

A DUAL APPROACH TO FINANCIAL PERSONALITY IN CHILDHOOD

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Abstract

In 2018, the Péncziránytű Foundation published an anonymous and voluntarily completed online financial personality test for 12-14 year olds. After completing the test, the respondents receive an immediate assessment of their financial personality traits based on a predetermined framework. The evaluation highlights the respondent's benevolent behaviour and draws attention to areas for change. The test was completed by 15,933 respondents until February 2022. This study was made using the collected responses. We have shown that the development of the financial personality of 12-14-year-old children is determined by six behavioural patterns. The three most powerful of these negatively influence personality development. We also isolated two childhood financial personality types. With this dual approach, we want to promote more differentiated learning content and methods of financial education for this age group.

Keywords: financial personality; childhood; financial attitudes; financial decisions; spending

Introduction

Since the 1970s, many researchers have been dealing with financial attitudes and personality types, looking for the factors that shape people's financial behaviour patterns (Gelencsér et al. 2023). Their studies typically focused on personality from two directions: behavior and attitude.

The first study is attributed to Goldberg and Lewis (1979). The author pair distinguished three types of individuals: hoarders, independence-seekers and power players. People who strive for independence accumulate money in order to reduce their discomfort, while hoarders want to avoid the damage caused by economic and environmental change by accumulating money. For power players,

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the main purpose of having money is to gain the attention and admiration of other people.

Forman (1987) supplements Goldberg and Lewis's system with a new category, that of players. Members of this group associate the acquisition of money with an intense excitement and emotional state, like poker or roulette. Sometimes the stock market itself can be seen as a kind of gambling.

Furnham's (1984) measurement was also aimed at behavioral patterns related to money. In addition to behavior, however, he also examined beliefs related to money. The *"Money Beliefs and Behaviours He reduced the sixty statements of the Scale"* to a total of six factors. These are (1) compulsiveness, (2) power, (3) savings, (4) security, (5) dissatisfaction, (6) effort. Compulsive individuals compare themselves to others on the basis of their money. Money is connected with superiority. The second category, that is, power, is only slightly different from the first. Here, money is the basis of power. The third dimension is that of saving, which is characterized by financial conservatism and putting security first. The dimension of the dissatisfied has something in common their characteristic is that they never have enough money. They are characterized by the "more is better than more" attitude, which is also a kind of driving force for them. Finally, the effort dimension includes all those for whom the motive of work appears in connection with money and their attitude to money.

Christopher, Pam, and Carroll (2004) and Masuo, Lakshmi, Hanashiro, and Kim (2004) used Furnham's scale in their research in a shortened version. Christopher et al.'s dimensions: dissatisfaction (which corresponds to one of the factors of the original research), self-aggrandizement, conservative attitude, and negative emotions related to money. It can be seen that the meanings of the factors have also changed in their content. All this can be observed even more in the research conducted by Masuo et al. (2004). Their three factors are power, security and financial modesty.

Mellan (1995) distinguished a total of nine personality types. According to Mellan's typology, a saver is someone who clings to his money and finds it difficult to use it to buy things that give him momentary pleasure. Money represents a kind of security for him, so hedonistic behaviour is foreign to him. For the spending financial personality type, the joy of being able to spend your money when and on what you want is usually tied to an external stimulus. Saving and budgeting are foreign to this personality type. The type of financial ascetic feels guilty when they suddenly come into a large amount of money. They are convinced that money is the destroyer of everything. Mellan (1995) characterizes those who try to avoid daily tasks related to money as escapists. The main goal of the scavenger personality type is the continuous increase of their money, this is also a means of proving their power. He calls the combination of the frugal and the spending personality type a spendthrift. This type saves for a while (say, to achieve a bigger goal), but at the same time, under the influence of a suitable external stimulus (impulse), he can buy without considering. A characteristic of the anxious type is lack of self-confidence. They are afraid of losing control, which is why they keep

their finances under control and monitor them constantly. For risk takers, money means adventure, excitement and freedom. They love the thrill and adrenaline that comes with it. They risk their money for that feeling. Mellan's last category is the group of risk avoiders. For them, money equals security. He also prefers to keep his money at home if he can.

Németh et al. (2016) separated nine dimensions that determine the financial personality with the help of a test consisting of 36 questions: (1) position, (2) sometimes hop, sometimes knock, (3) order, (4) price sensitivity, (5) hoarding, (6) planning, (7) wallowing, (8) busyness, (9) unable to manage their finances. The dimension of scheduling primarily means avoiding debts, saving, and managing money. People with "one time hop, another time knock" traits like to have fun, shop and often reward themselves, but other times they save. The dimension of order is dominated by monitoring finances and keeping track of expenses. Price sensitivity means up-to-date knowledge and comparison of prices. Hoarding refers to the accumulation of possessions. Planning refers to planning how to spend money (making a shopping list). The beautician also undertakes expenses that could be avoided - presumably for reasons of convenience. Such as buying ready meals or not asking for change when paying. A worker tends to take on work in order to earn money. Finally, those who "can't control their finances" are unable to appreciate the real value of the goods they want to consume.

Examining the concept of financial attitude is of critical importance in understanding how individuals spend, as well as helping to understand irrational phenomena such as compulsive buying (Furnham & Okamura, 1999), unhappiness (Kasser & Ryan, 1996) or gambling addiction (Tatzel, 2003). Therefore, money can influence and damage not only economic, but also social and individual behaviour. Financial attitude research offers banks a new segmentation method. Financial institutions began to use the grouping of customers based on their financial attitude. The study by Fünfgeld and Wang (2009) defined five dimensions in terms of financial attitudes: concern, interest in financial topics, decisiveness, need to save, tendency to spend. Based on these, consumer groups with different needs in terms of financial services can be distinguished.

