Does personality affect the allocation of resources within households?

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Abstract

This paper examines whether personality influences the allocation of resources within households. I model households as couples that make Pareto-efficient allocations and divide resources according to a distribution function. Using a sample of Dutch couples from the LISS survey, which includes detailed individual-level data on consumption, labor supply, and personality traits, I investigate two structural channels through which personality can affect intrahousehold allocations. First, I show that personality, acting as a taste shifter, significantly influences preferences for consumed goods and leisure time. Second, by testing distribution factor proportionality and the exclusion restriction of a conditional demand system, I find that personality can act as a distribution factor. Specifically, differences in personality traits between spouses shape resource allocation by influencing the bargaining process within households. For example, women who are relatively more conscientious and engage more cognitively than their male partners receive a larger share of intrafamily resources. This paper thus provides empirical evidence on how personality traits can contribute to consumption inequality within families.

Keywords: Collective Model, Personality Traits, Distribution Factor, Intrahousehold Behavior

JEL Classification: D1, J12, J22, J24

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1. Introduction

There is increasing evidence that personality traits matter for relevant life outcomes (Heckman, Jagelka, and Kautz 2021). For instance, personality is associated with the formation of future cognitive skills (Cunha, Heckman, and Schennach 2010), with educational choices over the life cycle (Todd and Zhang 2020), and labor market outcomes (Flinn, Todd, and Zhang 2020). Personality is also correlated with the probability of marriage and divorce (Lundberg 2012) and is a relevant attribute on which individuals sort into the marriage market (Dupuy and Galichon 2014). Nevertheless, much less is currently known about possible channels through which personality could impact intrahousehold consumption patterns. For example, do personality traits affect the allocation of resources through their impact on individual preferences over goods? Or are there other mechanisms by which personality might shape the way couples decide over total resources? Is personality related to the distribution of power within households?

In this paper, I aim to empirically investigate the questions mentioned above by testing the structural role of personality traits in resource allocation within households. Families are modeled as couples that make decisions regarding private and public consumption and also allocate their time to the labor market. As a starting point, I assume that each adult household member has his or her own rational preferences. Additionally, I assume that couples make Pareto-efficient allocations and distribute resources among household members through an intrahousehold decision process (Chiappori 1988, 1992). By adopting this framework, I can test the concept of collective rationality, which refers to the collective model, using consumption and labor supply information. This approach allows me to recover relevant information underlying the consumption process. The main focus of this paper is to explore the hypothesis that personality traits may partially determine how couples divide resources. To investigate this, I test the theoretical restrictions of the collective model as formalized by Bourguignon, Browning, and Chiappori (2009). The collective framework not only enables the characterization of couples in terms of rational decisions but also allows for the integration of individual personality into a model of household consumption and labor supply. I show that personality traits can play a significant role in shaping both preferences over consumed commodities and the distribution of resources within established households.

This article contributes theory-based evidence about new channels that may explain

consumption inequality within households. In the collective model, couples maximize a weighted sum of individual utilities, where the weights are referred to as Pareto weights. When examining the impact of a specific variable on household behavior, a distinction is made between two channels: *preference* and *distribution* factors. Preference factors typically influence individual preferences for consumed commodities, while distribution factors specifically affect the decision-making process within the household through changes in the Pareto weights. In this sense, the *level* of a specific variable (e.g., years of schooling) is often considered as a preference factor and the *relative* amount of it (e.g., differences in education between partners) as a distribution factor (Browning, Chiappori, and Weiss 2014). I leverage this notion, to formally introduce the level of an individual's personality as a taste shifter and within-household differences in traits that are commonly known to be relevant for labor market outcomes (e.g., wage offers) as distribution factors. The testable restrictions of the collective model, allow me to structurally relate personality and intrahousehold behavior. I test both distribution factor proportionality and the exclusion restriction of a conditional demand system, two theoretical restrictions associated with the collective approach in our setting, and find no evidence to reject that differences in personality between spouses influence the bargaining process. The results also suggest that personality directly influences preferences for consumed commodities. Furthermore, I demonstrate that differences in certain traits, such as differences in conscientiousness or cognitive engagement between spouses, are strongly associated with consumption inequality within the household. These findings provide valuable insights into the role of personality traits in shaping intrahousehold resource allocation dynamics.

Distribution factors, which influence household decisions without directly impacting preferences, have been extensively studied in the collective literature. These factors encompass a wide range of variables, including relative wages among spouses and the presence of divorce laws in relevant matching markets. For instance, Browning et al. (1994) demonstrate that the intrahousehold allocation of resources is related to factors such as relative ages and relative incomes in consumption models. Chiappori, Fortin, and Lacroix (2002) extend earlier versions of the collective model and test their implications by introducing the local sex ratio and divorce laws as distribution factors in a labor supply model. In a nonparametric setting, Cherchye, De Rock, and Vermeulen (2011) examine the relationship between the intrahousehold share of income and differences in age and educational level between spouses. Furthermore, exploiting exogenous variation from a randomized cash transfer program in Mexico, several

studies have constructed distribution factors and tested the theoretical restrictions of the collective model (see Bobonis (2009); Attanasio and Lechene (2014); De Rock, Potoms, and Tommasi (2022)).[1]

Building upon the collective framework and the existing applied research on the impact of personality, this paper contributes novel evidence suggesting that both intrahousehold rational behavior and consumption inequality are linked to the personality of household members. While recent advancements in personality research have been extensively reviewed (see John, Robins, and Pervin (2010)), the detailed examination of its role within family dynamics is still relatively unexplored. In a related study, Flinn, Todd, and Zhang (2018) develop a model of household behavior and apply it to Australian data to investigate how personality traits influence cooperative and non-cooperative interactions within households, as well as members' labor supply and wage rates. Their findings demonstrate that personality affects intrahousehold behavior and individual wages. The approach taken in the present paper differs from Flinn, Todd, and Zhang (2018). Instead of applying a behavioral model to the data, the present study leverages a set of testable restrictions derived from Bourguignon, Browning, and Chiappori (2009), which serve as necessary and sufficient conditions for collective rationality. By adopting this approach, I can test the extent to which personality traits structurally determine the allocation of resources between partners by influencing their preferences and respective bargaining positions within the household.

The rest of the paper unfolds as follows. Section 2 provides an introduction to the notation used and presents a collective model of household consumption and labor supply. This section also outlines the testable restrictions of the model based on observed household behavior, specifically focusing on distribution factor proportionality and the exclusion restriction of a conditional demand system. In Section 3, I describe the sample along with the available measures of personality traits. Section 4 outlines the empirical strategy employed in the study. It presents the functional form for the household demand functions and explains how tests of the collective model are derived from these functions. Section 5 presents the results obtained from estimating the demand system and testing the restrictions of the collective model. This section also provides evidence about the relationship between intrahousehold consumption inequality and personality traits. Finally, in Section 6, I conclude the paper.

[1] Refer to Browning, Chiappori, and Weiss (2014) for a comprehensive review.

2. Theory

The analysis considers a nonunitary labor supply setting where households consist of two adult members: the wife (f) and the husband (m). These individuals jointly make consumption decisions involving a Hicksian public good ($C \in \mathbb{R}_+$), private Hicksian assignable goods for each member ($c^i \in \mathbb{R}_+$), and individual leisure time ($\ell^i = T^i - L^i$), where $\ell^i \in \mathbb{R}_+$ represents the amount of leisure time, T^i is the time endowment for each individual, and L^i is the time supplied to labor ($i = m, f$). It is assumed that children do not have any bargaining power within the household, but some portion of the household budget may still be allocated to expenditures related to children. The prices of all Hicksian goods are normalized to one and wages ($w^i \in \mathbb{R}_{++}$) represent the prices of individual leisure. Observed heterogeneity is represented by the vector of preference factors $\boldsymbol{\xi} = (\xi^m, \xi^f)'$, including variables directly affecting preferences. The preferences of household members are captured by well-behaved utility functions. Each individual has an egoistic utility function denoted as $u^i = \upsilon^i(c^i, \ell^i, C; \xi^i)$.

