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Articles

The Influence of Personality Traits on Household Financial Decisions: Evidence from 31 European Countries

A influencia dos trazos de personalidade nas decisións financeiras dos fogares: evidencia de 31 países europeos

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Abstract

Household financial decision-making is a complex process influenced by various factors, including personality traits. This study examines the impact of these on household finance in 31 European countries, utilizing the European Union Statistics on Income and Living Conditions (EU-SILC) dataset from Eurostat. We have employed a logistic regression analysis to investigate the relationship between personality traits and three key dimensions of household finance: the likelihood of holding secured debts, the probability of experiencing financial distress, and the state of financial well-being. Our findings have revealed that high levels of neuroticism and extraversion are linked to a greater likelihood of financial distress, whereas low levels of either of them are associated with a higher probability of holding a mortgage. This study highlights the significance of incorporating personality traits into the analysis of household financial decision-making and provides valuable insights into the determinants of household finance in Europe.

Keywords: Personality traits; Household finance; Financial distress; Financial well-being; Secured debts; Mortgage; Neuroticism; Extraversion.

Correction . This article was originally published with errors, which have now been corrected in the online version. Correction https://doi.org/10.15304/rge.34.1.10482.

Resumo

A toma de decisións financeiras nos fogares é un proceso complexo no que inflúen diversos factores, entre eles os trazos de personalidade. Este estudo examina o impacto destes nas finanzas dos fogares en 31 países europeos, utilizando o conxunto de datos das Estatísticas da Unión Europea sobre a Renda e as Condicións de Vida (EU-SILC) de Eurostat. Empregamos unha análise de regresión loxística para investigar a relación entre os trazos de personalidade e tres dimensións chave das finanzas dos fogares: a probabilidade de ter débedas garantidas, a probabilidade de experimentar dificultades financeiras e o estado de benestar financeiro. Os nosos resultados revelaron que os niveis elevados de neuroticismo e extraversión están relacionados cunha maior probabilidade de sufrir dificultades financeiras, mentres que os niveis baixos de calquera deles asócianse cunha maior probabilidade de ser titular dunha hipoteca. Este estudo pon de relevo a importancia de incorporar os trazos de personalidade á análise da toma de decisións financeiras dos fogares e achega valiosas ideas sobre os determinantes das finanzas domésticas en Europa.

Palabras chave: Trazos de personalidade; Finanzas domésticas; Dificultades financeiras; Benestar financeiro; Débedas garantidas; Hipoteca; Neuroticismo; Extraversión.

JEL Codes: G14; G40; G50; G51.

1. INTRODUCTION

Over the past two decades, researchers have increasingly recognized personality as a crucial motivator of human behavior (Davidson et al., 2003; Durand et al., 2008). Larsen and Buss (2009, p. 4) defined personality as "the set of psychological traits and mechanisms within the individual that are organized and relatively enduring, and that influence his or her interactions with, and adaptations to the environments (including the intrapsychic, physical, and social environments)". Initially studied within social psychology, this concept has since spread to the field of behavioral finance (Oehler et al., 2018).

Social science has long sought to identify factors contributing to an individual's financial well-being. However, neither demographic nor economic variables can explain the significant cross-sectional variations of this state (Xu et al., 2015). Understanding the sources of individual variation in financial behavior and outcomes is crucial for effective behavioral and policy interventions to be devised that can be aimed at enhancing financial well-being.

Household finance, an essential area of study, involves decisions regarding savings and financing. Campbell (2006) described this term as the practices of what financial instruments and markets family units utilize to achieve their goals and aspirations. Despite its growing significance (Guiso & Sodini, 2013; Zehra & Singh, 2023), the relationship between personality traits and household finance remains underexplored. Given the importance of household decisions in the modern economy, it is vital to understand how these choices are made.

Three notable studies have investigated the relationship between personality traits and household finance. Brown and Taylor (2014) examined the influence of the former on financial decisions related to unsecured debts and financial assets in the UK. Xu et al. (2015) explored the relationship between these human characteristics and financial distress among young adults in the US. More recently, Rendall et al. (2021) investigated the impact of retail borrowers' personality traits on their ability to manage debt repayment difficulties by way of an extensive online survey conducted in the UK. All three studies identified significant associations between this mindset and financial outcomes. However, they did not address the relationship between personality traits and three crucial dimensions of household finance: 1) the decision to hold secured debts, 2) the likelihood of experiencing financial distress, and 3) the likelihood of achieving financial well-being.

This study aims to fill the void in the literature by examining the impact of the former on the latter three dimensions in 31 European countries, utilizing the EU-SILC dataset from Eurostat. The choice of geography is motivated by the cultural diversity of these countries, as identified by Hofstede's (2001, 2011) cultural dimensions.

Our study has several features which deserve to be highlighted. To begin with, to the best of our knowledge, this article is the first to examine the impact of personality traits on household financial decisions in Europe, the analysis of which spans 31 countries. Specifically, we have analyzed how neuroticism, extraversion, and agreeableness influence three dimensions of household finance: the decision to hold secured debts, and the likelihood of experiencing financial distress and achieving financial well-being. Understanding these financial dimensions in Europe is particularly important given the region's significant role in the global economy. For example, in 2022, the national debt in the 27 European Union countries amounted to €50.58 trillion (Eurostat, 2023), compared to the US national debt of $30.93 trillion (Statista, 2023).

Secondly, as far as we are aware, this is the first investigation to employ the EU-SILC dataset from Eurostat for this purpose. The use of this dataset enables comprehensive cross-national

comparisons in a culturally diverse region, offering valuable insights into household financial behavior in Europe.

Our findings provide the first insights into the impact of individual personality traits on key dimensions of household finance in the European context. Specifically, our evidence reveals that neuroticism and extraversion are negatively associated with the likelihood of holding a mortgage, while agreeableness is positively associated with mortgage amounts. Neuroticism and extraversion correlate positively with the likelihood of experiencing financial distress, whereas agreeableness correlates negatively. Furthermore, neurotic and extraverted individuals are less likely to achieve financial well-being, while agreeable individuals are more likely to do so.

The paper is structured as follows: section 2 reviews related literature and develops the hypotheses to be tested; section 3 describes the data and methodology; section 4 presents the empirical results; section 5 discusses these results; lastly, section 6 concludes the paper.