Numerous researches have proven (Atkinson & Messy, 2012; Kovács et al., 2013; Gáspár et al., 2023; Nagy & Tóth, 2012) that attitudes are important elements of financial decisions, so conclusions can be drawn regarding the financial behaviour of individuals based on attitudes. For example, those who put their short-term goals ahead of their long-term options are unlikely to show interest in long-term forms of savings. In 2012, the OECD (Organisation for Economic Co-operation and Development) conducted research covering 14 countries, in which the differences in financial knowledge and attitudes were examined based on sociodemographic characteristics. According to the results, respondents with higher financial knowledge show more positive financial behaviour in all countries examined, similarly, a positive financial attitude results in positive financial behaviour (Atkinson & Messy, 2012).

Yamauchi and Templer (1982) defined attitude towards money as a multidimensional concept. The first dimension is power-prestige, in which money is a symbol of success and power for individuals. It helps you to gain power, security and freedom, and to stand out from the rest. The second dimension is savings and time. In this group, saving and accumulation are of primary importance. Preparation for the future and continuous control of the financial situation play the main role. Such an individual is able to give up current consumption in the hope of future, expectedly greater consumption. Distrust is the third financial personality dimension of the author pair. People who don't trust their finances usually don't trust themselves either. The fourth dimension is that of anxiety. For them, money is a contradictory phenomenon, it simultaneously causes anxiety and functions as a means of protection. They are the "what if it doesn't happen" type of personality.

Bauer and Mitev (2011) in Hungary was based on the typology of Yamamuchi and Templer (1982) just outlined. "*Money Attitude Scale*" savings-time dimension was used to examine the correlations with compulsive buying. Based on their results, saving money and judicious spending cannot form one dimension, but at the same time, saving and compulsive buying are also possible. This coincides with the results of a study published in 2008 by Ridgway et al. (2008).

Tang (1992) identified six factors based on money attitudes. The affective component shows the emotions money evokes. In the cognitive component, evaluative thoughts (performance, respect, and power) appear related to money. The conative component can determine the actual behaviour. Tang and Hall (1995) later used his questionnaire consisting of 30 statements in a shorter version, first with 12 statements and finally with 6 statements (Tang & Kim, 1999). The six statements define a total of three factors. The first is the budget, the second is the negative feelings related to money "Money is the source of all evil", while the third is money the key to success ("Money is a symbol of success", "Money reflects performance").

Newer research aims to identify several dimensions at the same time, therefore they examine behavior and attitude together, often including additional factors. In 2012, the OECD conducted research covering 14 countries, in which the differences in financial knowledge and attitudes were examined based on sociodemographic characteristics. According to the results, respondents with higher financial knowledge show more positive financial behavior in all countries examined, similarly, a positive financial attitude results in positive financial behavior (Atkinson & Messy, 2012). Németh and Zsótér (2019) examined different aspects of the financial culture of young adults based on the OECD methodology, too. During their research, they identified three clusters: the worried spenders, the satisfied risk-takers and the cautiously considered. Financial vulnerability is characteristic of anxious spenders, who make up about a quarter of young adults. They prefer to live for today, financial problems make it difficult for them to make a living, because of this they feel a lot of anxiety and have no savings.

In addition, compared to the other two clusters, their financial knowledge and skills are at a lower level, they prepare fewer budgets, their income is lower, and they are not typical of setting financial goals either.

Luksander, Németh, and Zsótér (2017) is of great importance from the point of view of our topic. Based on the results of the already mentioned 36-question financial personality test, the identification of personality traits and behaviour patterns affecting individuals' indebtedness was carried out. According to their results, the most important risk factor for avoiding indebtedness is reliance on luck. Gambling refers to a kind of external control, which clearly negatively affects financial awareness and behaviour. Malatyinszki (2007, 2015, 2019, 2020, 2021) examines the value-creating capacity of financial awareness and, above all, the impact of the social environment and education on these processes.

Fachrudin and Latifah's (2022) research was to examine the impact of individual characteristics and personality on personal financial difficulties. Financial behaviour was used as a link variable. Their results show that neurotic traits have a significant impact on financial behaviour and personal financial difficulties. The higher the individual's neuroticism, the less prudent he is in his investment decisions. This leads to debt and financial difficulties. Appropriate financial behaviour can alleviate the financial difficulties faced by an individual with neurotic traits.

The research on financial personality thus has significant roots, but at the same time, individual personality types cannot be sharply distinguished from each other (Zsótér, Béres, & Németh, 2015). While the research presented above focused primarily on the definition and typification of financial personality, and the characterization of each type, the latest research is already examining the effect of individual personality types on the financial vulnerability or success of individuals, as well as on their mental health.

Both behavior and attitude contain learned elements. The learning paradigm shift taking place today, by adapting to market needs (Kálmán et al., 2022; Cherlenyak & Poyda-Nosyk, 2021), can promote the wider dissemination of financial information (Poyda-Nosik, 2021). This not only leads to more beneficial financial decisions and behavior, but also helps whiten the economy (Poyda-Nosyk & Chopovdia, 2022). Successes can also have a positive effect on attitude. The development of financial personality is influenced not only by psychological and familial factors but also by economic and technological changes. The advancement of technology and the industrial revolution pose new challenges for financial education. Digital transformation profoundly affects our work practices and our relationship with money (Jenei & Módosné, 2022). The COVID-19 pandemic, in conjunction with digital transformation, has significantly reshaped the economy, presenting new challenges and opportunities for financial education and the development of financial personalities. The varied effects of the crisis shed light on the relationship between financial behavior and economic changes, underscoring the importance of financial education in equipping the youth to navigate the unpredictable economic environment (Mura et al., 2022).

