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PERSONALITY TRAITS AND HOUSEHOLD FINANCIAL MANAGEMENT

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ABSTRACT

The paper investigates the possible influence of Big Five personality traits on financial behaviors in regarding to saving to cover future expenses and household finances manageability based on the dataset of Dutch people in 2005. The Confirmatory Factor Analysis and Structural Equation Model techniques are used. We find that extraversion, conscientiousness, and emotional stability have significant influence on saving for future expenses as well as on the ability to manage household finances. Agreeableness plays a significant role on management ability of household finance but not on saving. When savings is added to the model as mediator between personality traits and the ability of household finances, the significances of conscientiousness and extraversion disappear. This indicates that savings fully mediates the effect of these personality traits.

Keywords: Personality traits, big five personality, household finance, savings, financial management

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Introduction

Many papers have studied the impact of personality traits on household financial behaviors. Nyhus and Webley (2001) studied the role of personality following the personality trait constructs of Hendriks, Hofstee and De Raad (1999) on various kind of saving and borrowing behavior of Dutch household. Their studies suggest that the personality factors of emotional stability and extraversion were predictors of saving behavior. Another study on British household, Brown and Taylor (2014) found that certain personality traits based on "Big Five" taxonomy such as extraversion are significantly associated with household finances. Following the literatures, this paper attempts to investigate how a person's personality traits influence the propensity to save for future expenses, and the ability to manage overall financial situation of the household based on Dutch dataset of the DNB Household Survey, collected by the research institute CentERData in 2005. The study applies Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) by using AMOS software for this research analysis. It is found that the personality traits of extraversion, conscientiousness, and emotional stability have significant influence on saving for future expenses. The same is true for extraversion and conscientiousness on ability to manage household finances. Agreeableness plays a significant role on management ability of household finance but not on saving. The analysis was carried further to investigate the effect of mediation of saving on the ability of household finances.

The study is divided to 4 sections. Section 1 introduces the framework of measurement model on all constructs used in the analysis and the formulation of hypotheses on expected relationship among constructs by using the developed SEMs. Section 2 provides the information on data and measures of the constructs, as well as assesses model fit and validity. Section 3 proposes and estimates the SEMs to test the hypotheses. The estimated results are discussed and the models fit are assessed and validated. Section 4 concludes.

Theoretical framework and hypotheses

The objective of the research project is to investigate the possible influences of personality traits on financial decision making regarding saving and managing household finances. The personality traits are measured according to Goldberg (1999) with 50 survey questions on a 5-point Likert scale from the International Personality Item Pool (IPIP) to measure the "Big Five" personality traits namely: openness to experience, extraversion, emotional stability, conscientiousness, and agreeableness[1]. The motives of saving and household finance manageability are measured on various Likert-type scales[2] with 8 survey questions from the same dataset. The correlations among constructs are drawn in the measurement model, which is summarized to a diagram in Figure 1.

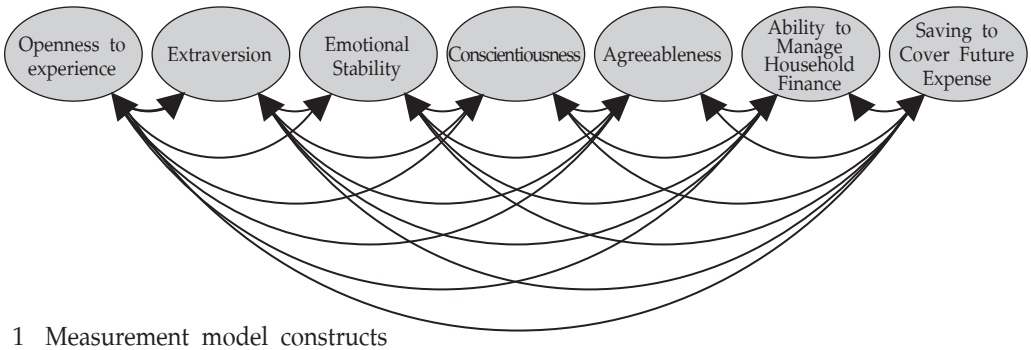

Figure 1 Measurement model constructs

[1] The 50 survey questions are in the DNB 2005 dataset, which are answered on a 5-point Likert scale. The dataset were matched with the information on the 50-item IPIP scale from http://ipip.ori.org/New_IPIP-50-item-scale.htm..