2. LITERATURE REVIEW

2.1. Personality traits and household finance

The literature on behavioral finance has highlighted several factors influencing individuals' decision-making processes, including personality traits and demographic characteristics. Households often need to face challenging decisions under uncertain conditions. According to prospect theory, psychological factors play a significant role in causing deviations from perfectly rational decision-making (Tversky & Kahneman, 1979), a phenomenon that can be further exacerbated by one's misunderstanding of one's own risk perception (Kumar et al., 2024; Lobão, 2024).

Personality traits refer to the set of perceptual, cognitive, emotional, and motivational systems in an individual that affect decision-making responses to environmental stimuli (Stagner, 1948). Various efforts have been made to measure personality traits. For instance, the Myers-Briggs Type Indicator (MBTI) framework categorizes personality into four dichotomies: 1) judging versus perceiving, 2) sensing versus intuition, 3) thinking versus feeling, and 4) extraversion versus introversion. Established by Carl Jung in 1921, the MBTI considers personality as a preference in decision-making rather than a fixed characteristic (Leary et al., 2009).

Building on the MBTI, several personality models have been developed. Cattell et al. (1970) introduced the 16 Personality Factors (16PF) model, which includes five global factors and 16 primary traits. Costa and McCrae (1992) developed the widely-used Big Five personality traits framework, classifying personality into extraversion, openness, agreeableness, conscientiousness, and neuroticism. These traits have been extensively utilized in psychology and increasingly in economics (Brown & Taylor, 2014).

Campbell (2006) emphasized the significance of household finance, now a distinct field of research (Guiso & Sodini, 2013). Households use financial instruments throughout their lives, including cash, checks, and credit cards for purchasing goods and services, and they invest in durable goods and human capital to fund present and future consumption. They require liquidity to manage risks beyond their control, such as those of health and property. Therefore, knowledge about payment choices, debt financing, savings, and insurance contracts is essential (Guiso & Sodini, 2013).

Several studies have examined the impact of personality traits on savings and borrowing behavior. Using a Dutch dataset, Nyhus and Webley (2001) found that agreeableness and

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neuroticism are positively associated with the likelihood of holding a mortgage, while extraversion is negatively associated with the mortgage amount. Other studies have explored the influence of personality on unsecured debts and assets. Brown and Taylor (2014), using the British Household Panel Survey (BHPS), found that extraversion (positively) and conscientiousness (negatively) are associated with the probability of amassing a credit card debt. They also found that extraversion is negatively related to the likelihood of holding shares. However, Donnelly et al. (2012) found that personality traits are weak predictors of debts such as those of credit cards, contrary to Nyhus and Webley (2001) and Brown and Taylor (2014). More recently, Kausel et al. (2016), utilizing a survey regarding the Chilean economy, concluded that conscientiousness positively predicts pension and bank savings behavior.

The literature has revealed that personality traits can significantly predict economic behavior, particularly in money management skills, and financial decision-making (Nyhus & Webley, 2001; Almlund et al., 2011). Donnelly et al. (2012) discovered that neuroticism is negatively correlated with money management skills, while Johnston et al. (2016) found significant impacts of personality traits on financial decision-making in the Australasian market. Additionally, Oehler et al. (2018) showed that extraversion and neuroticism influence financial behaviors in an experimental asset market, with extraverted individuals paying higher prices and buying more when assets are overpriced, and neurotic individuals holding fewer risky assets in their portfolios.

Research has also examined the effects of personality traits on the likelihood of experiencing financial distress. Donnellan et al. (2009) found that low self-reports of neuroticism during adolescence predict less economic pressure in adulthood, while Gillen and Kim (2014) concluded that neurotic and agreeable individuals are more likely to need financial assistance. Xu et al. (2015) discovered that neuroticism and agreeableness are positively correlated with the likelihood of financial distress among young adults in the US, while conscientiousness and extraversion are negatively associated with financial distress.

Conversely, other studies have investigated the influence of personality traits on the likelihood of achieving financial and social well-being. Hill et al. (2012) found that agreeableness and extraversion (positively) and neuroticism (negatively) correlate with social well-being. However, Donnelly et al. (2012) concluded that there is no significant relationship between personality traits and financial well-being. More recently, Fan et al. (2022) examined the relationship between personality traits and the subjective well-being of young adults. They came to the conclusion that extraversion, conscientiousness, and agreeableness were positively associated with subjective well-being, while neuroticism was negatively associated with it.

In summary, previous studies have suggested that personality traits can significantly predict various financial dimensions, such as savings and borrowing behavior (Nyhus & Webley, 2001), money management (Donnelly et al., 2012), and financial behaviors in the asset market (Oehler et al., 2018). However, there are a lack of studies examining the relationship between personality traits and household finance in Europe. Therefore, this study aims to investigate the influence of personality traits on three household finance dimensions in the continent: 1) the decision to hold secured debts, 2) the likelihood of experiencing financial distress, and 3) the likelihood of achieving financial well-being.

2.2. Development of hypotheses

The hypotheses developed in this section are grounded in three key theoretical foundations: the first one is that individual personality traits exist and are stable enough to be identified (Larsen & Buss, 2009); the second states that these traits can be categorized using

the Big Five personality traits framework. Finally, these personality traits play a significant role in shaping financial decisions at the household level (Brown and Taylor, 2014; Xu et al., 2015; Fan et al., 2022).

Costa and McCrae's 1992 model includes extraversion, openness, agreeableness, conscientiousness, and neuroticism. Each trait is measured in terms of six specific facets. Table 1 presents the definitions of these personality traits and their respective facets.

Table 1. Big Five personality traits

Big Five Traits	Definition	Facet (and Correlated Trait Adjective)
Extraversion	The general tendency to experience positive emotions such as joy and pleasure, as well as certain traits such as being sociable, lively, and active.	Gregariousness (Sociable), Assertiveness (Forceful), Activity (Energetic), Excitement-seeking (Adventurous), Positive emotions (Enthusiastic), Warmth (Outgoing)
Agreeableness	The primary dimension of interpersonal behavior as the tendency to act cooperatively and unselfishly.	Trust (Forgiving), Straightforwardness (Not demanding), Altruism (Warm), Compliance (Not stubborn), Modesty (Not an egotist), Tender-mindedness (Sympathetic)
Neuroticism	The individual tends to experience excessive worry, depression, anger, and psychological distress.	Anxiety (Tense), Angry hostility (Irritable), Depression (Not contented), Self-consciousness (Shy), Impulsiveness (Moody), Vulnerability (Not self-confident)
Conscientiousness	A dimension that contrasts scrupulous, well-organized, and diligent people with lax, disorganized, and lackadaisical individuals.	Competence (Efficient), Order (Organized), Dutifulness (Not care-free), Achievement-striving (Thorough), Self-discipline (Not lazy), Deliberation (Not impulsive)
Openness	High-Openness individuals are imaginative and sensitive to art and beauty and have a rich and complex emotional life; they are intellectually curious, behaviorally flexible, and nondogmatic in their attitudes and values.	Ideas (Curious), Fantasy (Imaginative), Aesthetics (Artistic), Actions (Wide interests), Feelings (Excitable), Values (Unconventional)