Objective

The financial behaviour and habits of individuals can be highly differentiated in space and time, as their development and changes are influenced by a number of factors together. The whole person is too complex for a comprehensive analysis, but certain areas of individuality can be examined and typified.

This study focuses on the financial personality of Hungarian children. Our goal is to explore what dimensions can be defined from the point of view of financial personality. We examine the advantageous and disadvantageous forms of behaviour and attitudes that shape the financial personality. Our research starts from the consideration that, in addition to knowledge and skills, other factors contribute to financial culture. These include, for example, attitudes and behaviour patterns related to finances, financial planning, the ability to prolong the satisfaction of needs, and the ability of the person to "keep his finances in order", so to speak.

Research related to financial personality takes place in two directions. One possible way is to examine the effect of personality traits on financial behaviour (Mutlu & Ozer, 2019). The other approach looks for special features from which a model of financial personality can be created (Khan & Siddique, 2021, Luksander et al., 2017). In this study, we examined the topic from the latter point of view.

Research questions

RQ1 Do the measures of the sample's financial personality differ from the theoretical average, and if so, in what direction?

RQ2 Can the sample of children be divided into two significantly different groups on the basis of advantageous and disadvantageous attitudes?

RQ3 Is there a behavioural difference between the two groups?

RQ4 Can the 20 questions of a used questionnaire be combined into fewer variables without losing essential information?

RQ5 What factors affect the development of the financial personality in childhood?

RQ6 How do these factors work and are there interactions between the factors?

Our goal was to lay the foundations of a personality typology, the creation of which can facilitate the content and methodological modernization of financial education and training. During the literature review, we review the research conducted in this field that we deemed relevant for the present study, and based on which we built our own evaluation.

Hypotheses

Reviewing the literature on the subject, we encountered several typological divisions. That's why we decided not to multiply the already diverse groupings with another version, but rather to try to find a simpler, practical use of only two typical personality types. We formulated the following hypotheses:

H1 The childhood financial personality can be described as a complex system of advantageous and disadvantageous traits, of which some of the children have favourable traits, while others have a stronger impact of unfavourable traits.

[Answer to RQ2, RQ3]

H2 The financial personality of the majority of children corresponds to what is expected for their age (planning, responsible decision-making, ability to save) and only a small proportion of them need significant help due to their behaviour (spending, demanding money from their parents, irresponsible). [Answer to RQ1]

H3 The twenty questions of the used questionnaire can be compressed into factors without losing essential information. [Answer to RQ4]

H4 These factors and the interactions between them affect the development of the financial personality in childhood. [Answer to RQ5, RQ6]

The interpretation of the wording "expected at his age" used in this research is described in the methodological section.

Method

Participants

Our aim was to develop a dual financial personality typology, which is based on the dominance of personality traits with advantageous and disadvantageous consequences. In our research, we used the answers to the questionnaire financial personality tests of the Money Compass Foundation. The online questionnaire survey covers three age groups: children (aged 12-14), high school students (aged 14-18) and adults (over 18 years). A separate questionnaire was prepared for all three age groups. In this study, we only analyse the questionnaire responses of children. From 2018, children could fill out the questionnaire continuously.

The questionnaire used is a questionnaire developed by the authors themselves, so its use is not subject to copyright or permission. It was prepared for online data collection among Hungarian children in the age group of 12-14 years. It does not contain questions about demographic variables, it does not collect information about place of residence, family circumstances, income conditions, and it does not even ask about the gender of the person completing it. The questionnaire is open to the public. It is continuously available and can be filled out for all interested parties on the website of the Money Compass foundation. Response is voluntary and anonymous. After filling in, they also received immediate feedback based on the score achieved. Therefore, no research ethics objections arise in connection with the questionnaire. The authors of this study conducted and are conducting their research independently. None of the authors have any financial interest in the development of the study results.

The answers of 15,933 children were available in the constantly expanding database when processing began in February 2022. A research report was prepared from the processed results (Németh et al., 2022). In the present

study, only the answers to the children's questionnaires were used for further analyses not included in the report.

Instruments

The children's questionnaire contained 20 questions. The creators of the questionnaire also provided coding instructions to facilitate the interpretation of the responses. All questions were suitable for differentiated answers using a five-point Likert scale. For these scales, 1 is usually the least ("not at all"), while 5 is the most positive ("completely"). Almost half of the questions (due to their wording) require a reverse interpretation. An example of this type is "It happens to me that I don't come out of my money." question. For this, 5 points (I fully agree) is the least optimal result. When explaining the methodology, such questions were labelled "F" by the authors of the questionnaire. 8 of the 20 children's questions were marked F. The questions of the questionnaire are grouped according to this characteristic **Error! Reference source not found..**

Table 1. Question from the children's financial questionnaire

Questions to be assessed	Questions to be interpreted in reverse graded ("F") questions
CH1. If I want to buy something, I save up for it.	CH 4. If I like something, I buy it.
CH2. I know how much it costs.	CH5. Sometimes I don't even know what I spent my money on.
CH3. I know exactly how much money I have and how I want to spend it.	CH6. I like cool stuff.
CH8. I'll take a snack with me so I don't have to buy it at the cafeteria.	CH7. I have some bad habits that just take money away.
CH9. I keep things in order.	CH10. It happens to me that I don't come out of my money.
CH12. I like to earn more money by working for it.	CH11. I like to have fun with my friends.
CH13. I plan how I can achieve my goals.	CH14. My money goes as it comes.
CH15. I think carefully about what I need before I buy.	CH 19. A good parent buys his child everything he asks for.
CH16. I decide what I spend my money on.	CH20. I like it when a game has a lot to do with luck.
CH17. I surprise others with self-made gifts.	
CH18. I can allocate my money well.	