In the collective model of Chiappori (1988, 1992), any Pareto-efficient intrahousehold allocation can be characterized as the solution of the following optimization program:

$$
\begin{aligned}
\max_{c^m, c^f, \ell^m, \ell^f, C} & \left[\upsilon^m(c^m, \ell^m, C; \xi^m) + \mu(w^m, w^f, y, \mathbf{z}) \upsilon^f(c^f, \ell^f, C; \xi^f) \right] \\
\text{s.t.} \quad & c^m + c^f + C + w^m \ell^m + w^f \ell^f \leq y, \\
& c^i \geq 0, \\
& C \geq 0, \\
& T^i \geq \ell^i \geq 0,
\end{aligned}
\tag{P1}
$$

where y is household full income defined by $y = w^m T^m + w^f T^f + x$ with $x \in \mathbb{R}_+$ the household nonlabor income, and $\mu(w^m, w^f, y, \mathbf{z})$ is the (unobserved) Pareto weight that depends on (exogenous) wages, income, and distribution factors defined by $\mathbf{z} = (z_1, \ldots, z_K)'$ with K the total number of available distribution factors. An interpretation of μ is that it represents the relative bargaining power of the household members in the allocation process. A variation on elements of $\mathbf{z}$ could impact outside options of household members and thus their intrahousehold bargaining power. Because distribution factors do not enter preferences nor the household budget constraint but do affect the decision process, their influence upon household behavior provides a powerful testable

restriction for the collective model.[2]

The solution to (P1) implies a set of differentiable household demand functions for goods and leisure that depend on prices, full income, preference factors, and the distribution function:

$$\mathbf{q} = \mathbf{g}\Big[w^m, w^f, y, \mu(w^m, w^f, y, \mathbf{z}); \xi\Big], \tag{1}$$

for all commodities $\mathbf{q} = (\mathbf{c}, \ell, C)'$ with $\mathbf{c} = (c^m, c^f)'$ and $\ell = (\ell^m, \ell^f)'$.

Distribution factor proportionality. As explained by Bourguignon, Browning, and Chiappori (2009), in a setting with no price variation distribution factor proportionality is necessary and sufficient for collective rationality.[3] Assuming the existence of at least two distribution factors, this condition entails testing a set of cross-equation restrictions based on the estimation of the household demand system (1):

$$\frac{\partial c^m/\partial z_1}{\partial c^m/\partial z_k} = \frac{\partial c^f/\partial z_1}{\partial c^f/\partial z_k} = \frac{\partial \ell^m/\partial z_1}{\partial \ell^m/\partial z_k} = \frac{\partial \ell^f/\partial z_1}{\partial \ell^f/\partial z_k} = \frac{\partial C/\partial z_1}{\partial C/\partial z_k} \qquad \forall \;\; k = 2, \ldots, K. \tag{2}$$

The intuition of equation (2) is that distribution factors ($\mathbf{z}$) only affect the intrahousehold allocation of consumption and leisure through their impact on the distribution function (μ). For example, take the marginal change in distribution factor z_k on the household demand for commodity j:

$$\frac{\partial g_j}{\partial z_k} = \frac{\partial g_j}{\partial \mu}\frac{\partial \mu}{\partial z_k}. \tag{3}$$

Comparing the effect of two distribution factors, z_1 and z_2, we get:

[2] In axiomatic bargaining models, variables that are only applicable for threat points of the bargaining process can be potential distribution factors. See the discussion about extrahousehold environmental parameters in McElroy (1990) and bargaining models in Browning, Chiappori, and Weiss (2014).

[3] The first notions of the proportionality condition with only private consumption are introduced in Bourguignon et al. (1993) and Browning et al. (1994). Bourguignon, Browning, and Chiappori (2009) extend these results for public goods and externalities in consumption.

$$\frac{\partial g_j/\partial z_1}{\partial g_j/\partial z_2} = \frac{\partial \mu/\partial z_1}{\partial \mu/\partial z_2}, \tag{4}$$

where the right-hand-side term in equation (4) is independent of the demand for good j.

z-conditional demand system. An alternative demand system is the z-conditional system introduced by Bourguignon, Browning, and Chiappori (2009). Under the assumption that distribution factor z_1, say, is strictly monotonic on commodity ℓ^m, say, it is possible to invert the demand function for such good on this (continuous) factor:

$$z_1 = \nu(w^m, w^f, y, \ell^m, \mathbf{z}_{-1}; \xi), \tag{5}$$

where $\mathbf{z}_{-1} = (z_2, \ldots, z_K)'$ excludes the first element of $\mathbf{z}$.[4] Substituting (5) into the demand for the remaining goods $\mathbf{\Phi}(\cdot)$, we get the z-conditional demand system for $\tilde{\mathbf{q}} = (\mathbf{c}, \ell^f, C)'$:

$$\begin{aligned} \tilde{\mathbf{q}} &= \mathbf{\Phi}(w^m, w^f, y, \mathbf{z}; \xi), \\ &= \mathbf{\Phi}\left[w^m, w^f, y, \nu(w^m, w^f, y, \ell^m, \mathbf{z}_{-1}; \xi), \mathbf{z}_{-1}; \xi\right], \\ &= \tilde{\mathbf{g}}(w^m, w^f, y, \ell^m, \mathbf{z}_{-1}; \xi). \end{aligned} \tag{6}$$

The restriction of the collective model based on the estimation of the (conditional) demand system in equation (6) states that subject to the conditioning good (ℓ^m), the demand for the remaining commodities should be independent of all other distribution factors. This translates into the following testable implication:

$$\frac{\partial \tilde{\mathbf{g}}(w^m, w^f, y, \ell^m, \mathbf{z}_{-1}; \xi)}{\partial z_k} = 0 \qquad \forall \; k = 2, \ldots, K. \tag{7}$$

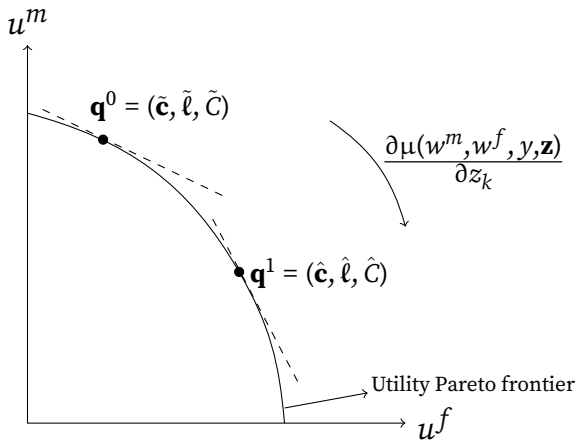
The restriction described in equation (7) implies that, conditional on the commodity used to invert z_1, additional distribution factors should not provide any meaningful

[4] Appendix C provides evidence that supports monotonicity between male leisure time and one of the distribution factors presented in Section 4. This evidence is used in the empirical application when testing the collective model.

additional information about the intrahousehold behavior. It is important to note that for this restriction to have empirical significance, it requires at least two distribution factors and at least two demand functions.[5]

Although the testable implication in equation (7) is empirically more powerful than implication (2), which is why it is used as a robustness check in the empirical application, both restrictions capture the same underlying mechanism.[6] The intuition behind these restrictions is illustrated in Figure 1. Suppose we observe an optimal household demand function that is relatively more representative of the husband's (m) preferences, such as $\mathbf{q}^0$. Now, assume that we want to reallocate intrahousehold resources in a manner that is more favorable to the wife's (f) preferences, resulting in household decisions represented by $\mathbf{q}^1$. The testable restrictions of the collective model inform us that variations in the distribution factors $\mathbf{z}$ would only impact such a reallocation of resources by shifting the individual bargaining weights. In other words, the effect of distribution factors on household behavior is one-dimensional as they only operate through the distribution function (μ).

FIGURE 1. The collective effect



Source: Based on Browning, Chiappori, and Weiss (2014).

[5]There is recent evidence about jointness of time in the household or work-related expenses (e.g., Cosaert, Theloudis, and Verheyden (2023)). For simplicity, the tests presented in this section abstract from any explicit form of leisure-leisure or leisure-consumption complementarity between partners. Browning, Chiappori, and Weiss (2014) provides some discussion about the proportionality condition and the restrictions for the conditional demands in a framework with the production of domestic goods. Fong and Zhang (2001) provides a theoretical discussion about the identification of the collective model in the presence of distribution factors and of leisure that is partly private and partly public. I thank one anonymous referee for pointing this out.

[6]Exclusion tests for single equations prove to be more robust compared to equality tests for parameter equations. See Proposition 2 in Bourguignon, Browning, and Chiappori (2009) and the discussion thereof.

3. Data

Sample selection and summary statistics. I use a sample of Dutch households obtained from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) panel gathered by CentERdata. This dataset provides rich information on economic and sociodemographic variables. Crucially, it also collects detailed data on individual consumption and a set of member-specific personality scales.

The sample selection criteria for this study are similar to those used in other studies using the LISS panel such as Cherchye et al. (2017) and Cherchye, De Rock, and Vermeulen (2012). Couples included in the sample must have both adults between the ages of 25 and 65. Both adults in the couple must participate in the labor market for at least 10 hours per week, as wage information is required. Couples with at least one self-employed adult are excluded from the sample to avoid potential imputation of wages and the separation of consumption from work-related expenses. The sample includes only couples with no additional household members apart from children residing in the household. Due to significant imbalance issues in the panel structure of the data, I do not make use of the panel structure and treat the data as a pooled cross-section.[7] Overall, the sample consists of 1016 couples pooled from five different years, ranging from 2009 to 2017.