Source: Costa et al. (1995) and Costa and McCrae (1992)

This study focuses on three of the Big Five personality traits: neuroticism, agreeableness, and extraversion. Due to a lack of data in the EU-SILC for openness and conscientiousness, it is not feasible to explore all of the personality traits. Previous research has examined the relationship between certain ones and the decision to hold different types of debts. For instance, Nyhus and Webley (2001) found that levels of agreeableness and neuroticism were positively associated with the likelihood of holding a mortgage, whereas extraversion was negatively associated with the mortgage amount. Brown and Taylor (2014) noticed a positive association between extraversion and the probability of running up credit card debts. Neurotic individuals tend to be emotional when having to face financial challenges, which can impair their ability to think clearly, make decisions, and cope with stress, leading to irrational actions (Rizvi & Fatima, 2015). Thus, we hypothesize that neurotic individuals are more likely to accrue debt. In contrast, extraverted individuals are more likely to experience positive emotions and avoid distress (Costa & McCrae, 1992), leading us to predict that extraverted individuals will be less likely to incur debts. Agreeable individuals, being more influenced by others and more doubtful of their decisions (Erjavec et al., 2019), are expected to be more likely to amass debts.

Based on these findings, we propose the following three hypotheses regarding the decision to hold secured debts:

Hypothesis 1: The level of agreeableness in an individual is positively related to the likelihood of their household incurring a debt.

Hypothesis 2: The level of neuroticism in an individual is positively related to the likelihood of their household incurring a debt.

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Hypothesis 3: The level of extraversion in an individual is negatively related to the likelihood of their household incurring a debt.

Research has also suggested that certain personality traits are associated with financial distress. Donnellan et al. (2009) found that low levels of neuroticism during adolescence predict less economic pressure in adulthood. Gillen and Kim (2014) showed that neuroticism and agreeableness are positively correlated with the need for financial assistance. Xu et al. (2015) concluded that neuroticism and agreeableness are positively associated with financial distress. Additionally, Donnelly et al. (2012) found that neuroticism is negatively correlated with money management skills, while Xu et al. (2015) demonstrated that conscientiousness and extraversion are negatively associated with financial distress among young adults in the United States. Borrowers who show neurotic tendencies are found to be more likely to undertake high-risk strategies when faced with unforeseen issues that affect their ability to keep up with their debt interest and repayments (Rendall et al., 2021). Extraverted individuals tend to seek instant gratification, spend more, and save less, which can increase their likelihood of financial distress (Hirsh, 2015). Conversely, neurotic individuals are prone to excessive worry and psychological distress (Costa & McCrae, 1992), increasing their likelihood of financial distress.

Based on these findings, we propose the following hypotheses regarding financial distress:

Hypothesis 4: The level of agreeableness in an individual is positively related to the likelihood of their household being in a state of financial distress.

Hypothesis 5: The level of neuroticism in an individual is positively related to the likelihood of their household being in a state of financial distress.

Hypothesis 6: The level of extraversion in an individual is positively related to the likelihood of their household being in a state of financial distress.

Several studies have examined the relationship between personality traits and financial or social well-being. Hill et al. (2012) found that agreeableness and extraversion levels are positively and negatively correlated with social well-being, respectively. Fan et al. (2022) have reported that extraversion and agreeableness are positively associated with subjective well-being, while neuroticism is negatively associated with it. However, Donnelly et al. (2012) concluded that there is no significant association between personality traits and financial well-being. Neurotic individuals are more likely to experience excessive anger and psychological distress (Costa & McCrae, 1992), leading us to hypothesize that neurotic individuals are less likely to achieve financial well-being. Similarly, extraverted individuals' tendency to seek instant gratification and spend more makes them less likely to achieve financial well-being (Hirsh, 2015). Additionally, the indecisiveness and lack of confidence in the decisions of agreeable individuals (Erjavec et al., 2019) suggest a lower likelihood of reaching a state of financial well-being.

Based on this reasoning, we have formulated the following three hypotheses regarding this state:

Hypothesis 7: The level of agreeableness in an individual is negatively related to the likelihood of his/her household experiencing financial well-being.

Hypothesis 8: The level of neuroticism in an individual is negatively related to the likelihood of his/her household experiencing financial well-being.

Hypothesis 9: The level of extraversion in an individual is negatively related to the likelihood of his/her household experiencing financial well-being.

To control for individual demographic characteristics, such as gender, age, income, health, education, marital status, activity status, tenure status, and country of residence, we have followed the existing literature (Donnelly et al., 2012; Brown & Taylor, 2014; Xu et al., 2015; Álvarez-Espiño et al., 2023). Moreover, we have included the squared age to account for the non-linear effects of individuals' personalities throughout their lifetimes (Oehler & Horn, 2020).

3. DATA AND METHODOLOGY

3.1. Data

To examine the relationship between personality traits and household finance, we utilized data from the EU-SILC dataset, obtained from the Eurostat Database (see Appendix 1 for Supplementary Data). The EU-SILC is a comprehensive tool designed to collect both cross-sectional and longitudinal microdata on income, poverty, social exclusion, and living conditions. It covers both objective and subjective aspects of these topics in monetary and non-monetary terms for households and individuals. Specifically, the data provides information on personality traits as of 2013.

The data collection was performed choosing from these five modes: 1) pen-and-paper personal interviewing (PAPI), 2) computer-assisted personal interviewing (CAPI), 3) computer-assisted telephone interviewing (CATI), 4) self-administered survey, or 5) proxy interview. The dataset includes information on individuals' personality traits, demographic characteristics, and household finance dimensions at the household level. The household respondent for the finance dimensions was selected based on the following priorities: 1) the main person responsible for the upkeep of the dwelling, and 2) a household member aged 16 or over who would be best placed to provide this information.