Note: CH stands for the questions in the children's questionnaire

We consider it necessary to add a note to the table. Eight of the twenty questions in the children's questionnaire were reverse coded. In addition to these, the CH20 was treated with reverse coding in the study just described. question, as a high score for this also indicates low awareness.

Procedure

We wanted to create a model that helps describe and shape the financial personality in a positive direction. The data were processed using statistical methods. Descriptive statistics, Welch's test, principal component analysis, and K-means cluster analysis were used for group formation and group comparison. Based on our results, a structural equation model (SEM) was created to assess the impact of individual factors on children's financial personality.

Based on the theorem of the central limit distribution, due to the high number of elements (N=15339), the normality of our sample can be assumed. Therefore, further tests were performed with parametric tests. The steps of each

method are explained in more detail in the description of the results chapter, if necessary. The SmartPLS statistical program version 3.3.9 was used to analyse the results.

RQ1 was answered by analysing the descriptive statistics of the sample. Since homoscedasticity is only a condition for the two-sample t-test, we can answer RQ2 with a one-sample t-test. Our second research question (RQ2) was related to group formation within the sample. We also divided the samples into groups based on the sign of the self-made Personality Index (a precise description of this is provided in the Data analysis subsection). We examined whether such a breakdown really results in significantly different groups. After the group formation, to determine the direction of further progress, we examined the homogeneity of variance using Levene's test. Based on Levene's test output to compare the two groups, we have to use the Welch test instead of the t-test, which also requires homogeneity of variance.

In the next step, we examined what common elements we could find in the questions about favourable and unfavourable personality traits. For this purpose, we performed a factor analysis using the 9 "F" questions, using the Varimax method. Then, we calculated the factor averages for each respondent, and then based on the six factor averages, clusters were created using the K-means method. We chose this procedure because its algorithm requires a predefined cluster number as input, and we want two clusters for the dual approach. We named them "Advantageous" and "Disadvantageous" based on the overall type of personality traits that characterize the cluster.

In order to discover the effect of each personality trait individually or in interaction, we examined what kind of correlation matrix can be built between the individual elements in the two groups. Since the individual answers were given on a Likert scale, we used a Spearman correlation test. Based on the correlations, we used linear regression to examine the extent to which individual personality traits influence the entire spectrum of financial habits of the "advantageous" and "disadvantageous" groups. The next step was to build a path model. With this, we examined the role and effect of personality factors on the development of the Personality Index.

Data analysis

Of the 15,933 child-age respondents, 15,339 submitted an evaluable questionnaire. Based on the answers, we analysed the impact of habits and their interactions on the development of childhood financial personality. Since filling in the questionnaire is dependent on age and does not contain additional demographic variables, the descriptive statistics of the sample are presented based on the total score obtained as a result of the filling. The answers to the questions were aggregated by averaging by question type for each respondent, creating an index of the favourable and unfavourable personality traits of each child. Aggregation was performed by averaging in order to exclude the effect of the different number of questions. We called the difference between the favourable and unfavourable indicators the "Personality Index", which due to the

method of creating the index can be in the value range between +5 and -5. Accordingly, the theoretical average is the value 0 ("neutral" or "balanced" personality, in which neither the positive nor negative personality traits do not dominate). This theoretical average was considered on a statistical basis as a measure of the "personality traits that can be expected based on age". Figure 1 and Table 2 show the distribution of the Personality Index in the sample of children.

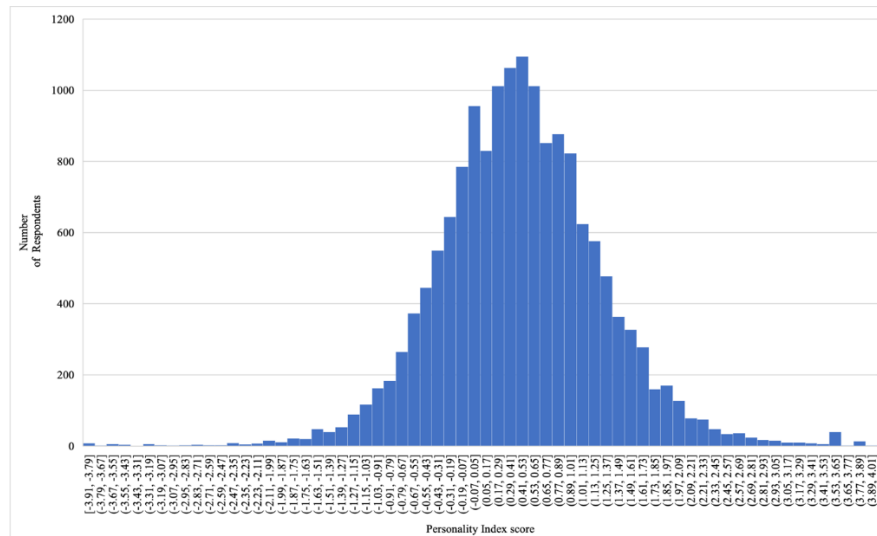


Figure 1. Distribution of the Personality index in the sample of children

Table 1. Descriptive statistics of the full sample

Personality index					
N = 15933					
Missing	0	Variance	0.684	Skewness	0.0391
Average	0.453	Scope	7.82	Std. error skewness	0.0194
Median	0.434	Minimum	-3.91	Kurtosis	1.92
Std. deviation	0.827	Maximum	3.91	Std. error kurtosis	0.0388

The distribution is symmetrical (skewness=.04), based on the value of kurtosis (1.92), the curve approaches the normal distribution, but is less peaked. Both the figure and the table show that the advantageous and disadvantageous traits established on the basis of the questions do not cancel each other out and that the majority of the children (80% according to the calculations) are dominated by the advantageous traits.