Table 1 provides summary statistics for the main variables used in the analysis. All economic variables listed in Panel A are in weekly real terms.[8] In our collective labor supply setting, couples allocate their full income to spouses' leisure time and remaining private and public expenditures. Full income is defined as the sum of spouses' wages multiplied by the total available time (i.e., 112) plus any non-labor income of the household.[9] Leisure for each partner is derived by subtracting the hours worked by each individual from the total available time. The dataset includes information on assignable expenditures for each household member.[10] In the empirical analysis, these individual

[7] Refer to Theloudis et al. (2025) for a recent discussion about the theoretical assumptions and empirical requirements that would be needed under a dynamic collective setting.

[8] The definition of the economic variables presented in Table 1 follows from Cherchye et al. (2017). The consumption choices used in the construction of private and public expenditures are standard across papers using the LISS data (e.g., Cherchye, De Rock, and Vermeulen (2012) or Cherchye et al. (2017)).

[9] We assume that an individual needs 8 hours per day for sleeping and personal care activities, which implies a total of 112 available weekly hours for market work and leisure time.

[10] The assignable good categories are food at home and outside home, tobacco, clothing, personal care products and services, medical care and health costs not covered by insurance, (further) schooling expenditures, donations and gifts, and other personal expenditures. In the LISS data, respondents were asked how much of the household food expenditures were personally consumed (not with other members of the household).

expenditures are treated as a Hicksian aggregate commodity. Total private consumption is defined as the sum of both spouses' total assignable private expenditures plus spouses' leisure time evaluated at market wages. Household expenditures are calculated as the sum of nonassignable public expenditures and assignable private expenditures (excluding leisure consumption).[11] Just like assignable expenditures, public expenditures are considered a Hicksian aggregate commodity in the empirical exercise.

As shown in Table 1, females work fewer hours and have lower wages compared to males. In terms of assignable consumption, females spend slightly more per week than males. The majority of total household consumption comes from public expenses. Females allocate more time to leisure activities than males, although a detailed breakdown of non-labor time is not available.[12] When testing the collective model in the empirical exercise, the demand systems in equations (1) and (6) are estimated in budget shares (Bobonis 2009). The share of each consumed commodity over household full income is shown in Panel B of Table 1 (in percentages). Demographically, males are slightly older and have a higher educational level compared to females.

Personality traits. The spouses' personality traits in this study are measured using three different sources. The first source is Rosenberg's Self-Esteem Scale (Rosenberg 1965), which assesses individuals' perceptions of their self-worth. The second source is the Need For Cognition Scale (Cacioppo and Petty 1982), which serves as a proxy for an individual's inclination to engage in intellectual activities. The third source is the Big Five Personality Traits questionnaire (Goldberg 1990, 1992), which captures personalities based on five overarching dimensions: agreeableness, conscientiousness, neuroticism, extraversion, and openness to experiences.[13]

Out of the total of 1016 couples in the sample, valid information on personality traits is available for 519 couples. For household members with missing personality

[11]The nonassignable consumption includes mortgage, rent, utilities, transport, insurance, daycare, alimony, debt, holiday expenditures, housing expenditures, other public expenditures, and child expenditures.

[12]Data about the individual time allocated to household chores is only available in three waves.

[13]The Rosenberg Self-Esteem Scale and the Need for Cognition Scale alongside the Big Five Personality Traits in an analysis offer advantages as several aspects of the two scales are not directly addressed in the Big Five. For instance, high-order factors of the Big Five model are not entirely explained by self-esteem (Erdle, Gosling, and Potter 2009). Similarly, the Need for Cognition scale may be more effective in measuring aspects related to intelligence, such as motivation for cognitive challenge (Furnham and Thorne 2013). To construct the seven personality measures, I consider individual questions with high loading values from exploratory factor analysis as in Flinn, Todd, and Zhang (2018) and Todd and Zhang (2020). These personality measures demonstrate high internal consistency, as indicated by Cronbach's alphas exceeding 0.7.

information, the values are imputed by averaging observed personality scores from other waves for that same household member. This imputation approach takes into account the stability of personality traits over time, which has been suggested by several studies.[14] I test various imputation methods, such as using the median value, but the main results remain robust (refer to Table D3 in Appendix D). Looking at Panel D of Table 1, on average, males tend to have higher values than females in measures of self-esteem, extraversion, and cognitive engagement. In contrast, females tend to score higher than males in conscientiousness, neuroticism, and agreeableness. Both males and females exhibit similar levels of openness. These gender differences in personality traits align with findings from previous studies conducted on Dutch samples (e.g., Nyhus and Pons (2005) or Dupuy and Galichon (2014)). Importantly, the gender differences in personality traits observed in the entire sample remain virtually unchanged even after the imputation of missing personality traits (Table A1, Appendix A.2).

4. Empirical strategy

In this section, I discuss the measures of *relative* personality traits that are employed to examine the restrictions of the collective model outlined in Section 2. These relative measures capture differences between spouses in personality traits that are relevant for labor market outcomes. The functional form for the household demand functions is also introduced. From these demand functions, several testable implications can be derived to assess the validity of the collective model.

Personality and labor market outcomes. Establishing a link between personality and distribution factors requires the conjecture that some of the seven traits could affect an individual's outside option in marriage. A natural way to conceptualize the outside option is in terms of an individual's comparative advantage in the labor market relative to their partner. Several studies have demonstrated that labor market outcomes, such as wage offers and job stability, depend significantly on an individual's agreeableness, conscientiousness, neuroticism, and cognitive level.[15] Based on this evidence, I hypoth-

[14] See, e.g., Cobb-Clark and Schurer (2012), Todd and Zhang (2020) or Fitzenberger et al. (2022). See Appendix A.1 for the stability of personality traits in the current sample.

[15] Almlund et al. (2011) show that conscientiousness, agreeableness, and neuroticism have a crucial role in determining job performance and wages by influencing occupational choices and job search, incentive scheme selection, absenteeism, and turnover. For instance, under a job search approach, Flinn, Todd, and Zhang (2020) show that higher levels of conscientiousness and lower levels of agreeableness and neuroticism increase hourly wages and promote greater job stability. See Heckman, Jagelka, and Kautz (2021) for a recent revision. On top of psychological traits, cognition also has a relevant role in labor

TABLE 1. Summary statistics.

	Mean	Std. dev.	Min	Max
Panel A– Economic Variables:				
Male wage rate	13.74	3.74	6.88	29.90
Female wage rate	12.18	3.13	4.26	21.80
Male weekly hours worked	37.40	4.91	12	60
Female weekly hours worked	26.29	7.95	10	48
Assig. male private expenditures	91.04	52.54	15	453.72
Assig. female private expenditures	96.07	53.86	19.96	507.66
Total private consumption (incl. leisure)	2260.55	472.31	1142.50	4089.12
Public expenditures	584.05	231.20	102.96	1898.35
Household expenditures (excl. leisure)	771.17	258.11	173.21	2284.98
Full income (total consumption)	2844.60	577.74	1357.20	4770.11
Male weekly leisure	74.59	4.91	52	100
Female weekly leisure	85.70	7.95	64	102
Panel B– Consumed Commodities Shares (%):				
Share male leisure	36.14	6.92	17.50	72.21
Share female leisure	36.77	7.28	14.90	64.25
Share male private consumption	3.24	1.84	0.44	14.24
Share female private consumption	3.47	1.92	0.50	14.55
Share public consumption	20.35	6.10	3.68	44.62
Panel C– Demographic Characteristics:				
Male age	47.51	9.75	25	65
Female age	45.57	9.85	25	65
Number of children	1.14	1.10	0	5
Male high school graduates (proportion)	62.70	–	–	–
Female high school graduates (proportion)	65.45	–	–	–
Male university graduates (proportion)	37.30	–	–	–
Female university graduates (proportion)	34.55	–	–	–
Panel D– Personality Traits:				
Male openness	3.06	0.26	1.37	3.87
Female openness	3.07	0.28	1.87	3.87
Male extraversion	3.19	0.50	1.50	4.50
Female extraversion	3.13	0.51	1.33	4.50
Male agreeableness	3.08	0.23	2.00	3.75
Female agreeableness	3.17	0.18	2.37	3.62
Male neuroticism	2.29	0.56	1.11	4.22
Female neuroticism	2.57	0.58	1.05	4.33
Male conscientiousness	2.79	0.25	1.88	3.66
Female conscientiousness	2.86	0.23	1.77	3.55
Male self-esteem	5.99	0.64	3.80	7.00
Female self-esteem	5.85	0.72	3.70	7.00
Male cognitive engagement	4.79	0.83	2.66	7.00
Female cognitive engagement	4.45	0.80	2.41	6.75

Notes: Sample size of 1016 couples. LISS waves 2009, 2010, 2012, 2015, and 2017 pooled up. All economic variables are in weekly 2015 euros. Feasible values of the personality traits: self-esteem (1 to 7); cognitive engagement (1 to 7), and all Big Five traits (1 to 5).

market outcomes (Heckman, Stixrud, and Urzua (2006)). For example, in a dynamic model of schooling and occupational choices, Todd and Zhang (2020) show that individuals with higher cognitive skills tend to work in the white-collar sector. There is suggestive evidence that our measure of cognitive engagement

esize that the relative levels of this subset of traits between spouses may influence the distribution of bargaining power within the household. Better scores in any of these traits could enhance an individual's competitiveness in the labor market, *ceteris paribus,* subsequently improving their intrahousehold position relative to their partner's.[16]

Admittedly, stronger labor market-valued personality traits could to some extent reflect the role of relative earnings between spouses, which are traditionally used as a distribution factor (e.g., Browning et al. (1994)). However, adding relative personality traits into the study of intrahousehold behavior may offer a more nuanced understanding of bargaining dynamics. Unlike earnings, which provide a snapshot of labor market productivity, personality traits may be linked to a wider array of social skills that high-paying jobs increasingly require (Deming 2017) and that are valuable across different social contexts (Kambourov et al. 2013).

