the control condition. Therefore, it cannot be concluded that actively engaging with a mindfulness app had a unique effect on financial well-being.

These findings are consistent with previous research showing that mental health and financial well-being are interconnected (Hoffmann & Risse, 2020), but they also highlight the difficulty of isolating the effects of specific interventions in real-world settings. The results support the idea that addressing one side of the mental health–financial well-being cycle may influence the other, but more rigorous designs are needed to confirm causality.

However, this study highlights the importance of stress management techniques as a potentially missing piece in the broader model of financial well-being. While financial education and structural support are often emphasized, this research suggests that equipping individuals with accessible tools to manage stress can be a valuable and underused strategy. These tools may not only improve psychological well-being but also enhance financial resilience, making them a promising addition to future intervention models aimed at improving overall well-being.

Limitations

While the insights gained from this study were valid and robust, there were still some notable limitations that could be addressed in future research on the topic. The sample was not balanced, as most participants were female. This is an issue that is quite common, especially when it comes to mental health related studies (Kohl et al., 2013). Whatever the reason may be, for carrying out further research the recruiting design should be improved to find ways to engage male participants as well. Also, the study would benefit from larger sample. The problem with the sample size stems from large dropout that occurred mostly when participants in test group received their assignment. Some of the reasons given by participants themselves were mentioned above in the Sample chapter, however, it has been observed that when it comes to health interventions, dropout in intervention group tends to be higher (Crutzen et al., 2015).

Participants were recruited via Facebook AdCentre. This means people who don't use Meta's products were left out. Also, recruiting participants via social media likely resulted in a sample biased toward individuals already interested in mental health and financial well-being, not only because of self-selection, but also due to the ad algorithm, which tends to show content to users whose online behaviour suggests prior engagement with these topics.

Regarding research design, limitation is the lack of passive or waitlist control group which should be included in case a further study is being undertaken. In terms of research design, a short intervention period could also be a limitation, which can be taken account in the future. Another problem is that since studies like this are not lab experiments, it is not possible to control any other factors that may occur in participant's lives and affect their mental health and financial well-being while participating in the study.

In the future, research on this topic should take the above-mentioned limitations into consideration to produce results that are even more robust by correcting for biases like gender and quasi-randomness introduced via the recruitment method.

ACKNOWLEDGEMENTS

This research has been financially supported by the non-profit organisation ERSTE Foundation and was carried out as part of the research project in partnership between the University of Tartu and Erste Foundation, Human-centered approach for increasing financial well-being of individuals and societies.

I used the assistance of an AI language model (Microsoft Copilot) for drafting the executive summary, and then revised and finalised the chapter myself.

REFERENCES

- Barrafrem, K., Västfjäll, D., & Tinghög, G. (2024). Financial Homo Ignorans: Development and validation of a scale to measure individual differences in financial information ignorance. *Journal of Behavioral and Experimental Finance*, *42*, 100936. <https://doi.org/10.1016/j.jbef.2024.100936>
- Calm. (2023). *About Calm* [Website]. <https://blog.calm.com/about>
- Charles, S. T., Piazza, J. R., Mogle, J., Sliwinski, M. J., & Almeida, D. M. (2013). The Wear and Tear of Daily Stressors on Mental Health. *Psychological Science*, *24*(5), 733–741. <https://doi.org/10.1177/0956797612462222>
- Chi, X., Bo, A., Liu, T., Zhang, P., & Chi, I. (2018). *Effects of Mindfulness-Based Stress Reduction on Depression in Adolescents and Young Adults: A Systematic Review and Meta-Analysis*. *9*, 1034. <https://doi.org/10.3389/fpsyg.2018.01034>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, *24*(4), 385–396. JSTOR. <https://doi.org/10.2307/2136404>
- Consumer Financial Protection Bureau. (2015). *Financial Well-Being: The Goal of Financial Education*. https://files.consumerfinance.gov/f/201501_cfpb_report_financial-well-being.pdf
- Crutzen, R., Viechtbauer, W., Spigt, M., & Kotz, D. (2015). Differential attrition in health behaviour change trials: A systematic review and meta-analysis. *Psychology & Health*, *30*(1), 122–134. <https://doi.org/10.1080/08870446.2014.953526>
- Ferré-Grau, C., Lluch-Canut, T., Albacar-Riobó, N., Lorca-Cabrera, J., Raigal-Aran, L., Sánchez-Ortega, A., Boqué-Cavallé, M., Miguel-Ruiz, D., Mulet-Barberà, M., & Puig-Llobet, M. (2020). *TIVA: Program to promote positive mental health through the*

cuidadoras crónicas app (1. ed). Universitat Rovira i Virgili.