Results and discussion

Personality index in the entire sample

Before dividing our sample into groups, we examined whether the difference between the sample mean (0.453) and the theoretical mean (0) described in the descriptive statistics of the Personality Index (Table 2) could be

considered significant (RQ1). Given the high number of elements, the normality of the sample can be assumed based on the theorem of the central limit distribution (Table 3).

Table 2. Deviation of the average of personality index from the theoretical average in the full sample

One-sample t-test		Statistics	df	p	Average discrepancy
Personality index	Student's t	69.1	15932	<.001	.453

Our results show that the average of the sample's Personality Index differs significantly from the theoretical average. The same result is shown graphically in Figure 4. So, it is typical for children as a whole that attitudes with positive outcomes prevail more strongly in the financial personality.

Personality groups

The sizes of the two groups created on the basis of the Personality Index were different: the dominance of favourable personality traits was characteristic of 80% of the children, the unfavourable traits predominated in only 20% of the children. This is the explanation for the significant positive deviation of the mean of the entire sample from the theoretical mean observed above. Table 4 shows the result of Levene's test. Based on the test result the variance homogeneity of the two samples do not match.

Table 3. Result of the Levene test of the samples of children

Group variable	F	df	p
Personality index	323	15931	<.001

This was to be expected, as there is a significant difference in the size of the two groups. However, heteroskedasticity is not a mistake, but rather an opening from theoretical statistics to the real world (Hunyadi, 2006). Table 5 shows the results of the comparison of the two groups (Welch test) based on the total score (the difference in the degree of freedom compared to the first table is due to the difference in standard deviations).

Table 4. Welch test of the samples of children

Group variable	t	df	p
Personality index	138	9331	<.001

The result means that there is a significant difference between the total score achieved in the test, *i.e.*, the financial personality of the children belonging to the two groups. In other words, our idea of grouping based on dominant habits proved to be correct. In addition to the total score, an important question is how the individual children's answers developed - how many performed at the minimum and maximum level in the area of financial habits, and how many achieved the theoretical average score (3.0). In the case of beneficial habits, 136 children achieved a maximum performance of 5 points and we found 26 children who only achieved the minimum level. Among the unfavourable habits, 53

children are unfortunately characterized by these behaviours to the maximum extent, but we also found 71 children who are practically completely free of them. The theoretical average (3.0) was found for 64 children in both types of habits at the same time, while 384 children showed average behaviour in the area of advantageous habits, and another 749 showed average behaviour in the field of disadvantageous habits.

The results factor analysis examining common elements of 20 personality questions are shown in table 6 (Cronbach's alpha: .751).

Table 5. Chief component analysis of „F” questions, which are to be interpreted in reverse

	Component			Uniqueness
	1	2	3	
CH14F	0.772			0.363
CH7F	0.727			0.420
CH10F	0.709			0.494
CH5F	0.705			0.486
CH4F	0.510	0.302		0.576
CH11F		0.849		0.277
CH6F		0.743		0.366
CH19F			0.790	0.343
CH20F			0.742	0.425

Note: " varimax " rotation was used; KMO: 0.824; the MSA for all variables is over 0.7; Bartlett: $p < .001$

In the first factor, we find five characteristics, all of which indicate that the respondent runs out of money without any control. That's why we named this factor "Money Pit". They are the impulsive buyers who spend without control. For the respondents belonging to the second factor, the purpose of spending money is to feel good, we called them "pampering". The third factor is characterized by the fact that he expects everything from his parents, while he is incapable of conscious planning and entrusts the development of his finances to luck. They are the "demanding" children.

We analysed the questions with a normal interpretation (Cronbach's alpha: .751) using the same method (Table 7).

Table 6. Chief component analysis of questions that require a normal interpretation

	Component			Uniqueness
	1	2	3	
CH3	0.694			0.497
CH13	0.655			0.509
CH18	0.624			0.538
CH9	0.616			0.530
CH2	0.597			0.539
CH15	0.535	0.390		0.558
CH1	0.519			0.627
CH12	0.509	0.325		0.604
CH17		0.749		0.419
CH8		0.629		0.565
CH16			0.902	0.171

Note: " varimax " rotation was used; KMO: 0.872; the MSA for all variables is over 0.8; Bartlett: $p < .001$

In the first factor, there are “conscious planners”. They are aware of their own financial situation, have goals and are willing to do something to achieve them. The second factor is that of the “thrifty”. They take every opportunity not to spend more than necessary. A question was included in the third factor, which characterizes the members of the factor, they are the “Self-employed”. Table 8 summarizes the results of cluster analysis.

Table 7. Clusters of child respondents

Designation (Factors)	cluster		
	Complete pattern	Advantageous	Disadvantageous
(N)	(15,933)	(8,324)	(7,609)
SFact_Money.Pit	2.3701	1.8463	2.9430
SFact_Pampering	3.8486	3.3501	4.3939
SFact_Demanding	2.5211	2.0064	3.0841
Sfact_Conscious.Planner	3.8080	4.0032	3.5944
Sfact_Thrifty	3.1557	3.5374	2.7381
Sfact_Independent	4.1676	4.1312	4.2074

Note: missing values replaced by mean/mode; Simple K-means, Euclidean distance

The graphic representation of the cluster centres is illustrated in Figure 2. The red columns show the cluster centres of the personality traits that affect the financial personality in a negative direction, and the green ones show the personality traits that influence the personality in a beneficial direction.