Principal Component Analysis. To construct the spouses' relative measure of personalities that are attractive to the labor market, I employ Principal Component Analysis (PCA). This method addresses potential issues of multicollinearity between personality traits and identifies the principal components, which are linearly uncorrelated factors, that explain the majority of the variance in the observed data. The principal components capture the multivariate interactions among traits and account for the fact that traits can be better interpreted in combination rather than in isolation (e.g., Lattin, Carroll, and Green (2004)).

Table 2 presents the correlations between the principal components (PCs) and the individual personality traits, as well as the eigenvalues and the share of observed variance explained by each PC. The results indicate that the two principal components capture distinct aspects of personality. The first PC may describe organized and disciplined individuals, as reflected by the high loading in conscientiousness. At the same time, PC1 reflects individuals loading high in neuroticism. On the other hand, the second PC may represent emotionally stable individuals who enjoy relatively more intellectual activities, as denoted by the loadings of neuroticism and cognitive engagement. Both PCs have a relatively similar loading in agreeableness, which describes the tendency to act cooperatively and unselfishly. The eigenvalues and the proportion of observed variance

(i.e., the NFC scale) highly relates to an individual's cognitive level and intelligence (Fleischhauer et al. (2010) and Strobel et al. (2019)).

[16]Appendix E presents several goodness-of-fit measures that support the model presented in this section. I compare this model with an alternative version where all seven personalities are considered to construct the distribution factors explained below (instead of considering the subset of four personalities that are attractive to the labor market for which we have consistent evidence).

explained by each PC reflect their relative importance in explaining the variability in the original personality traits.

As shown in the figures displayed in Appendix B, the PCs are correlated with labor market productivity. Wage rates of men and women are (mildly) negatively correlated with PC1, which may be because PC1 primarily reflects individuals with high neuroticism despite the strong positive loading of conscientiousness. Conversely, wage rates are positively correlated with PC2, which is somewhat expected given the high loading on cognitive engagement and the negative loading on neuroticism.

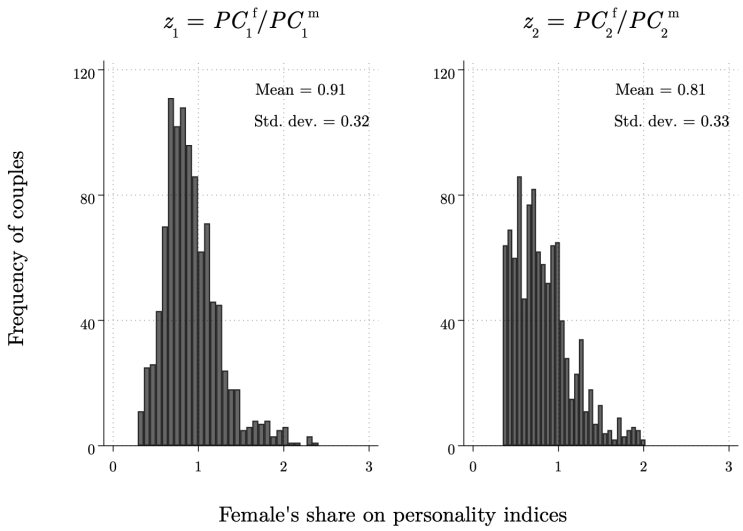
Next, I construct the relative measures of personality between spouses, which are used to test the restrictions of the collective model. For each couple in the sample, the relative endowment of personality between partners is calculated by constructing the ratio of spouses' principal components. These ratios represent how attractive to the labor market the personalities of a spouse are relative to her partner. In our empirical application, these ratios are treated as continuous measures and tested as distribution factors in the collective consumption model presented in Section 2. To facilitate comparison and analysis, the PCs are scaled from 1 to 100, considering that they can take negative values. Figure 2 displays the distribution of these ratios. On average, women tend to have lower values in both personality factors.

Table 2. Principal components

Personality:	**PC1**	**PC2**
1. Agreeableness	0.56	0.48
2. Conscientiousness	0.73	0.30
3. Neuroticism	0.66	-0.48
4. Cognitive engagement	-0.20	0.80
Eigenvalue	1.14	1.09
Variance share	33.04%	29.90%

Notes: Explained share of the observed variance: 62.95%. The table indicates the loadings of each personality trait on each component.

Figure 2. Within-couple differences in personality traits



Parametrization of unconditional demand functions. To test the restrictions of the collective model, a functional form for the household demand functions needs to be specified. I parametrize the unconditional demand functions $\mathbf{q} = (\mathbf{c}, \ell, C)$ in budget share form as:

$$\omega_j = \alpha_j + \ln(\mathbf{z}')\boldsymbol{\beta}_j + a_j(y) + b_j(y^2) + \ln(\mathbf{w}')\boldsymbol{\lambda}_j + \boldsymbol{\xi}'\boldsymbol{\gamma}_j + \mathbf{m}'\boldsymbol{\psi}_j + \boldsymbol{\tau}_j + \varepsilon_j, \tag{8}$$

where for each couple in the sample, ω is the budget share on commodity j, a and b are functions of full income and its square, $\mathbf{w}$ includes partners' wages and their interaction, $\boldsymbol{\xi}$ is a vector of taste shifters, $\boldsymbol{\tau}$ are time dummies capturing heterogeneity over time, and ε is unobserved heterogeneity. Prices of composite goods, which are normalized to one, are assumed to enter through $\boldsymbol{\tau}$. The vector $\mathbf{z}$ includes the relative endowment of personality traits that are attractive to the labor market, i.e., ratios of PCs between partners of a household. The additional control $\mathbf{m}$ is detailed below.[17]

One potential source of endogeneity in equation (8) is the endogenous selection of

[17]The semilog system in equation (8) has several desirable properties. For instance, it allows for a straightforward interpretation of the coefficient estimates in the empirical model and the linearity in parameters eases its estimation (e.g., Bobonis (2009)). Also, the system does not impose any equality conditions of the collective model. By including the interaction of the spouses' (log) wages, the system captures how the effect of one spouse's earnings on budget shares is moderated by the earnings of the other spouse (e.g., Chiappori, Fortin, and Lacroix (2002)).

couples in the marriage market, wherein individuals may form couples based on their respective personality traits. Despite the limitations of the current dataset, I address this potential issue in two ways.[18] First, the vector of taste shifters (ξ) includes, besides the spouses' education, age, and number of children, the *level* of the seven personality traits of each spouse and their squares. I include the squares to accommodate for potential nonlinearity in the influence of personality on preferences over commodities, as suggested in the analysis of Borghans et al. (2008). The introduction of personality traits through the vector ξ, allows me to test whether personality impacts intrahousehold behavior by changing preferences over consumed commodities. Second, in all specifications, I incorporate the vector $\mathbf{m}$ to account for marriage market conditions with respect to personality, as discussed in Dupuy and Galichon (2014). This vector incorporates the weighted ratios of the number of husbands and wives who are of similar age and educational level and who have the same score in a given personality trait as the husband or wife of each household, divided by the corresponding number of husbands or wives. These ratios, referred to as *marriage market personality ratios,* are akin to the sex ratio concept in Chiappori, Fortin, and Lacroix (2002) and serve to control for the underlying structure of the marriage market in the sample with respect to personality traits.

The proportionality restriction imposed by collective rationality (as expressed in equation (2)) on the system of unconditional demand functions can be formulated as follows:

$$\begin{aligned} \frac{\partial \omega_j / \partial \ln(z_1)}{\partial \omega_j / \partial \ln(z_2)} &= \frac{\partial \omega_s / \partial \ln(z_1)}{\partial \omega_s / \partial \ln(z_2)}, \\ \frac{\beta_{j1}}{\beta_{j2}} &= \frac{\beta_{s1}}{\beta_{s2}} \end{aligned} \tag{9}$$

for all goods j, s, with $j \neq s$. If condition (9) is satisfied, we cannot reject the hypothesis that *differences* in personality between partners impact resource allocation by (only) changing the intrahousehold distribution function.