<https://llibres.urv.cat/index.php/purv/catalog/book/459>

Ferré-Grau, C., Raigal-Aran, L., Lorca-Cabrera, J., Lluch-Canut, T., Ferré-Bergadà, M., Lleixà-Fortuño, M., Puig-Llobet, M., Miguel-Ruiz, M. D., & Albacar-Riobóo, N. (2021). A Mobile App-Based Intervention Program for Nonprofessional Caregivers to Promote Positive Mental Health: Randomized Controlled Trial. *JMIR mHealth and uHealth*, 9(1). <https://doi.org/10.2196/21708>

Flett, J. A. M., Hayne, H., Riordan, B. C., Thompson, L. M., & Conner, T. S. (2019). Mobile Mindfulness Meditation: A Randomised Controlled Trial of the Effect of Two Popular Apps on Mental Health. *Mindfulness*, 10(5), 863–876. <https://doi.org/10.1007/s12671-018-1050-9>

Galante, J., Friedrich, C., Dawson, A. F., Modrego-Alarcón, M., Gebbing, P., Delgado-Suárez, I., Gupta, R., Dean, L., Dalgleish, T., White, I. R., & Jones, P. B. (2021). Mindfulness-based programmes for mental health promotion in adults in nonclinical settings: A systematic review and meta-analysis of randomised controlled trials. *PLOS Medicine*, 18(1), e1003481. <https://doi.org/10.1371/journal.pmed.1003481>

Guan, N., Guariglia, A., Moore, P., Xu, F., & Al-Janabi, H. (2022). Financial stress and depression in adults: A systematic review. *PLOS ONE*, 17(2), e0264041. <https://doi.org/10.1371/journal.pone.0264041>

Hanna, S. D., & Lindamood, S. (2010). Quantifying the Economic Benefits of Personal Financial Planning. *Financial Services Review*, 19(2). <https://doi.org/Available at SSRN: https://ssrn.com/abstract=1888285>

Hayes, A. F. (2022). *Introduction to Mediation, Moderation, and Conditional Process Analysis. A Regression-Based Approach* (3rd ed.). Guilford Press.

Hayes, A. F. (2025). *The PROCESS macro for SPSS, SAS, and R* [Website].

<https://www.processmacro.org/index.html>

Headspace. (2025). *About Headspace* [Website]. <https://www.headspace.com/about-us?origin=navigation>

Hoffmann, A. O. I., & Risse, L. (2020). Do good things come in pairs? How personality traits help explain individuals' simultaneous pursuit of a healthy lifestyle and financially responsible behavior. *Journal of Consumer Affairs*, *54*(3), 1082–1120.

<https://doi.org/10.1111/joca.12317>

Howells, A., Ivtzan, I., & Eiroa-Orosa, F. J. (2016). Putting the 'app' in Happiness: A Randomised Controlled Trial of a Smartphone-Based Mindfulness Intervention to Enhance Wellbeing. *Journal of Happiness Studies*, *17*(1), 163–185.

<https://doi.org/10.1007/s10902-014-9589-1>

Huberty, J., Green, J., Glissmann, C., Larkey, L., Puzia, M., & Lee, C. (2019). Efficacy of the Mindfulness Meditation Mobile App “Calm” to Reduce Stress Among College Students: Randomized Controlled Trial. *JMIR Mhealth Uhealth*, *7*(6), e14273.

<https://doi.org/10.2196/14273>

Ionescu, T. C., Fetecau, B. I., Boscaiu, V., & Tudose, C. (2021). Anxiety, Perceived Stress, and Resilience during the COVID-19 Pandemic: Population Estimates of Persons Presenting to a General Practitioner in Romania. *Brain Sciences*, *11*(11), 1541.

<https://doi.org/10.3390/brainsci11111541>

James, H., & Lymer, A. (2023). *Money and Pension Service: Money and Mental Health Rapid Evidence Review* (Final Report). Centre for Personal Financial Wellbeing (CPFW), Aston University, Birmingham UK. <https://maps.org.uk/content/dam/maps->

corporate/en/publications/research/2024/maps-money-mental-2023-health-rapid-evidence-review.pdf

Jung, J., Mukherjee, K., Brown, M., & Sadigh, G. (2024). Association between financial hardship and psychological burden and the role of social and mental health support: An observational study. *Medicine*, *103*(28), e38871.
<https://doi.org/10.1097/MD.00000000000038871>

Kohl, L. F., Crutzen, R., & De Vries, N. K. (2013). Online Prevention Aimed at Lifestyle Behaviors: A Systematic Review of Reviews. *Journal of Medical Internet Research*, *15*(7), e146. <https://doi.org/10.2196/jmir.2665>

Lee, R. L. (2023). Review of Headspace: Meditation and sleep. *Families, Systems, & Health*, *41*(1), 114–116. <https://doi.org/10.1037/fsh0000737>