[2] The construct of "saving" is measured using 5 survey questions in the DNB 2005 dataset of spaarm04, 05, 10, 14, and 15. The construct of "ability to manage household finance" is measured with 3 items in the same dataset of finstu, inkrond, and inkeven. The survey questions are available upon request.

All constructs in the measurement model will be validated and tested for the model fit in the next section. The structural model is developed to study the influence of "Big Five" personality traits on saving and household finance manageability. The SEM diagram in Figure 2 shows the expected relationship between personality traits with saving and with ability to manage financial household. Based on literatures and our understanding, the hypotheses are developed for each personality dimension.

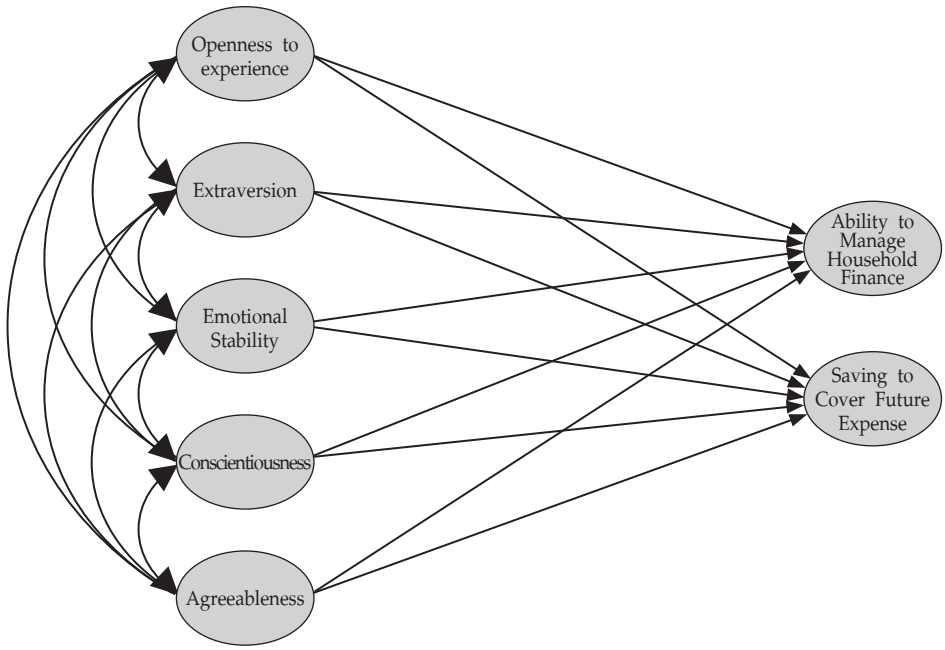

Figure 2 Structural equation model with expected relationships

'Openness to experience' or sometimes known as 'Intellect' or 'Imagination' is believed to be an open-minded to new things and have long-term vision on financial plan in terms of saving or decision making in the household finance, especially the high intellect case. The higher intellect should be able to forecast the possible future expenses of a household and thus prepare on a saving plan to meet any upcoming desires. As a result, it is hypothesized that the more openness to experience or intellect is associated with the higher saving and more ability to manage household finance.

'Extraversion' is an out-going kind of person who loves to socialize and spend time with other people. The lifestyle of extraversion involves with more consumption pattern, which may allow less saving. Extraverts interact with other people more often, which may cause less caution and less time for thinking critically on financial planning of household. Therefore, it is plausible to hypothesize that extraverts save less and have lower ability to manage financial household. 'Emotional Stability' is believed to have a good self-control on following a plan, they are able to meet the budget and manage financial household. They are also less likely to engage in impulsive and excessive buying (Hoch & Loewenstein, 1991), and therefore make them more discipline to save. It is hypothesized that emotional stability should have positive influence on saving and household financing.

'Conscientiousness' is a well-planned out and self-discipline person, which is believed to be vigilant in terms of following budgeting and saving plan. They are expected to keep track on their spending, they are less likely to engage in impulsive buying. Therefore, they should be able to mange household finance as well as to have good plan on saving to cover any future expenses. It is hypothesized

that the conscientiousness trait is expected to have association with saving and ability to manage household positively.