To test the nonlinear cross-equation restrictions presented in equation (9), the model is estimated as a system, allowing for correlation between the error terms across the budget shares equations. The cross-equation hypotheses are then examined using Wald

[18] Fully addressing selection in personality traits, such as through the estimation of a structural matching model, is beyond the scope of this paper.

test formulations. It is important to note that these formulations may be subject to low statistical power. For instance, in OLS systems, Wald tests tend to overreject the null hypothesis, and they are not invariant to the definition of the null hypothesis (Greene 2003). To address these concerns, I adopt a similar approach to that of Bobonis (2009). Firstly, the Wald tests are conducted using the bootstrap distribution with 200 replications.[19] Secondly, as a robustness check of the main results, linear Wald tests are computed based on the estimation of the z-conditional demand system proposed by Bourguignon, Browning, and Chiappori (2009).

Parametrization of the z-conditional demand system. Under the additional assumption that one distribution factor is strictly monotone in one good, we can derive the demand for that good as a function of the distribution factor. In my analysis, I find suggestive evidence indicating the presence of a monotonic correlation between factor $z_1 = PC_1^f/PC_1^m$ and male leisure time (ℓ^m).[20]

In budget share form, the demand for male leisure consumption (ℓ^m) inverted on z_1 is given by:

$$\begin{aligned}\ln(z_1) \;=\; & \frac{1}{\beta_{\ell m 1}}\Big[\omega_{\ell m} - \alpha_{\ell m} - \beta_{\ell m 2}\ln(z_2) - a_{\ell m}(y) - b_{\ell m}(y^2) \\ & - \ln(\mathbf{w}')\boldsymbol{\lambda}_{\ell m} - \boldsymbol{\xi}'\boldsymbol{\gamma}_{\ell m} - \mathbf{m}'\boldsymbol{\psi}_{\ell m} - \boldsymbol{\tau}_{\ell m} - \varepsilon_{\ell m}\Big].\end{aligned} \tag{10}$$

Substituting equation (10) in $\tilde{\mathbf{g}}(w^m, w^f, y, \ell^m, \mathbf{z}_{-1}; \xi)$, the demand for the remaining goods, we obtain the z-conditional demand system:

$$\begin{aligned}\omega_s \;=\; & \varphi_s + \theta_s \ln(z_2) + \frac{\beta_{s1}}{\beta_{\ell m 1}}\omega_{\ell m} + \Xi_s \\ & - \frac{\beta_{s1}}{\beta_{\ell m 1}}\Big[a_{\ell m}(y) + a_{\ell m}(y^2) + \ln(\mathbf{w}')\boldsymbol{\lambda}_{\ell m} + \boldsymbol{\xi}'\boldsymbol{\gamma}_{\ell m} + \mathbf{m}'\boldsymbol{\psi}_{\ell m} + \boldsymbol{\tau}_{\ell m}\Big] + \zeta_s,\end{aligned} \tag{11}$$

where

[19] Specifically, to reduce the overrejection bias of the test, I estimate the corresponding p-value of the test statistic using the percentile F interval of the statistic based on its bootstrap distribution after 200 replications (Rilstone and Veall 1996).

[20] Refer to Appendix C for detailed evidence on the monotonicity assumption. It is important to note that for the collective test based on the conditional demand system presented in this section, z_1 needs to be both continuous and statistically significant. For a recent discussion on this topic, see De Rock, Potoms, and Tommasi (2022).

$$
\begin{aligned}
\Xi_s &= a_s(y) + b_s(y^2) + \ln(\mathbf{w}')\boldsymbol{\lambda}_s + \boldsymbol{\xi}'\boldsymbol{\gamma}_s + \mathbf{m}'\boldsymbol{\psi}_s + \boldsymbol{\tau}_s, \\
\varphi_s &= \alpha_s - \frac{\beta_{s1}}{\beta_{\ell^m 1}}\alpha_{\ell^m}, \\
\theta_s &= \beta_{s2} - \frac{\beta_{s1}}{\beta_{\ell^m 1}}\beta_{\ell^m 2}, \\
\zeta_s &= \varepsilon_s - \frac{\beta_{s1}}{\beta_{\ell^m 1}}\varepsilon_{\ell^m}
\end{aligned}
$$

for all goods $s \neq \ell^m$.

The testable restriction imposed by the collective model on the z-conditional demand system (as depicted in equation (7)), can be stated as follows:

$$
\frac{\partial \omega_s}{\partial \ln(z_2)} = \theta_s = 0 \qquad \forall \; s \neq \ell^m. \tag{12}
$$

Restriction (12) implies that once we condition the demand for the remaining goods on the demand for ℓ^m, which is monotonically related to z_1, the additional variation provided by z_2 does not play a significant role in determining the household equilibrium. This condition is equivalent to the requirement of distribution factor proportionality, as discussed in Bourguignon, Browning, and Chiappori (2009). We test the collective model through a joint test of the estimated parameter associated with the personality factor (z_2) in each budget share equation in system (11). The exclusion restriction stated in equation (12) carries greater empirical power compared to the cross-equation restrictions presented in (9). This observation further strengthens the robustness of the estimation results obtained for the unconditional demand system.

Endogeneity of the conditioning good in the z-conditional system. One important source of endogeneity that arises from the estimation of the system (11), is the fact that the share of male leisure time (ω_{ℓ^m}) is not independent of the new compound error term (ζ_s). The instrument that identifies the model is suggested directly by the theory and by the z-conditional test: the distribution factor used to invert the demand of the conditioning good satisfies the common requirements for valid instrumental variables. This is because, conditional on the demand for ω_{ℓ^m} in equation (11), no other distribution factor affects the demand for any commodity $s \neq \ell^m$ (e.g., Attanasio and Lechene (2014)). In estimating equation (11), I employ a control function approach by

incorporating the residuals from the first stage of the conditioning good as well.[21]

5. Empirical results

In this section, I delve into the mechanisms through which personality traits may influence household behavior, specifically by directly affecting individual preferences and the bargaining weights of spouses. I present the estimates of both the unconditional demand system and the z-conditional demand system introduced earlier. Towards the conclusion of this section, I provide suggestive evidence regarding the connection between personality and intrahousehold consumption inequality.

Personality and preferences. To study whether personality traits can influence preferences for consumed commodities, I estimate the unconditional demand system in equation (8) using ordinary least squares (OLS). To account for heteroskedasticity, I use robust standard errors and cluster the standard errors at the household level. The specifications include the following control variables: a linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the spouses' ages and their square, the spouses' educational level; the number of children the couple has; the marriage market personality ratios; and survey-year dummies. Moreover, the personality traits of each spouse enter the unconditional demand system in levels and squared, and through the vector of distribution factors.

Figure 3 illustrates the influence of personality traits in *levels* on budget shares, with the estimates sorted by magnitude. In general, personality traits have a direct impact on preferences regarding consumed commodities, and this impact varies across genders. Firstly, it is evident that not all personality traits have a significant impact, and the effects vary in magnitude. Secondly, there is a consistently significant effect of conscientiousness and agreeableness across genders. Thirdly, certain personality traits, such as self-esteem, are relevant for male preferences but not female preferences. Similarly, cognitive engagement matters more for female preferences than for male preferences. Finally, in some instances, such as conscientiousness or agreeableness, the direction of the estimates differs between men and women, indicating contrasting effects. Overall, these results are in line with the fact that a part of economic preferences can be mapped into psychological traits (see Borghans et al. (2009) for the relationship

[21] Control functions for testing collective rationality are also used by Bobonis (2009); Attanasio and Lechene (2014); De Rock, Potoms, and Tommasi (2022).