The sample consisted of individuals aged 16 and above from 31 European countries, including 26 European Union (EU) member states and the rest outside the EU (Iceland, Norway, Serbia, Switzerland, and the UK). The average number of observations per country was 16,194.

This study investigates individuals' personality traits based on the Big Five Personality Traits framework (Costa et al., 1995). Due to the lack of data on openness and conscientiousness in the EU-SILC, we focused on neuroticism, agreeableness, and extraversion as the main independent variables. Neuroticism was measured using a scale based on Nyhus and Webley (2001), Brown and Taylor (2014), and Gillen and Kim (2014). Agreeableness was analyzed with a scale based on Costa et al. (1995), and for extraversion, one was used based on Costa and McCrae (1992).

The study examines three dimensions of household finance: 1) the decision to hold secured debts, based on Brown et al. (2008, 2013), and Brown and Taylor (2014), 2) the likelihood of being in a state of financial distress, based on Xu et al. (2015, 2017), and 3) the likelihood of being in a state of financial well-being, based on Garðarsdóttir and Dittmar (2012), and Philippas and Avdoulas (2020). These three dimensions are considered to be our dependent variables. We have controlled for the most important individual demographic characteristics: age, squared age, gender, marital status, level of education, basic activity status, total household income, general health, tenure status, and country of residence. The measurements of all these variables are shown in Appendix 2, "Definitions of Variables".

Summary statistics for the dependent, independent, and control variables are shown in Table 2.

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Table 2. Summary statistics

Variable	Mean	Median	S.D.	Min.	Max.	Skewness	Kurtosis
Dependent Variables							
Holding a mortgage	0.25	0.00	0.43	0.00	1.00	1.16	-0.67
Log of total mortgage	5.39	6.39	2.99	0.00	11.34	-0.58	-1.09
Hire-purchase installment or other loan payment arrears	1.20	0.00	0.57	1.00	3.00	2.68	5.46
Mortgage or rental payment arrears	1.13	1.00	0.46	1.00	3.00	3.55	11.16
Bill arrears	1.20	1.00	0.58	1.00	3.00	2.62	5.14
Burden of total housing cost	2.20	2.00	0.72	1.00	3.00	-0.31	-1.03
Burden of repayment debts	2.10	2.00	0.76	1.00	3.00	-0.17	-1.25
Ability to afford a one-week annual holiday	0.59	1.00	0.49	0.00	1.00	-0.37	-1.86
Capacity to handle financial expenses	0.61	1.00	0.49	0.00	1.00	-0.45	-1.80
Ability to make ends meet	3.15	3.00	1.37	1.00	6.00	0.16	-0.67
Independent Variables							
Neuroticism	2.22	2.00	0.82	1.00	5.00	0.76	0.27
Agreeableness	4.21	5.00	3.26	0.00	10.00	-0.11	-1.39
Extraversion	2.63	2.00	1.32	1.00	5.00	2.42	9.19
Control Variables							
Age	56.50	57.00	18.31	23.00	88.00	-0.03	-1.03
Squared Age	3,527.75	3,249.00	2,084.75	529.00	7,744.00	0.43	-0.85
Education	3.08	3.00	1.27	0.00	5.00	0.15	-0.73
Health	3.70	4.00	0.98	1.00	5.00	-0.58	-0.06
Total household income	0.00	-0.30	1.00	-3.19	54.67	6.62	168.54

Note:The data is cross-sectional at the individual and household level from the EU-SILC dataset. We standardized total household income using Z-score standardization. The logs of total mortgage and total household income are expressed in Euros. Age is expressed in years. Refer to Appendix 2 for the definitions of the variables.

The average age of the population in our sample was 56.50 years. Notably, 25% of households held mortgages, and 59% could afford a one-week annual holiday.

3.2. Methodology

For our analysis, we employed logistic regression for binary dependent variables, which were as follows: i) holding a mortgage, ii) the ability to afford a one-week holiday, and iii) facing unexpected financial expenses. For the ordinal dependent variables, we used ordered logistic regression, which included: i) arrears on hire purchase instalments or other loan payments, ii) arrears on mortgage or rental payments, iii) arrears on bills, iv) the ability to make ends meet, v) the burden of total housing costs, and vi) the burden of repaying debts. Additionally, we used generalized linear models with a Gaussian distribution for the log of the total mortgage amount.

To mitigate multicollinearity issues, we individually entered the personality traits into the regressions. We began with a baseline regression controlling for age, squared age, gender, and country. Furthermore, we conducted additional estimates controlling for other individual demographic characteristics.

The following three main regression models were used to test our research hypotheses:

1. For the probability of holding secured debts:

$$\text{logit}(p) = \beta_0 + \beta_1\text{Neuroticism} + \beta_2\text{Agreeableness} + \beta_3\text{Extraversion} + \beta_4\text{Age} + \beta_5\text{Gender} + \beta_6\text{Squared Age} + \beta_7\text{Marital status} + \beta_8\text{Education level} + \beta_9\text{Activity status} + \beta_{10}\text{Income} + \beta_{11}\text{Health} + \beta_{12}\text{Country} + \varepsilon \quad (1)$$

where $p = P(\text{Holding secured debts} = 1)$.

The tenure status variable was excluded in this equation to avoid multicollinearity issues, as the "holding a mortgage" variable was derived from tenure status.

2. For the likelihood of being in a state of financial distress:

$$\text{logit}(p) = \beta_0 + \beta_1\text{Neuroticism} + \beta_2\text{Agreeableness} + \beta_3\text{Extraversion} + \beta_4\text{Age} + \beta_5\text{Gender} + \beta_6\text{Squared Age} + \beta_7\text{ Marital status} + \beta_8\text{Education level} + \beta_9\text{Activity status} + \beta_{10}\text{Income} + \beta_{11}\text{Health} + \beta_{12}\text{Tenure status} + \beta_{13}\text{Country} + \varepsilon \quad (2)$$

where $p = P(\text{The likelihood of being in a state of financial distress} = 1)$.

3. For the likelihood of being in a state of financial well-being:

$$\text{logit}(p) = \beta_0 + \beta_1\text{Neuroticism} + \beta_2\text{Agreeableness} + \beta_3\text{Extraversion} + \beta_4\text{Age} + \beta_5\text{Gender} + \beta_6\text{Squared Age} + \beta_7\text{ Marital status} + \beta_8\text{Education level} + \beta_9\text{Activity status} + \beta_{10}\text{Income} + \beta_{11}\text{Health} + \beta_{12}\text{Tenure status} + \beta_{13}\text{Country} + \varepsilon \quad (3)$$

where $p = \text{The likelihood of being in a state of financial well} - \text{being} = 1)$.