'Agreeableness' is a generosity person who likes to take consideration of others and less likely to deny the request of others. As a generous person, it is easily for them to get influenced on financial decision making easily, and therefore less ability to manage household finance. Agreeableness person can spend money easily upon the request of their friends or families, as a result they have tendency to save less. Thus, it hypothesized that agreeableness person is expected to have negative influence on saving and on ability to manage household finance. The structural model is further built as to further investigate on the mediation effect from saving to ability to manage household finance. It is therefore hypothesized that certain personality traits may have some indirect effect on ability to manage household through the mediator of saving. Moreover, it is also expected that saving to cover future expense can predict ability to manage household finances positively. To test all the above hypotheses the additional control variables are considered, as it is plausible that saving and ability to manage household finance may be influenced by education level, financial knowledge, household income, gender, age, and whether that person is the main wage earner of the household. Figure 3 shows the diagram with additional path of relationship from control variables with mediation effect from saving. It is important to note that the education levels for Dutch people are quite varied; they are grouped into three levels of high, medium, and low education level using dummy variables.

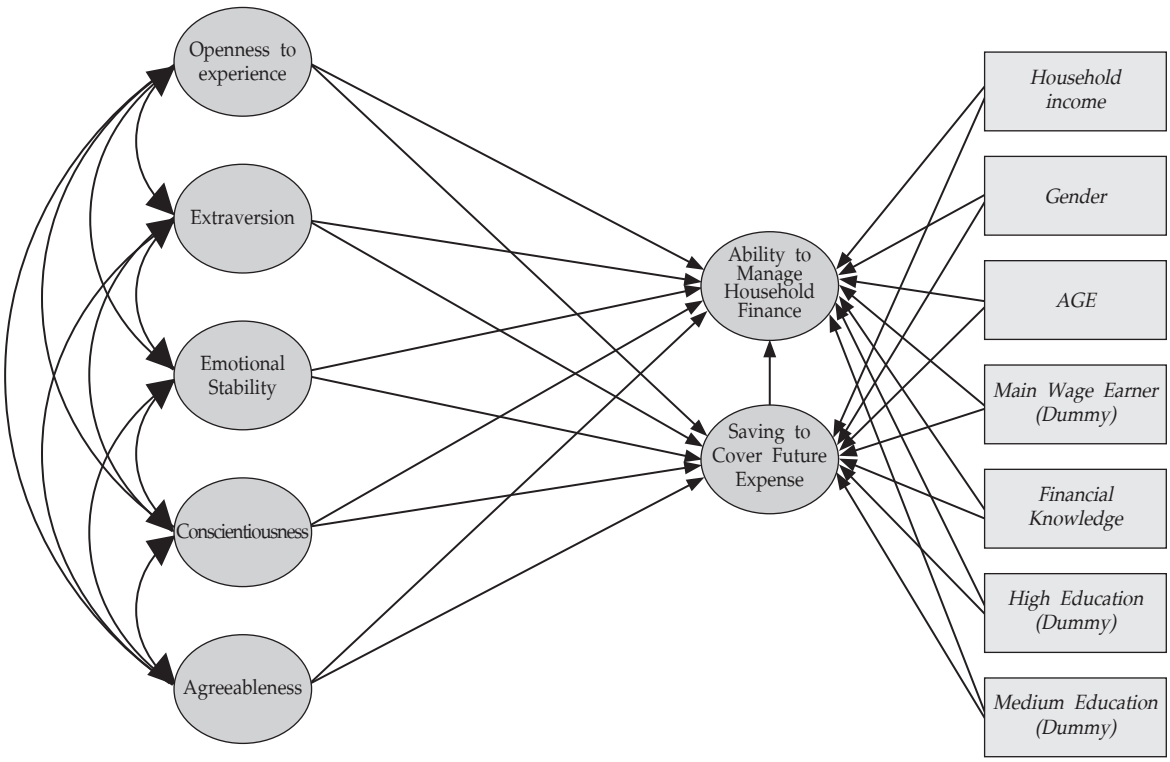

Figure 3 Structural Equation Model with Control Variables and Mediation Effect

All constructs and the measurement model in Figure 1 are further analyzed for reliability and validity as well as assessed the model fit in the following section. The analysis on structural models will be carried on after the measurement model.