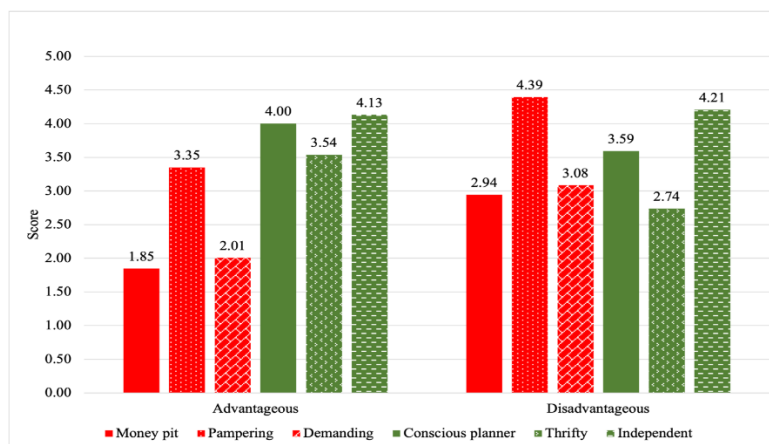


Figure 2. Cluster centres of children's clusters

On Figure 2 independence plays a prominent role in the respondents of both clusters. In the case of the “Advantageous” cluster, this is combined with conscious planning, but money-sucking and demanding behaviours only occur at a level below the theoretical average. In addition to the independence of the “Disadvantaged” cluster, the same behaviours show a value above the theoretical average. Another important difference is that the children belonging to the “Advantageous” cluster are more thrifty. In addition to independence, the other common characteristic of the two clusters is the goal: in both of them, the

pampering behaviour is significant, and in the “Disadvantaged” cluster, its level is even higher than that of independence. Comparing the two clusters, each child makes independent decisions about their finances - or at least that's what they think of themselves. He typically spends his money on pleasures (friends, fashionable things). This is not as much of a problem as a child as it is as an adult, especially if you create resources with conscious planning, diligence and thrift. However, the irresponsible and demanding behaviour of parents' money is not appropriate even as a child. A positive feature of the “Disadvantaged” cluster is that its members also consider thrift to be important. The question is whether, in the absence of conscious planning, these children are really able to do this in the long term.

The influence of individual personality factors on childhood financial personality

Using Spearman correlation test we found weak ($\rho < .5$) relationships in both groups (Figure 3 and Figure 4).

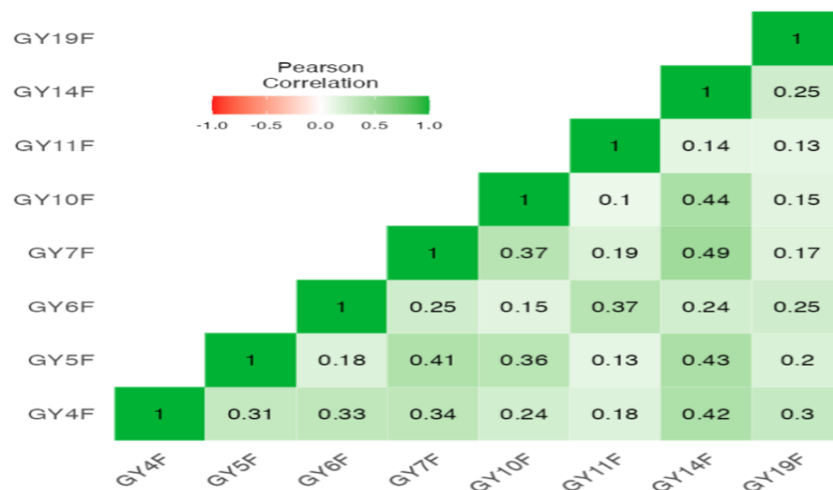


Figure 3 Intercorrelations of traits negatively influencing the personality ($p < .001$)

Although the examination of the correlations was primarily carried out for the later model creation, Figure 3 also provides additional information. The closest correlation (0.49) is between the statements CH7F (I have some bad habits that just take money) and CH14F (My money goes as it comes). This suggests that irresponsible spending is primarily attributable to bad habits, entertainment (CH11F) and "cool stuff (CH6F)" come much later as reasons, since their correlation with question CH14F is the weakest (CH6F-CH14F: 0.24 and CH11F-CH14F: 0.14). This can be attributed to the fact that the respondent is not able to properly allocate his money (CH10F-CH14F: 0.44) and does not know what he spent it on (CH5F-CH14F: 0.43).

Table 9. Effect of disadvantageous traits on the Personality Index

Model coefficients – Personality index ($R^2 = 0.521$)				
Variable	Estimated for him	Std. error	t	p
Axial section	2.9541	0.02183	135.35	.001
CH4F	-0.1095	0.00460	-23.83	.001
CH5F	-0.0717	0.00391	-18.36	.001
CH6F	-0.1222	0.00416	-29.38	.001
CH7F	-0.0723	0.00402	-17.99	.001
CH10F	-0.1056	0.00429	-24.62	.001
CH11F	-0.1532	0.00426	-35.98	.001
CH14F	0.0454	0.00458	9.92	.001
CH19F	-0.1066	0.00414	-25.73	.001
CH20F	-0.1297	0.00365	-35.50	.001

In both tables, the value of R^2 is less than 0.6, which statistics generally consider a sign of a good fit. However, according to the literature (Ballard, 2019), human behaviour is one of the phenomena that is difficult to predict. Therefore, even an R^2 of less than 0.5 indicates that the model is adequate and suitable for interpretation if the inputs are significant ($p < .05$). This is achieved in our case. The explanation for this is that R^2 does not take averages into account, but the dispersion of the data around the average. Based on the third column in both tables, all correlations are significant ($p < .001$). In the second (Estimate) column of the tables, the Intercept value indicates the axis section of the regression line. The values next to the question number also show the slope of the regression line for the given question in the second column.