4. EMPIRICAL RESULTS

4.1. The decision to hold secured debts

Table 3 presents the baseline logistic regression results for the decision to hold a mortgage, along with the generalized linear models (GLM) with a Gaussian distribution for the log of the total mortgage amount. Robust Standard Errors were employed in the GLM regression to address heteroscedasticity.

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Table 3. Personality and mortgage baseline regression

	Dependent variables					
	Holding a mortgage			Log of the total mortgage		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Neuroticism	-0.141*** (0.006)			-0.044*** (0.008)		
Agreeableness		-0.002 (0.001)			0.003** (0.001)	
Extraversion			-0.059*** (0.005)			-0.028*** (0.007)
Gender [Male]	0.050*** (0.009)	0.058*** (0.008)	0.072*** (0.009)	0.048*** (0.011)	0.029*** (0.009)	0.053*** (0.011)
Age	0.153*** (0.002)	0.133*** (0.001)	0.150*** (0.002)	0.056*** (0.002)	0.055*** (0.002)	0.056*** (0.002)
Squared age	-0.002*** (0.000)	-0.001*** (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Intercept	-3.774*** (0.056)	-3.532*** (0.044)	-3.877*** (0.056)	6.224*** (0.067)	6.158*** (0.050)	6.196*** (0.068)
Country	Yes	Yes	Yes	Yes	Yes	Yes
Num. Obs.	356,542	500,928	364,888	70,094	107,279	70,666
AIC	293,694	422,216	297,876	248,980	383,884	251,312
BIC	294,071	422,605	298,254	249,292	384,210	251,623
Log.Lik.	-146,812	-211,073	-148,903	-124,456	-191,908	-125,622

Note:This table presents the results of the logistic regression and GLM models for the determinants of holding a mortgage (listed in the third column) and the log of the total mortgage (listed in the fourth column), respectively. The models include the following variables, listed in the first column: Neuroticism, Agreeableness, Extraversion, Gender, Age, Squared age, and Country. Standard errors are reported in parentheses. Statistical significance is indicated by asterisks: * p < 0.1, ** p < 0.05, *** p < 0.01. Refer to Appendix 2 for the definitions of the variables.

In regressions (1 to 3), we observed a negative association between the likelihood of holding a mortgage and the levels of two personality traits: neuroticism and extraversion. These results were statistically significant at the 1% level. Additionally, the data indicated that males and older individuals were more likely to hold a mortgage, with statistical significance at the 1% level.

In regressions (4 to 6), the levels of neuroticism and extraversion were also found to be negatively associated with the mortgage amount, again with statistical significance at the 1% level. Conversely, the level of agreeableness was shown to be positively associated with the mortgage amount, with significance at the 1% level. Furthermore, males and older individuals were seen as being more likely to have a higher mortgage amount (significance at the 1% level). These findings contradict Donnelly et al. (2012), who claimed that these personality traits are not significant predictors of debt, but they do support the results of Nyhus and Webley (2001).

Additional estimates controlling for other demographic characteristics such as income, health, education, marital status, activity status, and tenure status (not reported) reaffirmed that neuroticism and extraversion levels were negatively associated with the likelihood of holding a mortgage (significance at the 1% level). The level of agreeableness remained positively associated with both the likelihood of holding a mortgage and the mortgage amount, with statistical significance at the 1% level. However, the statistical significance of neuroticism was slight when controlling for additional demographics.

In summary, hypotheses (1) and (3) regarding the effects of extraversion and agreeableness on the decision to hold secured debt should not be rejected. However, hypothesis (2), positing a positive impact of neuroticism, can be ruled out, as our results indicated a negative impact of neuroticism on the decision to hold secured debt.

4.2. The likelihood of being in a state of financial distress

Table 4 presents the baseline logistic regression results for the determinants of the likelihood of being in a state of financial distress. We controlled for age, squared age, gender, and country. Ordered logistic regressions were employed for the following five dependent variables: 1) the financial burden of the total housing cost, 2) the financial burden of the repayment of debts from hire purchases or loans, 3) arrears on bills, 4) arrears on hire purchase instalments or other loan payments, and 5) arrears on mortgage or rental payments.

Table 4. Personality and financial distress baseline regression

	Dependent variables														
	Burden of THC			Burden of repayment debts			Arrears on bills			Arrears on HPI/LP			Arrears on M/RP		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Neuroticism	0.554*** (0.005)			0.576*** (0.009)			0.641*** (0.007)			0.636*** (0.012)			0.686*** (0.012)		
Agreeableness		-0.042*** (0.001)			-0.042*** (0.002)			-0.051*** (0.002)			-0.052*** (0.003)			-0.056*** (0.003)	
Extraversion			0.088*** (0.003)			0.110*** (0.007)			0.046*** (0.004)			0.060*** (0.009)			0.062*** (0.009)
Gender [Male]	-0.073*** (0.007)	-0.117*** (0.006)	-0.146*** (0.007)	-0.035*** (0.013)	-0.078*** (0.011)	-0.117*** (0.013)	-0.011 (0.011)	-0.053*** (0.009)	-0.066*** (0.011)	0.046** (0.021)	-0.028 (0.017)	-0.015 (0.020)	0.064*** (0.021)	-0.037** (0.017)	-0.033* (0.020)
Age	-0.207*** (0.023)	-0.036*** (0.018)	-0.042* (0.022)	0.066 (0.050)	0.216*** (0.037)	0.271*** (0.049)	0.223*** (0.038)	0.478*** (0.030)	0.523*** (0.037)	0.011 (0.076)	0.388*** (0.060)	0.375*** (0.074)	0.167** (0.077)	0.420*** (0.060)	0.463*** (0.075)
Squared Age	0.016 (0.022)	-0.126*** (0.018)	-0.125*** (0.022)	-0.244*** (0.052)	-0.350*** (0.040)	-0.423*** (0.051)	-0.702*** (0.038)	-0.860*** (0.031)	-0.936*** (0.037)	-0.338*** (0.082)	-0.623*** (0.065)	-0.637*** (0.079)	-0.596*** (0.084)	-0.757*** (0.067)	-0.822*** (0.081)
Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. Obs.	356,200	499,954	364,489	89,106	133,093	90,466	354,007	497,164	362,249	100,461	149,155	102,111	148,991	216,511	151,361
AIC	622,971	890,067	652,256	159,705	244,667	166,356	266,165	383,390	283,209	76,378	111,813	80,759	84,359	122,945	89,241
BIC	623359	890,467	652,645	160,043	245,019	166,695	266,553	383,790	283,597	76,721	112,170	81,102	84,716	123,315	89,599
Log.Lik.	-311,449	-444,997	-326,092	-79,816	-122,297	-83,142	-133,046	-191,659	-141,568	-38,153	-55,870	-40,343	-42,143	-61,436	-44,584