Measurement Model

Data and Measures

Data used in this study is from the DNB Household Survey, collected by the research institute CentERdata of the Netherlands in 2005. The sample of 2000 Dutch people has been constructed by CentERdata to be representative of the general Dutch population of 16 years and older. Before analyzing the data, based on 7 constructs, there are 58 items and 6 control variables; the missing data is cleaned using listwised method and limited to only those respondents who take care of the household's financial matters. The final sample consisted of 1234 Dutch people. Based on the dataset, there is 54.9% of males and more than 70% are in the age of 30-60. Interestingly, 60% of Dutch sample group is more or less knowledgeable and about 24% is considered knowledgeable. Almost 70% of the sample size has medium and high level of education. Around 73% of the responsible household respondent is main wage earner and almost 50% of them earn an annual income of 40,000-75,000 euros.

The confirmatory factor analysis (CFA) is performed on the cleaned dataset using AMOS. The 'Big Five' personality traits are assessed based on IPIP. Each trait is represented by 10 items. The validity of five-personality trait constructs were assessed based on factor loading above 0.5. 18 items were eliminated due to low loadings. Ideally, the standardized factor loadings should be above 0.7 to best represent the construct. However, eliminating those may violate the discipline of a good measurement model on having at least 4 items for each construct. The items used two constructs on saving and ability to manage household finances remain as in the instruction. The final measurement model contains loading factors above 0.5 and a total of 101 estimated parameters with 820 parameters (variance and covariance) in total, thus the model is over-identified with 719 degree of freedom. The measurement model is a *reflective measurement model* with unidimensionality and congeneric measurement as there are no cross-loadings or covariance terms between and within items representing the constructs.

Considering the model fit, Table 1 shows the significant value of Chi-square with 729 degrees of freedom. The values of all indicators pass acceptable level except for the comparative fit index (CFI), which is slightly lower than 0.9. The overall CFA on the measurement model fit is considerably good. The reliability and validity of all constructs were assessed using the average percentage of variance extracted (AVE) and construct reliability (CR). Table 2 shows the standardized value of loadings, AVE, and CR. All constructs have CR above 0.7, but the AVE on personality constructs are below 0.5. The measurement model is convergent to a certain extent.

Table 1 CFA model fit

CFA model fit	
Chi-Square	3087.851
P-value	0.0000
DF	719
CFI	0.86
GFI	0.88
SRMR	0.06
RMSEA	0.05
PGFI	0.77
PCFI	0.80

Table 2 Convergent validity

Convergent validity			
Items	Standardized Factor Loadings	Average Percentage of Variance Extracted	Construct Reliability
Agreeableness		0.39	0.82
own behavior: Am interested in people	0.71		
own behavior: Sympathise with others feelings	0.71		
own behavior: Have a soft heart	0.51		
own behavior: Am not really interested in others	0.61		
own behavior: Take time out for others	0.72		
own behavior: Feel others emotions	0.57		
own behavior: Make people feel at ease	0.52		
Conscientiousness		0.38	0.75
own behavior: Am always prepared	0.58		
own behavior: Pay attention to details	0.68		
own behavior: Make a mess of things	0.52		
own behavior: Like order	0.60		
own behavior: Am exacting in my work	0.70		
Emotional Stability		0.43	0.85
own behavior: Get stressed out easily	0.61		
own behavior: Am relaxed most of the time	0.56		
own behavior: Seldom feel blue	0.58		
own behavior: Get upset easily	0.68		
own behavior: Change my mood a lot	0.64		
own behavior: Have frequent mood swings	0.76		
own behavior: Get irritated easily	0.60		
own behavior: Often feel blue	0.77		
Extraversion		0.40	0.84
own behavior: Am the life of the party	0.55		
own behavior: Don't talk a lot	0.60		
own behavior: Feel comfortable around people	0.61		
own behavior: Keep in the background	0.63		

Convergent validity			
Items	Standardized Factor Loadings	Average Percentage of Variance Extracted	Construct Reliability
own behavior: Start conversations	0.71		
own behavior: Have little to say	0.54		
own behavior: Am quiet around strangers	0.69		
own behavior: Talk to a lot of different people at parties	0.71		
Openness to experience		0.42	0.74
own behavior: Have a vivid imagination	0.56		
own behavior: Have excellent ideas	0.71		
own behavior: Do not have a good imagination	0.53		
own behavior: Am full of ideas	0.76		
Saving to Cover Future Expense		0.50	0.83
un/imp save for: cover future (high) expenses	0.73		
un/imp save for: do not ever need to ask other people for financial help	0.61		
un/imp save for: have some savings to cover unforeseen expenses	0.80		
un/ imp save for: enough money in bank to be sure to meet financial liabilities	0.73		
un/ imp save for: can buy durable goods in future	0.65		
Ability to Manage Household Finance		0.66	0.85
financial situation of the household now	0.89		
how well can you manage on total household income	0.77		
Expenditure: higher/equal/lower than income	0.77		