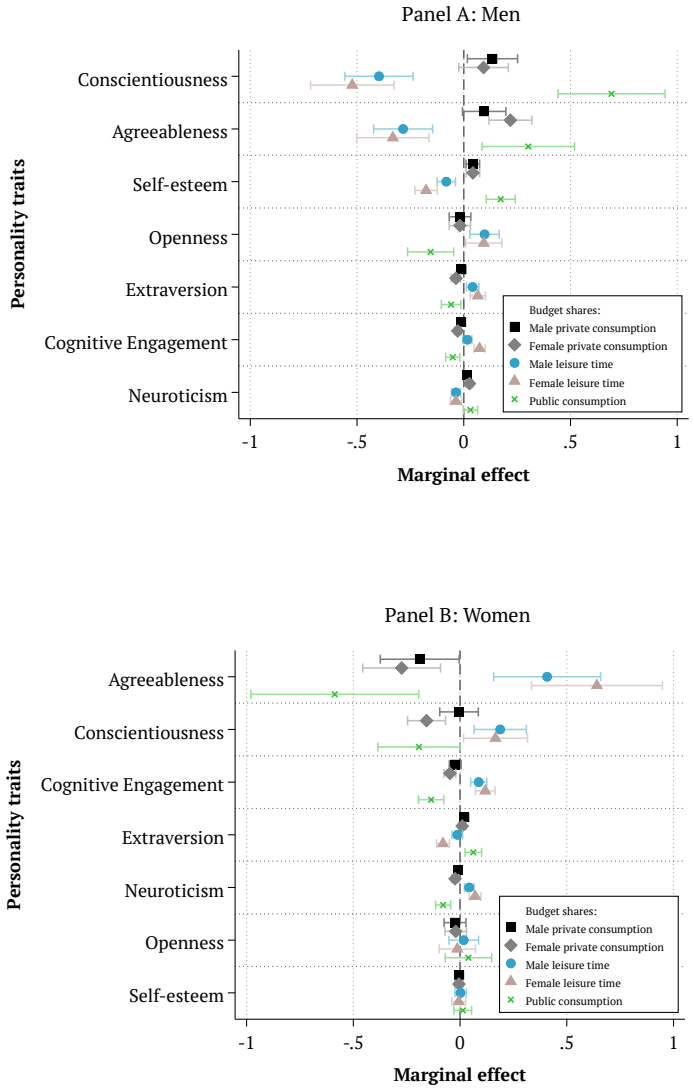
between agreeableness and risk preferences, and Jagelka (2024) for the association between conscientiousness and time preferences). Moreover, the Big Five personality traits have been related to household saving behavior and the acquisition of personal loans for individual consumption (Brown and Taylor 2014).

Personality and bargaining weights. Next, I explore the role that personality has in the bargaining process within households. Table 3 presents the estimates of the unconditional demand system for *relative* personalities between spouses that may influence an individual's competitiveness in the labor market. Firstly, it is observed that the relative endowments of personality between spouses have a significant impact on all commodities except male private consumption although the second personality factor is borderline significant in relation to male consumption. Both personality factors positively affect female private consumption and public expenditures, but negatively influence the allocation of leisure. This result may be driven by the possible relationship between relative personality, labor market productivity, and labor supply. Secondly, both distribution factors have a relatively similar average effect across goods. Thirdly, the ratios of the estimated coefficients of the distribution factors across commodities are around 1 in all specifications. These proportional average effects across commodities are supported by the results of the (bootstrapped) proportionality test presented at the bottom of Table 3. This evidence suggests that relative personality influences an individual's share of resources within a family, but solely through its impact on the distribution of power within the household. Overall, our results are in line with the results of the Pareto weight functions estimated in Flinn, Todd, and Zhang (2018), where agreeableness, neuroticism, and conscientiousness were significant determinants of intrahousehold bargaining weights.[22]

Table 4 presents the estimates of the z-conditional demand functions based on equation (11), estimated using a control function approach. In the control function approach, I incorporate the residuals obtained from a first-stage regression of male leisure time into the demand for the other commodities. The same control variables are used as in the unconditional demand equations. It should be noted that the conditioning good is ℓ^m, and the relative level of PC1 is employed to invert the demand for this good. Importantly, both personality factors have a significant impact on the budget share

[22]These results are robust to using only the subset of households for which personality traits were not imputed; see Table D1 in Appendix D for details. These results are also robust to the use of alternative imputation methods for personality traits; see Table D2 in Appendix D. These results are also robust to the use of personality ratios based on all seven traits instead of the subset of traits defining a partner's labor market attractiveness (for space limitations, these results are available upon request).

Figure 3. OLS estimates of the effect of personality traits on preferences over consumed commodities. System of unconditional demand functions.



Notes: Estimated OLS coefficients of the system of unconditional demand functions in equation (8). Estimates are sorted by size. Sample size: 1016 couples. Panel A: personality traits of the man. Panel B: personality traits of the woman. Additional controls: a linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; spouses' ages and their square; spouses' educational level; the number of children the couple has; and the marriage market personality ratios. Robust standard errors clustered at the household level are in parentheses. Confidence intervals constructed at 90% of confidence.

Table 3. OLS estimates of the effect of relative personality on household consumption. System of unconditional demand functions.

	Dependent variable: budget share				
	ω_{cm}	ω_{cf}	$\omega_{\ell m}$	$\omega_{\ell f}$	ω_C
$\ln(\frac{PC1^f}{PC1^m})$	0.014	0.054***	-0.075***	-0.077**	0.083**
	(0.014)	(0.013)	(0.024)	(0.030)	(0.035)
$\ln(\frac{PC2^f}{PC2^m})$	0.020	0.029**	-0.065***	-0.074***	0.090***
	(0.013)	(0.012)	(0.024)	(0.026)	(0.031)
Additional covariates	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes
Proportionality test	$\chi^2(4) = 2.563$ (p–value = 0.642)				

Notes: Sample size of 1016 couples. Robust standard errors clustered at the household level are in parentheses. *PC*: principal component. I estimate the proportionality test's p–value on its bootstrap distribution over 200 replications. Additional covariates: linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the spouses' ages and their square; the spouses' educational level; the number of children the couple has; the log of spouses' personality traits in levels and their squares; and marriage market personality ratios.
Significant with at least 90% of confidence: *
Significant with at least 95% of confidence: **
Significant with at least 99% of confidence: ***

equation of ℓ^m. The most compelling evidence is obtained from estimations where the budget share equation is responsive to both factors (De Rock, Potoms, and Tommasi 2022). Additionally, the relative levels of PC1 and PC2 are statistically significant in four out of five budget share equations (see Table 3). However, in the z-conditional demand system (Table 4), the relative level of PC2 is not significant in any case and the magnitude of the estimates is close to zero. The insignificance of the estimates partially comes from the decrease in the magnitude of the estimates which adds to the evidence for the collective model. These results suggest that the impact of relative personality is indeed one-dimensional, meaning that relevant information regarding the intrahousehold allocation of resources is *completely* summarized by the share of male leisure time. Crucially, this finding is confirmed by the result of the collective test at the bottom of Table 4.

Personality and intrahousehold consumption inequality. After providing theory-based evidence that preferences and bargaining are some channels through which personality can affect the allocation of resource inside households, it is important to explore the relationship between personality and within-family inequality. Following the approach of Cherchye et al. (2020), I analyze intrahousehold consumption inequality using the women and men relative individual cost of equivalent bundle (RICEB). For a given couple, these bundles are defined as follows:

Table 4. OLS estimates of the effect of relative personality on household consumption. System of z-conditional demand functions.

	Dependent variable: budget share			
	ω_{cm}	ω_{cf}	$\omega_{\ell f}$	ω_C
$\ln(\frac{PC2^f}{PC2^m})$	0.008	-0.013	-0.015	0.019
	(0.012)	(0.010)	(0.021)	(0.022)
Additional covariates	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
Collective test	$\chi^2(4) = 6.380$ (p–value = 0.270)			

Notes: Sample size of 1016 couples. Robust standard errors clustered at the household level are in parentheses. *PC*: principal component. The conditioning good is ℓ^m. I estimate the collective test's p–value on its bootstrap distribution over 200 replications. Additional covariates: linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the spouses' ages and their square; the spouses' educational level; the number of children the couple has; the log of spouses' personality traits in levels and their squares; and marriage market personality ratios.

$$\text{RICEB}^i = \frac{c^i + w^i \ell^i + C}{y} \qquad \text{with } i \in \{m, f\}. \tag{13}$$

Member-specific RICEBs describe how household members allocate consumption relative to the household's full income, taking into account both scale economies and the intrahousehold division of resources, thus providing an assessment of individual welfare.[23] In this study, intrahousehold consumption inequality is proxied by the difference between partners' RICEBs, specifically RICEB^f minus RICEB^m.

Next, I define a female personality fraction as $r_n = p_n^f/(p_n^f + p_n^m)$, with p_n^i being the observed score of spouse i in personality $n \in$ {agreeableness, conscientiousness, neuroticism, cognitive engagement}. This set of traits defined the indices of labor market competitiveness introduced in Section 4. I examine the distribution of intrahousehold consumption inequality for three categories of couples based on r_n: (a) households where the female fraction of a specific personality trait is *above* the 80th percentile of the distribution of all female fractions; (b) households where the female fraction of a specific personality trait is *between* the 45th and 55th percentiles of the distribution of all female fractions; and (c) households where the female fraction of a specific personality trait is *below* the 20th percentile of the distribution of all female fractions. I consider

[23] It is worth noting that while the concept of RICEBs is related to the sharing rule concept in the collective literature, the RICEBs evaluate public expenditures at market prices instead of at Lindahl prices. Bostyn et al. (2022) utilize RICEBs to analyze individual welfare in a collective model that incorporates marriage market restrictions.

only the subset of four personalities relevant to the labor market that were used to construct both distribution factors (i.e., agreeableness, conscientiousness, neuroticism, and cognitive engagement). This categorization of couples allows for a comparison between households where the within-household female personality fraction is either high, moderate or relatively low.[24]

Figure 4 illustrates how intrahousehold consumption inequality varies with the *relative* amount of personality within couples, comparing the three types of households mentioned above. First, it can be observed that couples with a *moderate* within-family difference in personality tend to exhibit, on average, a smaller degree of intrahousehold consumption inequality (indicated by the red dashed lines, which are more concentrated around zero on the horizontal axis). Second, for almost all personalities (except neuroticism), the black solid line is consistently positioned to the right of the blue dash-dotted line. This implies that a larger fraction of a woman's personality relative to her partner is associated with a greater allocation of intrahousehold resources towards her. This pattern is particularly pronounced for conscientiousness and cognitive engagement (and to a lesser extent in agreeableness). Indeed, in the case of conscientiousness and cognitive engagement, as demonstrated in Panel A of Table 5, I strongly reject the null hypothesis of equal means between couples with a *large* and *small* female personality fraction (referring to the black and blue distributions in Figure 4). In Panel B of Table 5, I present the difference in average intrahousehold consumption inequality between households with *large* and *small* personality fractions in the sample. For instance, in couples where women exhibit higher levels of conscientiousness than their male partners, there is an average of 3.709% more intrahousehold resources allocated to them compared to couples where men are more conscientious.