Note:This table presents the results of ordered logistic regressions for the determinants of the financial burden of the total housing cost (listed in the third column), the financial burden of the repayment of debts from hire purchases or loans (listed in the fourth column), arrears on bills (listed in the fifth column), arrears on hire purchase instalments or other loan payments (listed in the sixth column), and arrears on mortgage or rental payments (listed in the seventh column), respectively. The models include the following variables listed in the first column: Neuroticism, Agreeableness, Extraversion, Gender, Age, Squared age, and Country. Standard errors are reported in parentheses. Statistical significance is indicated by asterisks * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Refer to Appendix 2 for the definitions of the variables.

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From regressions 1 to 15 in Table 4, we observed that the levels of neuroticism and extraversion were positively associated with all five measures for the likelihood of financial distress (significance at the 1% level). Conversely, agreeableness was negatively associated with these measures, with the findings being statistically significant at the 1% level. Our results concerning neuroticism were consistent with those of Xu et al. (2015), whereas for agreeableness and extraversion, there was a notable difference, the former observing a positive association with financial distress for their study, the latter, a negative one, whereas our results indicated the opposite.

To further explore the determinants for the likelihood of financial distress, we conducted additional analyses controlling for demographic variables such as income, health, education, marital status, activity status, and tenure status (not reported). The positive associations of neuroticism and extraversion and the negative one of agreeableness with financial distress were the same under these controls at the statistical significance level of 1%.

Our findings also indicated that the higher the levels of income, education and health were, the lower the likelihood of financial distress. Age, however, appeared to increase it, with older individuals being more susceptible. Gender differences were also noted: males were more prone to arrears on debts like utility bills, mortgages or rental payments, and hire purchase instalments, but were less likely to be burdened by total housing costs and loan repayments. Marital status influenced financial distress, with married or never-married individuals being less likely to experience it. Employment status also played a role, as those who were working or retired faced less financial distress compared to the unemployed. Additionally, individuals who fully owned their properties or received free housing were less likely to be in financial distress. All these inferences were based on results that were significant at conventional levels of statistical significance.

In conclusion, our results consistently rejected hypothesis (4), confirming that agreeableness was negatively associated with financial distress. However, we could not reject hypotheses (5) and (6) concerning the influences of neuroticism and extraversion on the likelihood of financial distress.

4.3. The likelihood of being in a state of financial well-being

In this section, we examine the relationship between personality traits and the probability of attaining financial well-being. Table 5 presents the outcomes of the basic logistic regressions for the determinants of the probability of reaching a state of financial well-being, considering age, age squared, gender, and country. We employed logit models for two dependent variables: the ability to afford a one-week yearly vacation and the capacity to cope with unforeseen financial expenses. Additionally, we used an ordered logit model for the dependent variable: the ability to make ends meet.

Table 5. Personality and financial well-being: baseline regression

	Dependent Variables								
	Ability to afford vacation			Unexpected FE			Ability to make ends meet		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Neuroticism	-0.633*** (0.005)			-0.622*** (0.005)			-0.696*** (0.004)		
Agreeableness		0.056*** (0.001)			0.040*** (0.001)			0.048*** (0.001)	
Extraversion			-0.105*** (0.003)			-0.087*** (0.003)			-0.105*** (0.003)
Gender [Male]	0.101*** (0.008)	0.120*** (0.006)	0.178*** (0.007)	0.161*** (0.008)	0.163*** (0.006)	0.235*** (0.007)	0.067*** (0.006)	0.119*** (0.005)	0.157*** (0.006)
Age	0.054*** (0.001)	0.038*** (0.001)	0.040*** (0.001)	0.046*** (0.001)	0.023*** (0.001)	0.033*** (0.001)	0.452*** (0.021)	0.206*** (0.016)	0.243*** (0.020)
Squared age	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	-0.288*** (0.020)	-0.087*** (0.016)	-0.111*** (0.020)
Intercept	1.467*** (0.048)	0.260*** (0.039)	0.679*** (0.046)	1.247*** (0.046)	0.353*** (0.037)	0.428*** (0.044)			
Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. Obs.	356,248	499,905	364,560	356,746	500,785	365,049	356,930	501,101	365,233
AIC	401,196	569,951	427,795	421,052	604,721	448,767	1,031,876	1,485,543	1,083,465
BIC	401,574	570,341	428,173	421,430	605,110	449,145	1,032,296	1,485,977	1,083,886
Log.Lik.	-200,563	-284,940	-213,862	-210,491	-302,325	-224,348	-515,899	742,732	-541,693

Notes: This table presents the results of logistic regression and ordered logistic regression models for the determinants of the ability to afford a one-week yearly vacation, the capacity to cope with unforeseen financial expenses (listed in the third and fourth columns), and the ability to make ends meet (listed in the fifth column), respectively. The models include the following variables listed in the first column: Neuroticism, Agreeableness, Extraversion, Gender, Age, Squared age, and Country. Standard errors are reported in parentheses. Statistical significance is indicated by asterisks: * p < 0.1, ** p < 0.05, *** p < 0.01. Refer to Appendix 2 for the definitions of variables.

The regression results (1 to 9) presented in Table 5 indicate that neuroticism and extraversion were negatively associated with all three measures of financial well-being, while agreeableness was positively associated with these measures. These associations were statistically significant at the 1% level. Our finding regarding agreeableness aligned with Hill et al. (2012), who identified a positive correlation between personality traits and social well-being. In contrast, our results contradicted Donnelly et al. (2012), whose study found no significant relationship between personality traits and financial well-being but did observe a positive link between money management skills and wealth accumulation.

Further analysis (not reported here) entailed controlling for income, health, education, marital status, activity status, and tenure status, and re-confirmed our main conclusions regarding personality traits and financial well-being.