Notes: Standardized factor loadings at least 0.5, Average variance extracted should be greater than 0.5 and Construct reliability should be at least .07 to be adequate for confirmatory purpose.

Structural Equation Model

In this section, we build a structural equation models based on our hypothesis. First, as discussed in the framework section, we have our models to estimate the ability for Big 5 personality traits to "Saving to cover future expenses" and "Ability to manage household finances" constructs without any control variables. This is simply to have an idea on how these constructs are related to each other. Then we expand our model by adding various control variables. The first set consists of control on general demographic variables that are commonly used in literatures; gender, age and education. For education variable, we refer to the highest level of education that the respondent has completed, categorized into 3 levels, "no or low education,"

"medium education", and "university education." We control for household income, as higher income might give additional incentive for the respondent to have more financial knowledge, thus, it would lead to higher savings and better ability to manage household finance. We also add a dummy for being a "main wage earner." A person who makes the money for the household should be the one who appreciate value of money the most because he works so hard for it.

Being main wage earner should affect the propensity to live luxurious life and, therefore, savings. Finally, we control self-assessed financial knowledge. Obviously, better financial knowledge should lead to better ability to manage household finance.

After, we estimate the effect of Big 5 personality traits on "Saving to cover future expenses" and "Ability to manage household finances" constructs separately, we add a path from "Saving to cover future expenses" construct to "Ability to manage household finances" construct so that we can estimate the predictability power savings has on ability to manage house hold finances. These final phase of our SEM also allow us to investigate the effect that Big 5 personality traits have on ability to manage house hold finances through savings behavior. Diagrams of our SEM in AMOS can be seen in figure 7 and figure 8 in appendix section. Once we have our SEM done, first of all, we need to check whether the loadings of items on each construct do not change dramatically. Table 7 in appendix shows that the changes in the values of loadings are minimal. In fact, all of them are 0.001 or less. This is a good sign since this means the loadings are not affected by how the models are drawn and there is no interpretational confounding problem. The change in Chi-square is not large at 2.408 (3090.259 – 3087.851) with difference in degrees of freedom of 1 (720 - 719). The change is not significant at 95% confident level.

The estimated regression weights are shown in table 3. In model 1, first column, for savings, conscientiousness and agreeableness are positive and significant while openness to experience is negative and significant. This is partly consistent with our hypotheses. We expect that a person with conscientiousness would save more because he is a careful and vigilant type. And, extraversion persons would save less because they are more exposed to expenses. However, regression weight for agreeableness contradicts out expectation that it would reduce propensity for savings. When we add control variables, the insignificant level of conscientiousness decreases and agreeableness becomes insignificant (column 3). But emotional stability becomes negative and significant. This does not go along with our hypothesis that we expect a person with emotional stability would save more. Openness appears to have no relation with savings regardless of adding control variables. In conclusion, after we control for possible related factors, conscientiousness weakly relates to more savings while emotional stability and extraversion lead to less savings.

For an ability to manage household finance, in column 2, weights for conscientiousness and emotional stability are positive while agreeableness is negative. As we add control variables, the significances and signs of agreeableness and conscientiousness remain unchanged but emotional stability become insignificant while extraversion emerge to become significant (column 4). Beside emotional stability and Openness that are not significant, the regression weights are consistent with our hypothesis; people with conscientiousness tend to have better ability to manage finance, though the weight is small at 0.08, while those with agreeableness and extraversion have less. Table 3 column 6 shows that people with propensity for savings has better ability to manage household finance. The weight is 0.07 and significant at 95% confident level.