The effect of the questions to be interpreted in the opposite way on the Personality Index is negative, Table 9 Next to the number of the question in the Estimate column, the slope of the corresponding regression line is negative. In questions about unfavourable personality traits, “increasing performance” (which actually means an increasingly unfavourable situation) worsens the value of the aggregated Personality Index. This perfectly justifies the justification of reverse coding such questions. The only exception is the positive slope of question 14 (CH14F “My money goes as it comes and goes”) with a value of 0.045. This raises the possibility that some of the respondents marked this answer only because they thought it was “cool”. Unfortunately, a similar phenomenon can be observed in relation to academic results in this age group. In many communities, justifying a good grade with diligence is considered almost a shame, and the comment “I didn’t study at all” is often used as an excuse. The value of the intercept for the regression lines of questions on unfavourable personality traits is 2.9541. This would be the value of the Personality Index if the given behaviours were not present at all. So, the absence of unfavourable behaviours means a better, more positive Personality Index.

Table 10. Effect of beneficial traits on the Personality Index

Model coefficients – Personality index ($R^2=0.347$)				
Variable	Estimated value	Std. error	t	p
Axial section	-2.3921	0.03433	-69.68	.001
CH1	0.0491	0.00533	9.21	.001
CH2	0.1244	0.00536	23,21	.001
CH3	0.0933	0.00534	17.47	.001
CH8	0.0223	0.00386	5.77	.001
CH9	0.1042	0.00486	21.42	.001
CH12	0.0646	0.00530	12,17	.001
CH13	0.1139	0.00574	19.86	.001
CH15	0.0196	0.00533	3.69	.001
CH16	0.1694	0.00528	32.08	.001
CH17	0.1114	0.00439	25.40	.001
CH18	-0.1101	0.00564	-19.55	.001

The situation is exactly the opposite for the questions assessing advantageous features (Table 10). Here, the axis intercept is negative, so without the advantageous forms of behaviour, the value of the personality index would be -2.3921. In the question of beneficial traits, the slope of the regression lines has a positive sign, so the improvement in these forms of behaviour also increases the value of the Personality Index. There is also an exception in this group, the slope of the regression line for question 18 (CH18: “I can allocate my money well”) is -0.11. In other words, this statement often seems like a wish rather than a reality. Comparing the two tables, the disadvantageous forms of behaviour can be considered stronger. Their weakening raises the value of the Personality Index to almost 3 points, while favourable forms of behaviour can only offset a negative outcome of around 2.5.

Path model

To build the path model we determined the correlations between the factors (Table 11). The most interesting result of this is that the correlation of “independent” with the “personality” factor is negative (-.189). This confirms the result obtained for the clusters, that independence is different for children typically belonging to disadvantageous personality types than for the Advantageous group. In the case of the advantageous, independence is combined with conscious planning and frugality. And the independence of children with disadvantageous Personality means that they don't listen to good advice about what to spend their money on.

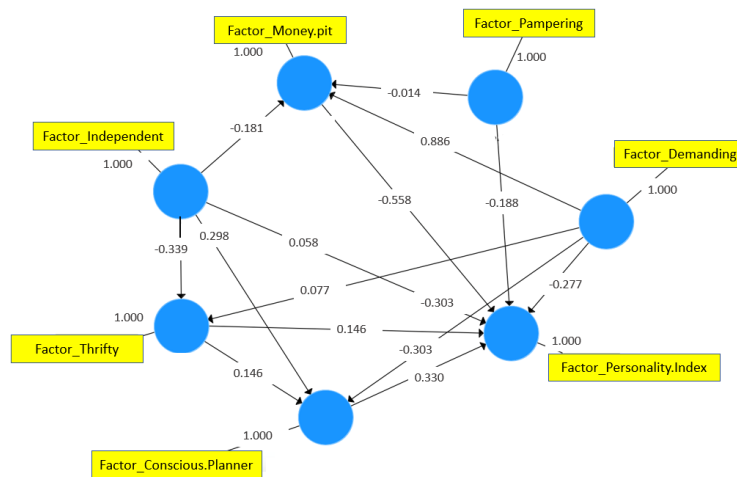
Table 11. Correlations of the factors affecting the Personality Index

	1	2	3	4	5	6
1. Personality index	1,000					
2. Money pit	-,856	1,000				
3. Pampering	-,642	,456	1,000			
4. Demanding	-,891	,808	,595	1,000		
5. Conscious planner	,481	-,091	-,140	-,197	1,000	
6. Thrifty	,044	,231	-,042	-,052	,069	1,000
7. Independent	-,189	,150	,309	,379	,138	-,310

Table 12. Total (direct + indirect) effect of the childhood financial personality model (SEM).

	Conscious designer	Money pit	Thrifty	Financial personality
<i>Conscious planner</i>				0.330 (0.330 + 0.000)
<i>Pampering</i>		-0.014 (-0.014 + 0.000)		-0.180 (-0.188 + 0.008)
<i>Demanding</i>	-0.291 (-0.303+0.011)	0.886 (0.886 + 0.000)	0.077 (0.077 + 0.000)	-0.857 (-0.277 – 0.580)
<i>Money pit</i>				-0.558 (-0.558 + 0.000)
<i>Thrifty</i>	0.146 (0.146 + 0.000)			0.194 (0.146 + 0.048)
<i>Independent</i>	0.248 (0.298 – 0.050)	-0.181 (-0.181 + 0.000)	-0.339 (-0.339 + 0.000)	0.192 (0.058 + 0.134)

The model based on the correlations is shown in Figure 5. The fit statistics of the model are good (Cronbach's alpha .97; SRMR 0.055). Table 12 contains the direct, indirect and total effects of individual personality factors.