Overall, we continued to reject hypothesis (7), confirming that agreeableness was positively associated with financial well-being. However, we could not reject hypotheses (8) and (9) regarding the impact of neuroticism and extraversion on financial well-being.

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5. DISCUSSION

Our findings on the influence of personality traits on mortgage decisions aligned with Nyhus and Webley (2001). Specifically, extraversion was negatively associated with mortgage amounts, whereas agreeableness was positively associated with the likelihood of holding a mortgage. These results indicate that neuroticism and extraversion negatively influenced the decision to hold a mortgage, while agreeableness had a positive effect. This stood in contrast to Donnelly et al. (2012), who reported that extraversion, agreeableness, and neuroticism were not significant predictors of debt. However, they identified a positive association between conscientiousness and debt and a negative one between openness and debt.

The discrepancies between our findings and those of Donnelly et al. (2012) may have stemmed from differences in sample size and sampling methodology. Our study utilized a representative probability sample of 502,017 individuals and households from 31 European countries, which likely provided more statistically significant results compared to Donnelly et al.'s (2012) convenience sample of 993 students in the United States.

Our results also suggested that neuroticism was positively associated with financial distress, consistent with Xu et al. (2015). However, our evidence indicated that agreeableness negatively impacted financial distress, while extraversion positively affected it. These findings contradicted Xu et al. (2015), who reported the opposite signs for agreeableness and extraversion coefficients. The discrepancy may have stemmed from differences in the scope of financial distress measurements and sample demographics. Our study used five financial distress measures compared to the two used by Xu et al. (2015). Additionally, our sample included individuals aged 23 to 88 from 31 European countries, while Xu et al. (2015) focused exclusively on young adults aged 24 to 34 in the United States.

Moreover, our results implied that agreeableness positively affected financial well-being, consistent with Hill et al. (2012), while neuroticism and extraversion negatively impacted it. This contrasted with Donnelly et al. (2012), who found no significant relationship between personality traits and financial well-being. The discrepancy may have arisen from Donnelly et al.'s (2012) use of a convenience sample of 355 individuals in the United States, which may not have been representative of other cultural contexts. Additionally, their study collected data on the Internet, possibly targeting a younger, better-educated demographic. Furthermore, Donnelly et al. (2012) focused on the impact of money management skills on financial well-being, rather than the direct effects of personality traits.

Although our paper has not focused on the impact of national cultures in all of their manifestations, for the dimensions of household finance examined in our study, it would be wise to discuss the potential interaction between cultural variables and the individual personality traits captured by the variables in our analysis. According to the literature, there is evidence suggesting that Hofstede's (2001, 2011) cultural dimensions correlate with the Big Five personality traits identified by Costa and McCrae (1992) and Costa et al. (1995) (Triandis & Suh, 2002; Hofstede & McCrae, 2004; Allik, 2005). For instance, Hofstede & McCrae (2004) reported a correlation coefficient of 0.64 between the cultural dimension of individualism and the personality trait of extraversion, a statistically significant relationship at the 0.1% level.

In the context of our study, in theory, the findings linking higher levels of extraversion with a greater likelihood of households experiencing financial distress and a higher probability of holding a mortgage could be replicated if we replaced the explanatory variable representing extraversion with one reflecting the cultural dimension of individualism as defined by Hofstede (2001, 2011). However, it is not prudent to overemphasize the importance of cultural factors, as the literature has suggested that the explanatory power of cultural variables in cross-country

studies may be weakening, attributed to cultural globalization, which is significantly eroding the distinct cultural traits of individual countries (Stackhouse et al., 2024).

6. CONCLUSIONS

This study has advanced the literature on household finance by exploring the determinants of key financial dimensions in 31 European countries. Specifically, we analyzed how personality traits influenced three critical aspects of household finance: the decision to hold secured debts, the likelihood of experiencing financial distress, and the likelihood of achieving financial well-being. To our knowledge, this is the first study to have utilized the EU-SILC dataset from Eurostat for this purpose.

Our findings indicated that personality traits significantly impacted household finance decisions and outcomes. Notably, individuals with high neuroticism and extraversion were less likely to hold a mortgage and, when they did, tended to take on larger mortgage amounts. Conversely, individuals with high agreeableness were more likely to hold a mortgage and incur higher mortgage repayments. Additionally, neuroticism and extraversion were positively correlated with financial distress, whereas agreeableness showed a negative correlation. Nonetheless, neurotic and extraverted individuals were less likely to be in a positive state of financial well-being, whereas agreeable individuals were more likely to achieve it. These associations remained significant even after controlling for various demographic variables.

Our study has highlighted the importance of considering personality traits when evaluating financial decisions and outcomes. It has suggested that behavioral interventions tailored to personality differences could be beneficial. To mitigate the negative effects of financial risk, we recommend that governments and financial institutions design financial products and services that cater to different personality profiles, by helping households to save, invest, and manage mortgages more effectively. Financial regulators should establish guidelines so that financial institutions can enhance transparency and raise awareness of the influence of personality traits on financial behavior and offer financial planning programs to address adverse cases of it.

Furthermore, individuals should be cognizant of how their personality traits affect their financial choices and outcomes. This self-awareness could facilitate more informed decision-making that would positively impact financial well-being. However, caution must be exercised regarding their ability to accurately assess their own personality traits and, consequently, their capacity to independently extract the lessons contained in our study. We advocate for public policies that promote financial literacy by way of educational programs and social media outreach. Our research offers valuable insights for policymakers aiming to improve household welfare and contributes to the academic understanding of the factors influencing household finance decisions.

Given our findings, specifically the positive association between the personality traits of neuroticism and extraversion and the likelihood for individuals to encounter financial distress, the policy recommendations outlined here should prioritize those exhibiting both of these traits. Such a focus would be particularly important during periods of significant economic downturns or recessions, as these are times when financial distress is likely to reach socially alarming levels.

Like most academic studies, our research has certain limitations that warrant acknowledgment. For instance, due to the constraints of the EU-SILC dataset, the impact of the personality traits of openness and conscientiousness on the three dimensions of household finance examined in this study could not be analyzed. This limitation is particularly noteworthy, as existing literature has established that, for example, the trait of conscientiousness plays a

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critical role in predicting pension and bank savings (Kausel et al., 2016). Additionally, the dataset's design constrains the personality trait measures available in the dataset.