Table 3 SEM results

SEM Results												
	Model 1				Model 2				Model 3			
	Std. Factor loading				Std. Factor loading				Std. Factor loading			
	Y1		Y2		Y1		Y2		Y1		Y2	
Agreeableness	0.25	***	-0.13	***	0.18		-0.05	***	0.18	***	-0.07	
Conscientiousness	0.13	***	0.09	**	0.14	*	0.08	***	0.14	***	0.06	
Emotional Stability	-0.06	*	0.20	***	-0.01	***	0.10		-0.02		0.11	***
Extraversion	-0.13	***	-0.07	*	-0.14	**	-0.08	***	-0.14	***	-0.07	*
Openness to experience	0.04		-0.04		0.06		-0.03		0.06		-0.04	
Gender					0.18		-0.01	***	0.18	***	-0.03	
Household Income					0.03	***	0.33		0.03		0.33	***
Age					-0.04	***	0.11		-0.04		0.11	***
Main Wage Earner (Dummy)					0.03		0.03		-0.02		0.05	
Financial Knowledge					-0.02	*	0.05		0.03		0.02	*
High Education (Dummy)					-0.03	**	0.07		0.00		-0.02	***
Medium Education (Dummy)					0.00		-0.02		-0.03		0.08	
Saving to Cover Future Expense											0.07	**

Notes: Y1 is Saving to Cover Future Expense and Y2 is Ability to Manage Household Finance.
* means significant at 0.1,
** means significant at 0.05,
*** means significant at 0.01

We further investigate the role of savings as a mediator for Big 5 personality traits to explain ability to manage household finance. Following the 4 steps suggested by Kenny, Kashy, and Bolger (1998), we need to check for total effect, indirect effect and, optionally, direct effect. When savings is added as a mediator, it turns out to be that emotional stability is the only Big 5 personality traits that remain significant. Since, for the other 4 personality traits, the total effects are not significant, we proceed to examine indirect effect for emotional stability only. We find that the indirect effect is not significant with two-tail bootstrap significance of 0.53 (the interval is [-0.009, 0.004]). Therefore, we can conclude that there is no mediation effect and savings is not a mediator for Big 5 personality traits and ability to manage household finance. However, if considering the low power of the test for total effect, we might ignore the first step, checking for total effects, and focus only on indirect effects. Indirect effects for conscientiousness, agreeableness, and extraversion are significant with the two-tail significance of 0.014, 0.013, and 0.013 respectively. The signs of indirect effect for conscientiousness and extraversion are the same as their corresponding direct effects so savings is a mediator for these two personality traits. Interestingly, the signs of direct and indirect effect for agreeableness are opposite so, for this personality, savings acts as a suppressor. This can be an explanation of why regression weight of agreeableness is significant in our second model but becomes insignificant in our third model where savings construct is added.

Table 4 SEM model fit

SEM Model Fit			
	Model 1	Model 2	Model 3
Chi-Square	3090.26	5448.5	5443.98
P-value	0.000	0.000	0.000
DF	720	1007	1006
CFI	0.863	0.772	0.772
GFI	0.881	0.829	0.829
SRMR	0.057	0.070	0.070
RMSEA	0.052	0.06	0.06
PGFI	0.773	0.74	0.719
PCFI	0.796	0.719	0.829

Table 4 shows the model fit for the three models specified eariler. Degrees of freedom for the three models are 720, 1007, and 1006, which mean these models are over-identified. CFIs for all models are lower than acceptable level of 0.95 so the model fit is not good based on CFI criteria. However, of other model fit indicators are good. SRMR and RMSEA are below the cutoff at 0.08 for all models. PCFI, ranges from 0.719 to 0.829, are all above 0.5 so based on this criterion, the model fits are good as well.

Conclusion

In this paper, we examine the effect that Big 5 personality traits have on propensity for saving to cover future expenses of households in the Netherlands. We use data from the DNB (De Nederlandsche Bank) household survey (DHS) conducted in 2005. We find that households with conscientiousness tend to save more money for their future expenses but its significance is weak. On contrary, Extraversion and emotional stability are the two personality traits that make less. Agreeableness and openness do not have any effect on saving. And, in turn, good saving habit leads to a better ability to manage household finance. We further investigate how Big 5 personality traits directly impact ability to manage household finance and indirectly through savings which acts as a mediator. We find that conscientiousness positively related to better ability while agreeableness and extraversion predict less ability. When savings is added to the model as mediator, the significances of these personality traits disappear while their indirect effects remain significant. This indicates that savings fully mediates the effect of conscientiousness and extraversion.

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