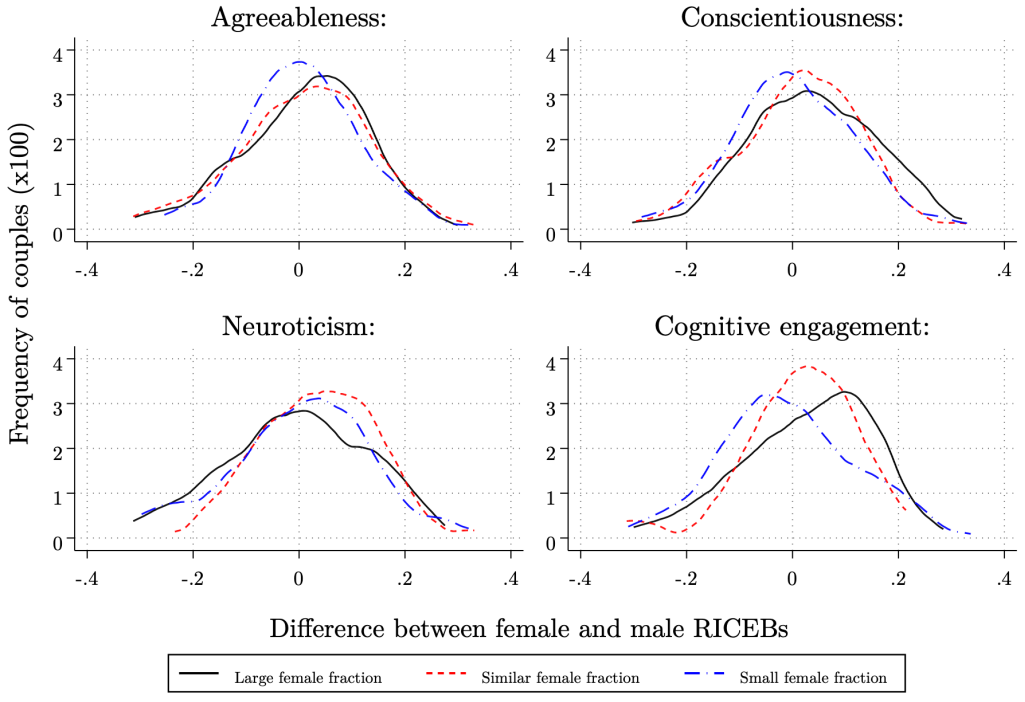
[24] Appendix F provides a detailed overview of the distribution of these female personality fractions as well as the RICEB measures. The results are robust to the choice of different cut-off values for the female personality fractions.

Table 5. Panel A: Test of equal mean in intrahousehold inequality between couples with *large* and *small* female personality fractions. Panel B: Difference in average intrahousehold inequality between couples with *large* and *small* female personality fractions.

	Panel A: Bootstrap statistics		**Panel B: Difference in inequality**
	t-statistic	*p*-value	
Agreeableness	-0.276	0.489	1.081%
Conscientiousness	-2.901**	0.040	3.709%
Neuroticism	0.628	0.455	-0.653%
Cognitive engagement	-3.122**	0.027	2.864%

Notes: Panel A shows the results of a bootstrapped *t*-test of equal mean between the black and blue distributions shown in Figure 4. I estimate both the *t*-statistic and *p*-value on their bootstrap distribution over 200 replications. Panel B shows the difference in the average intrahousehold inequality between black and blue distributions shown in Figure 4.
Significant with at least 90% of confidence: *
Significant with at least 95% of confidence: **
Significant with at least 99% of confidence: ***

Figure 4. Intrahousehold consumption inequality and relative personality



Notes: This figure shows kernel density plots of intrahousehold inequality (i.e., RICEB^f minus RICEB^m) by couples with different within-couple female personality fractions (r_n).

6. Conclusion

This paper presents evidence of potential channels through which personality traits can structurally affect intrahousehold behavior and resource allocation when assuming Pareto-efficient decision-making. By examining variations in personality traits among Dutch couples, this study tests for distribution factor proportionality and the exclusion restriction utilizing a conditional demand system estimation. The findings do not allow for the rejection of the hypothesis that (relative) personality influences the bargaining process within households. Notably, women who exhibit higher levels of conscientiousness and cognitive engagement relative to their male partners tend to receive a larger proportion of intrafamily resources. To address potential selection bias in personality, the budget share equations are conditioned on the level of personality and additional explanatory variables that capture the structure of the marriage market in relation to personality traits within the sample. The results also indicate that personality could directly influence preferences for consumed commodities. Establishing a precise mapping between individual psychological traits and the distribution of resources within families allows us to understand better what factors drive inequality and poverty within and between households.

Some of the limitations of this paper can be addressed in the future to further explore the role of personality traits within the family context, as well as the underlying mechanisms through which these traits exert their influence. Firstly, employing a model with a more robust structure for preferences and the sharing rule, similar to approaches utilized by Browning, Chiappori, and Lewbel (2013) or Cherchye et al. (2017), would offer deeper insights into the welfare implications of personality traits. Secondly, it is worth noting that several studies have demonstrated the importance of personality traits within marriage market dynamics (Lundberg (2012) or Dupuy and Galichon (2014)). Therefore, it could be valuable to study the role of personality as a potential driver of power dynamics through its effect on the marriage market (Fernández and Kovaleva 2024). Lastly, the current paper's framework overlooks intertemporal aspects that are relevant to household consumption, such as the influence of personality on occupational or educational choices (Todd and Zhang (2020)). Considering these factors in future research would enhance the richness and applicability of the analysis.

Conflict of interest. The author declares no competing interests.

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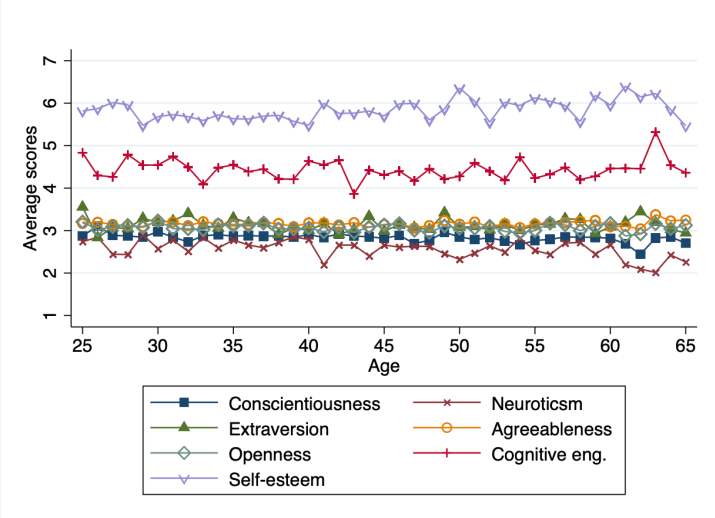
Appendix A. Data appendix

A.1. Stability of personality traits

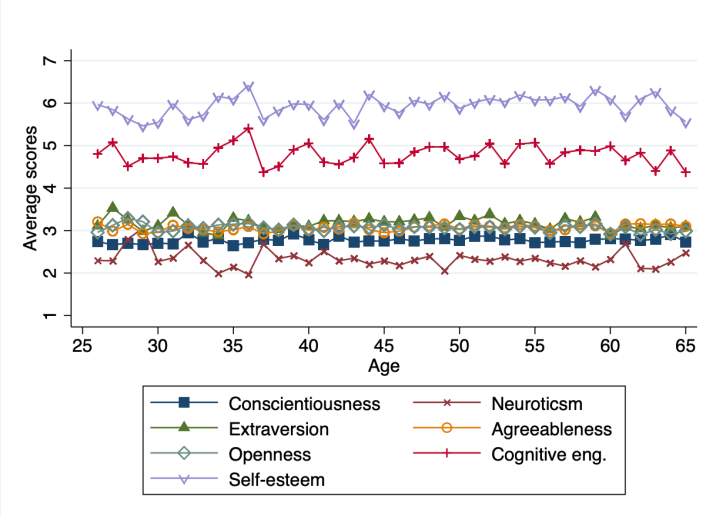
This section illustrates the evolution of personality over time for women and men in our sample. Figure A1 shows the average score by age for each personality measure and gender. I consider all waves together.