As future research directions, we suggest that scholars consider incorporating variables capable of capturing the influence of various dimensions of national cultures on financial decisions made within households. Furthermore, it would be worthwhile to address the limitations of the dataset used in this study by enabling the inclusion of personality traits not examined here, such as extraversion and openness to experience. Finally, it would be interesting to investigate the potential mediating role that variables such as financial literacy or risk preferences, among others, may play in terms of the effect of personality traits on households' financial decisions.

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Author contributions

Conceptualization, J. L. and R.I. A.; Methodology, J. L. and R.I. A.; Software, R.I. A.; Validation, J. L. and R.I. A.; Formal Analysis, J. L. and R.I. A.; Data Curation, J. L. and R.I. A.; Writing - Original Draft Preparation, J. L. and R.I. A.; Writing - Review & Editing, J. L. and R.I. A. All authors have read and agreed to the published version of the manuscript.

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Appendix

Appendix 1. Supplementary data

Supplementary data to this article can be found online under official request to the Eurostat database at https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions.

Appendix 2. Definitions of variables

Variable	Definition
Dependent variables	
Holding a mortgage	A binary variable that takes the value of 1 if the household has taken out a mortgage; otherwise, it takes the value of 0 (Source: EU-SILC dataset, Eurostat).
Log of total mortgage	The logarithm of the sum of mortgage principal repayments and interest payments of households, in euros (Source: EU-SILC dataset, Eurostat).
Ability to make ends meet	A financial well-being indicator measured by asking households if their total income covers their necessary expenses. It is an

Variable	Definition
	ordinal variable that takes values from 1 to 6 as follows: 1 - with great difficulty, 2 - with difficulty, 3 - with some difficulty, 4 - fairly easily, 5 - easily, 6 - very easily (Source: EU-SILC dataset, Eurostat).
Capacity to afford to pay for a one-week annual holiday	A financial well-being indicator measured by asking households if they can afford a one-week annual holiday. It is a binary variable that takes the value of 1 if the answer is yes; otherwise, it takes the value of 0 (Source: EU-SILC dataset, Eurostat).
Capacity to face unexpected financial expenses	A financial well-being indicator measured by asking households if they would be able to afford unexpected financial expenses. It is a binary variable that takes the value of 1 if the answer is yes; otherwise, it takes the value of 0 (Source: EU-SILC dataset, Eurostat).
Arrears on mortgage or rental payments	A financial distress indicator measured by asking households if they have been in arrears on mortgage or rental payments and unable to pay on time due to financial difficulties in the last twelve months. It is an ordinal variable that takes values from 1 to 3 as follows: 1 - No, 2 - Yes, once, 3 - Yes, twice or more (Source: EU-SILC dataset, Eurostat).
Arrears on hire purchase installments or other loan payments	A financial distress indicator measured by asking households if they have been in arrears on hire purchase instalments or other loan payments and unable to pay on time due to financial difficulties in the last twelve months. It is an ordinal variable that takes values from 1 to 3 as follows: 1 - No, 2 - Yes, once, 3 - Yes, twice or more (Source: EU-SILC dataset, Eurostat).
Arrears on bills	A financial distress indicator measured by asking households if they have been in arrears on bills and unable to pay on time due to financial difficulties in the last twelve months. It is an ordinal variable that takes values from 1 to 3 as follows: 1 - No, 2 - Yes, once, 3 - Yes, twice or more (Source: EU-SILC dataset, Eurostat).
Financial burden of repayment of debts from hire purchases or loans	A financial distress indicator measured by asking households to assess to what extent the repayment of loans from hire purchases or loans is a financial burden. It is an ordinal variable that takes values from 1 to 3 as follows: 1 - Not a burden at all, 2 - A slight burden, 3 - A heavy burden (Source: EU-SILC dataset, Eurostat).
Financial burden of total housing cost	A financial distress indicator measured by asking households to assess to what extent their total housing cost is a financial burden. This ordinal variable has three values: 1 - Not a burden at all, 2 - A slight burden, and 3 - A heavy burden (Source: EU-SILC dataset, Eurostat).
Independent variables	
Neuroticism	This is a personality trait measured on a five-point scale based on Nyhus and Webley (2001), Brown and Taylor (2014), and Gillen and Kim (2014). The scale determines the average level of four indicators in the past four weeks, which are: i) nervousness, ii) feeling low, iii) feeling downhearted, and iv) calmness and peacefulness (reversed). The scale ranges from 1 (never) to 5 (all the time) (Source: EU-SILC dataset, Eurostat).
Agreeableness	This is a personality trait measured on a ten-point scale based on Costa et al. (1995). The scale measures the extent to which an individual trusts others, where 0 means “does not trust at all”, and 10 means “trusts fully” (Source: EU-SILC dataset, Eurostat).
Extraversion	This is a personality trait measured on a five-point scale based on Costa and McCrae (1992). The scale measures how often

Variable	Definition
	individuals have felt satisfied in the past four weeks. The scale ranges from 1 (not at all) to 5 (all the time) (Source: EU-SILC dataset, Eurostat).
Control variables	
Age	A continuous variable (Source: EU-SILC dataset, Eurostat).
Squared age	Squared of the age variable (Source: EU-SILC dataset, Eurostat).
Total household income	Total household income is the income of the household in euros (Source: EU-SILC dataset, Eurostat).
Gender	This is a binary variable where 0 represents Female, and 1 represents Male (Source: EU-SILC dataset, Eurostat).
Marital status	This is a nominal variable with five categories: 1 - Separated, 2 - Widowed, 3 - Divorced, 4 - Never married, and 5 - Married (Source: EU-SILC dataset, Eurostat).
The level of education	This is an ordinal variable with six categories: 0 - Pre-primary, 1 - Primary, 2 - Lower secondary, 3 - Upper secondary, 4 - Post-secondary non-tertiary, and 5 - First stage of tertiary education (Source: EU-SILC dataset, Eurostat).
General health	This is an ordinal variable with five categories: 1- Very bad, 2- Bad, 3- Fair, 4- Good, and 5- Very good (Source: EU-SILC dataset, Eurostat).
Tenure status	This is a nominal variable with five categories: 1- Rented at a reduced rate, 2- Rented at a market rate, 3- Provided free, 4- Outright owner, 5- Paying a mortgage) (Source: EU-SILC dataset, Eurostat).
Activity status	This is a nominal variable with four categories: 1- Inactive, 2- At work, 3- Unemployed, 4- Retired (Source: EU-SILC dataset, Eurostat).

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