Leger, K. A., Charles, S. T., & Almeida, D. M. (2018). Let It Go: Lingering Negative Affect in Response to Daily Stressors Is Associated With Physical Health Years Later. *Psychological Science*, *29*(8), 1283–1290.
<https://doi.org/10.1177/0956797618763097>

Li, S. Y. H., & Bressington, D. (2019). The effects of mindfulness-based stress reduction on depression, anxiety, and stress in older adults: A systematic review and meta-analysis. *International Journal of Mental Health Nursing*, *28*(3), 635–656.
<https://doi.org/10.1111/inm.12568>

Lown, J. M. (2011). Development and Validation of a Financial Self-Efficacy Scale. *Journal of Financial Counseling and Planning*, *22*(2). <https://doi.org/Available at SSRN: https://ssrn.com/abstract=2006665>

- Meltzer, H., Bebbington, P., Brugha, T., Farrell, M., & Jenkins, R. (2013). The relationship between personal debt and specific common mental disorders. *European Journal of Public Health, 23*(1), 108–113. <https://doi.org/10.1093/eurpub/cks021>
- Money and Mental Health Policy Institute. (2019). *Money and mental health: The facts. [Fact sheet]*. <https://www.moneyandmentalhealth.org/wp-content/uploads/2019/03/debt-mental-health-facts-2019.pdf>
- Netemeyer, R. G., Lynch Jr., J. G., Lichtenstein, D. R., & Dobolyi, D. (2024). Financial Education Effects on Financial Behavior and Well-Being: The Mediating Roles of Improved Objective and Subjective Financial Knowledge and Parallels in Physical Health. *Journal of Public Policy & Marketing, 43*(4), 254–275. <https://doi.org/10.1177/07439156241228197>
- O’Daffer, A., Colt, S. F., Wasil, A. R., & Lau, N. (2022). Efficacy and Conflicts of Interest in Randomized Controlled Trials Evaluating Headspace and Calm Apps: Systematic Review. *JMIR Mental Health, 9*(9), e40924. <https://doi.org/10.2196/40924>
- Patel, M. X., Doku, V., & Tennakoon, L. (2003). Challenges in recruitment of research participants. *Advances in Psychiatric Treatment, 9*(3), 229–238. <https://doi.org/10.1192/apt.9.3.229>
- Perend, L. (2022). *Tajutud stressi skaala lühiversiooni faktorstruktuuri uurimine* [Uurimistöo, Tartu Ülikool, Sotsiaalteaduste valdkond, Psühholoogia instituut]. <https://dspace.ut.ee/server/api/core/bitstreams/fe6c7180-b99a-49d9-8170-516509839136/content>
- Riitsalu, L., Atkinson, A., & Pello, R. (Eds.). (2025). *Beyond Money. Exploring Financial Well-Being through a Human Lens*. ERSTE Foundation/DIE ERSTE österreichische Spar-

Casse Privatstiftung. <https://www.erstestiftung.org/en/publications/beyond-money-exploring-financial-well-being-through-a-human-lens/>

Sorgente, A., Zambelli, M., & Lanz, M. (2023). Are Financial Well-Being and Financial Stress the Same Construct? Insights from an Intensive Longitudinal Study. *Social Indicators Research*, 169(1), 553–573. <https://doi.org/10.1007/s11205-023-03171-0>

van Raaij, F. W., Riitsalu, L., & Pöder, K. (2023). Direct and indirect effects of self-control and future time perspective on financial well-being. *Journal of Economic Psychology*, 99, 102667. <https://doi.org/10.1016/j.joep.2023.102667>

Wiegner, L., Hange, D., & Ahlborg, G. J. (2015). Prevalence of perceived stress and associations to symptoms of exhaustion, depression and anxiety in a working age population seeking primary care—An observational study. *BMC Family Practice*, 16(38). <https://doi.org/10.1186/s12875-015-0252-7>

Zhang, M., Zhao, X., Liu, Y., & Yang, J. (2021). Perceived stress and possible stressors in the general public in China during the COVID-19 pandemic. *Ethics, Medicine and Public Health*, 18, 100695. <https://doi.org/10.1016/j.jemep.2021.100695>

APPENDIX A

Perceived Stress Scale

Perceived Stress Scale is presented in Estonian, because participants responded in Estonian.

Palume Teil hinnata, kui tihti olete ennast viimasel ajal küsimuses kirjeldatud viisil mõelnud või tundnud. Palun vastake kõikidele küsimustele.