3SEM model of financial personality in childhood

Our explained variable is financial personality, which is 100% explained by the other variables in the model. We found three clearly explanatory (independent) variables: the “independent”, “demanding” and “pampering” personality traits. The former has a direct effect on personality in a positive (0.058) and the latter in a negative (-0.277) direction. The effect of the “demanding” trait is stronger in absolute terms, almost five times that of “independence”. This result is similar to the observation of Bloom Consulting, which (also) deals with country brand building (*What Is the Brand-Nought (B0)?* - Bloom Consulting, nd), according to which almost 2 good ones are needed to neutralize 1 bad opinion, and only the third tip the scales in a definitively positive direction. The direct effect of both factors is also strengthened by an indirect effect that is almost twice as strong. The effect of the “pampering” and “thrifty”

factors is also modified by an indirect effect, but these are at least two orders of magnitude weaker than the direct effect.

The factors “money pit” (-0.558) and “conscious planner” (0.330) have the strongest direct effect on the development of personality, and again the negative effect proved to be stronger. The result is even more unfavourable in terms of total effects: both “demanding” (-0.857) and “money pit” (-0.558) are ahead of the strongest favourable personality trait, the “conscious planner” (0.330).

The individual factors affect not only the development of personality, but also each other. The “independent” and “pampering” traits reduce (-0.181 and -0.014 respectively) the effect of the Money-swallowing factor, which most adversely affects the personality, but the presence of the “demanding” (0.886) trait strengthens it almost eight times more than these effects. “Independence” also weakens (-0.339) the “thrifty” trait. these effects are purely direct. It also strengthens the “independent”, “conscious planner”, but this is already a mixed effect: the direct (0.298) effect, however, is somewhat weakened by the indirect (-0.05) effect. In addition to the already mentioned “money pit”, the “demanding” factor also enhances the “thrifty” factor with a purely direct effect, much weaker (0.077), while the latter strengthens the conscious planner” trait with a purely direct effect (0.146). On the other hand, the “demanding” and “conscious planner” factor weakens (-0.303), which was slightly reduced by the indirect effect (0.011). The so-called latent members in yellow on the diagram of the model indicate the idea, which has not been concretely formulated so far, that in addition to the personality traits we have examined, there are other, currently unresearched factors that are the building blocks of the financial personality.

Conclusions

We provide the following answers to the questions asked at the beginning of the study.

RQ1: Overall, the financial personality of the examined Hungarian children is characterized by a significant preponderance of attitudes that lead to positive outcomes compared to negative ones.

RQ2 and RQ3: We distinguished two significantly different groups of childhood financial personality in the Hungarian age group 12–14. One group is characterized by a preponderance of traits that have a favourable effect on personality development (“advantageous”). 80% of Hungarian children aged 12–14 belong to this group. The other 20% group, on the other hand, is more characterized by the prominence of traits that adversely affect the personality (“disadvantageous”). Special attention should be paid to them during financial education. Our hypothesis H1 is verified.

RQ4 and RQ5: The 20 questions of the questionnaire were combined into 6 factors using factor analysis, *i.e.*, the answer to question RQ4 is “yes”. So, hypothesis H3 is verified. We found the answer to RQ5, too: The development

of the financial personality in childhood is determined by six factors (personality traits, behaviour), three of which have an advantageous and three unfavourable effects on the development of the personality. The negative effects are stronger than the positive ones. One possible reason for this is that the presence of the Independent factor is basically positive, but there are two types of “independence”. One is the positive feature associated with conscious financial behaviour. The other, however, should perhaps be called more stubbornness; this is the “don't tell me what I can spend my money on” type of independence. The task of financial education is to counterbalance and eliminate the effects of unfavourable traits.

RQ6: The developing personality is fully explained by the six factors examined. The picture is shaded by the fact that we also found interactions between the individual factors. The explanatory factors of the Thrifty and “conscious planner” factors are around 10%, which indicates that their further investigation may lead to the discovery of new personality-shaping effects. The significant negative effect of the Money-swallowing trait is explained in 68.2% by the “pampering”, “demanding” and “independent” factors, so further research on this is also necessary to create a more differentiated picture. Answered to RQ5 and RQ6 we verified our hypothesis H4.

We managed to verify all of our hypotheses. We observed that the average of the children's financial personality index is higher than the theoretical average. This is a positive result of this research. However, the children form two groups based on the examined personality traits. Among these, the results of the group comprising 20% of the examined children show that the children classified here are more inclined to make inappropriate financial decisions, so special attention should be paid to them. Even though we separated only two groups in our sample, the path model clearly shows that we actually analysed a complex system of personality traits.

Based on our results, the task of financial education and training is twofold: in addition to developing knowledge and skills that have a positive effect on personality development, it is also necessary to develop learning content and methods that at least neutralize negative effects, or even eliminate them in the best case.

Limits of research and directions for further progress

The research presented in this study is limited by the fact that we can only draw conclusions about the personality traits of Hungarian children. Another limitation of the research is that the questionnaire does not ask about demographic data (e.g., gender, place of residence), which would allow a more differentiated processing and evaluation while maintaining anonymity. However, the present research was the first step in a longer process. The English version of the questionnaire is now available and ready, but the Ukrainian and Macedonian versions are not activated. A separate questionnaire was prepared for high school and adult age groups, for now only in Hungarian. With the help of these, the development of the personality can be followed further.

Ethics statement

This study was conducted in accordance with the recommendations of the British Psychological Society (BPS) Code of Human Research Ethics. The online availability of the questionnaire and the voluntary and anonymous option to complete it ensured that the respondents could not be identified afterwards. Respondents can only be determined to belong to an age group based on which age group questionnaire they filled out.

Conflicts of interest

The authors declare no conflict of interest.

Author contributions

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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