	Väga harva	Üsna harva	Mõnikord	Üsna sageli	Väga sageli
Kui tihti olete Te viimasel ajal endast välja läinud mõne ootamatu sündmuse tõttu?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal tundnud, et Te ei ole enam ise oma elu peremees?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal tundnud, et Te olete närviline ja pinges?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal olnud kindel, et suudate oma isiklike probleemidega toime tulla?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal tundnud, et Teie elu läheb nii nagu Te tahate?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal tundnud, et Te ei saa enam hakkama kõigi nende asjadega, mida Te olete ette võtnud?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal tundnud, et Te suudate olla üle asjadest, mis Teid ärritavad?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal tundnud, et Te saate oma asjadega hästi hakkama?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal läinud endast välja asjade pärast, mis Teist ei sõltunud?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kui tihti olete Te viimasel ajal tundnud, et Te ei suuda enam üle pea kasvavate raskustega toime tulla?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Financial well-being scale

Financial well-being scale is presented in Estonian, because participants responded in Estonian.

Palun märkige alljärgnevate väidete kohta, kuivõrd Te nendega nõustute. Palun vastake iga väite kohta.

	1 – ei nõustu üldse	2	3	4	5 – nõustun täiesti
Mul on alati piisavalt raha igakuiste arvete, toidu ja transpordi jaoks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vajadusel saaksin sel nädalal uue külmiku osta selleks raha laenamata või järelmaksu võtmata.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tunnen end oma rahalise tuleviku suhtes kindlalt.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mul on piisavalt raha, et teha, mida tahan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minu elu otsuseid ega valikuid ei dikteeri raha.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saan oma elu muuta raha pärast muretsemata.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saan aeg ajalt iseendale osta ühteist meeldivat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saan endale lubada tegevusi, mis mulle meeldivad, näiteks käia kontsertidel, spordivõistlustel või sõpru õhtusöögile kutsuda.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rahaasjad ei takista mul elu nautimist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Muretsen pidevalt oma rahaasjade pärast.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

First three statements represent security, next three statements represent freedom, and next three pleasure dimension. Last statement represents stress, which is not part of financial well-being model, but was included in original questionnaire to assess construct validity of this measurement tool. This was done prior my research as a part of the project “Human-centered approach for increasing financial well-being of individuals and societies”.

APPENDIX B

Table 3. Results of mediation analyses

Outcome	Time Interval	Direct Effect	Indirect Effect (95% CI)	R ²	M → Y Path
Total FWB	I-II	b = -0.0741, p = .4096	b = 0.0046, 95% CI [-0.0830, 0.0806]	.1719	p < .001
	II-III	b = -0.0523, p = .4578	b = 0.0217, 95% CI [-0.0205, 0.0796]	.0995	p < .001
	I-III	b = -0.1403, p = .1688	b = 0.0402, 95% CI [-0.0480, 0.1463]	.1874	p < .001
FWB sec	I-II	b = -0.1036, p = .3681	b = 0.0032, 95% CI [-0.0702, 0.0612]	.0627	p = .0032
	II-III	b = -0.1274, p = .1029	b = 0.0179, 95% CI [-0.0157, 0.0720]	.0754	p = .0028
	I-III	b = -0.2347, p = .0404	b = 0.0249, 95% CI [-0.0346, 0.1082]	.0920	p = .0015
FWB fre	I-II	b = -0.0503, p = .6651	b = 0.0058, 95% CI [-0.0969, 0.1037]	.1598	p < .001
	II-III	b = -0.0790, p = .4416	b = 0.0257, 95% CI [-0.0252, 0.0933]	.0719	p = .0012
	I-III	b = -0.1394, p = .2821	b = 0.0416, 95% CI [-0.0541, 0.1557]	.1274	p < .001
FWB ple	I-II	b = -0.0685, p = .5395	b = 0.0049, 95% CI [-0.0886, 0.0842]	.1379	p < .001
	II-III	b = 0.0496, p = .6243	b = 0.0214, 95% CI [-0.0230, 0.0823]	.0489	p = .0061
	I-III	b = -0.0468, p = .7143	b = 0.0542, 95% CI [-0.0646, 0.1981]	.2056	p < .001

NON-EXCLUSIVE LICENCE TO REPRODUCE THE THESIS AND MAKE THE THESIS PUBLIC

I, Ene Tubelt

1. grant the University of Tartu a free permit (non-exclusive licence) to reproduce, for the purpose of preservation, including for adding to the DSpace digital archives until the expiry of the term of copyright, my thesis “Effects of a mental health intervention on financial well-being”, supervised by Leonore Riitsalu and Kerli Ilves;
2. grant the University of Tartu a permit to make the thesis specified in point 1 available to the public via the web environment of the University of Tartu, including via the digital archives, under the Creative Commons licence CC BY NC ND 4.0, which allows, by giving appropriate credit to the author, to reproduce, distribute the work and communicate it to the public, and prohibits the creation of derivative works and any commercial use of the work until the expiry of the term of copyright;
3. am aware of the fact that the author retains the rights specified in points 1 and 2;
4. confirm that granting the non-exclusive licence does not infringe other persons’ intellectual property rights or rights arising from the personal data protection legislation.

Ene Tubelt

06/06/2025