Figure A1. Stability of personality traits

A. Female average personality scores by age.



B. Male average personality scores by age.



A.2. Distribution of personality traits for different samples

TABLE A1. Summary of personalities for the full and restricted samples.

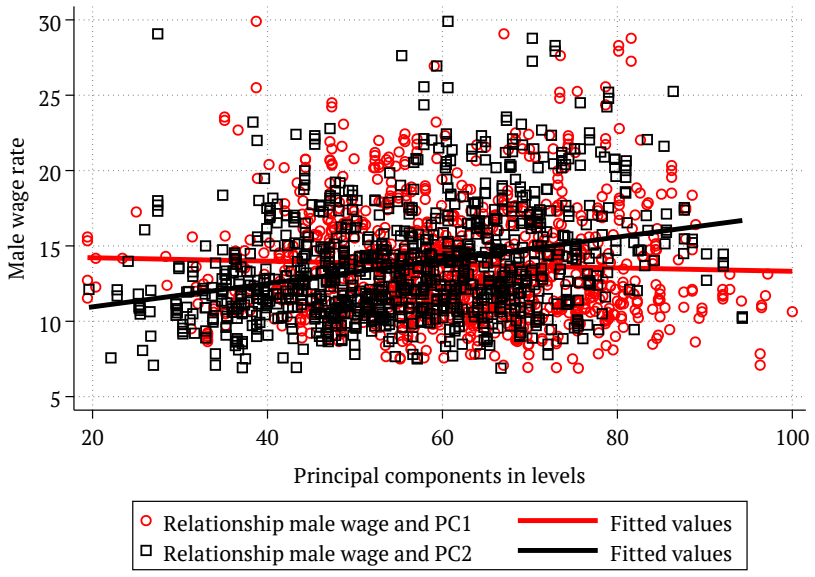
	Mean	Std. dev.	Min	Max
Full sample (N = 1016):				
Male openness	3.06	0.26	1.37	3.87
Female openness	3.07	0.28	1.87	3.87
Male extraversion	3.19	0.50	1.50	4.50
Female extraversion	3.13	0.51	1.33	4.50
Male agreeableness	3.08	0.23	2.00	3.75
Female agreeableness	3.17	0.18	2.37	3.62
Male neuroticism	2.29	0.56	1.11	4.22
Female neuroticism	2.57	0.58	1.05	4.33
Male conscientiousness	2.79	0.25	1.88	3.66
Female conscientiousness	2.86	0.23	1.77	3.55
Male self-esteem	5.99	0.64	3.80	7.00
Female self-esteem	5.85	0.72	3.70	7.00
Male cognitive engagement	4.79	0.83	2.66	7.00
Female cognitive engagement	4.45	0.80	2.41	6.75
Restricted sample (N = 519):				
Male openness	3.07	0.27	1.37	3.87
Female openness	3.08	0.28	1.87	3.87
Male extraversion	3.18	0.51	1.50	4.50
Female extraversion	3.14	0.53	1.33	4.50
Male agreeableness	3.08	0.23	2.00	3.75
Female agreeableness	3.17	0.20	2.37	3.62
Male neuroticism	2.32	0.57	1.11	4.11
Female neuroticism	2.59	0.59	1.11	4.33
Male conscientiousness	2.80	0.26	1.88	3.66
Female conscientiousness	2.86	0.25	1.77	3.55
Male self-esteem	5.97	0.66	3.80	7.00
Female self-esteem	5.84	0.75	3.70	7.00
Male cognitive engagement	4.80	0.82	2.66	7.00
Female cognitive engagement	4.46	0.81	2.41	6.75

Notes: The restricted sample corresponds to couples for which their personality values have not been imputed.

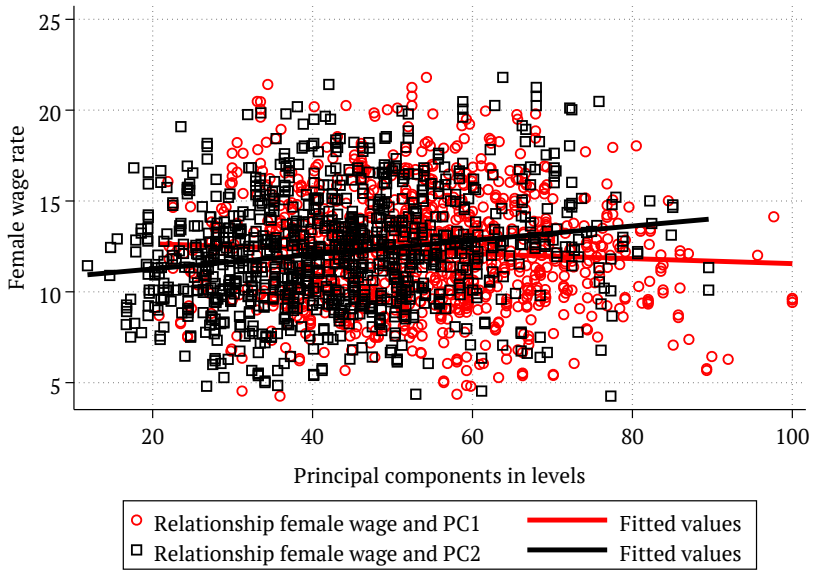
Appendix B. Relationship between wage rates and the level of the principal components

Figure B1. Wage rates and principal components

A. Males



B. Females



Appendix C. Monotonic relationship between z_1 and male leisure time ($\omega_{\ell m}$)

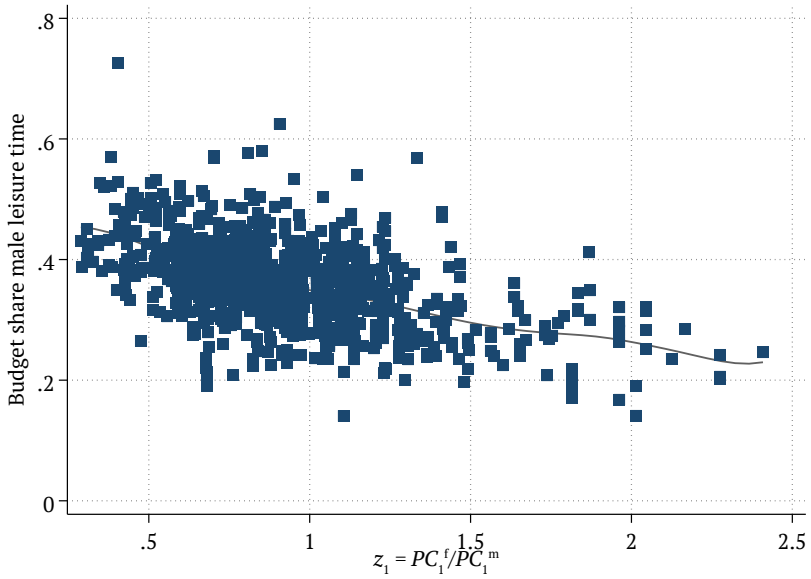
Following Attanasio and Lechene (2014), I study the relationship between the first distribution factor ($z_1 = \frac{PC1^f}{PC1^m}$) and the share of male leisure consumption ($\omega_{\ell m}$) by looking at the point estimates of different polynomials. The direction of the point estimates implies a decreasing relationship between the share of men's leisure time and the first measure of relative personality within households. This information, together with the fact that both distribution factors influence significantly $\omega_{\ell m}$ (see Table 3), supports the choice of men's leisure time as the conditioning good in the z-conditional demand system.

Table C1. Effect of distribution factors on consumption shares.

	Dependent variable: budget share				
	ω_{cm}	ω_{cf}	$\omega_{\ell m}$	$\omega_{\ell f}$	ω_C
$\ln(\frac{PC1^f}{PC1^m})$	0.008	0.061***	-0.082***	-0.081**	0.094**
	(0.016)	(0.015)	(0.025)	(0.033)	(0.040)
$[\ln(\frac{PC1^f}{PC1^m})]^2$	0.001	0.004	-0.009	0.012	-0.007
	(0.004)	(0.004)	(0.007)	(0.010)	(0.011)
$[\ln(\frac{PC1^f}{PC1^m})]^3$	0.004	-0.002	-0.001	0.011	-0.012
	(0.005)	(0.005)	(0.008)	(0.010)	(0.012)
$\ln(\frac{PC2^f}{PC2^m})$	0.020	0.033**	-0.066**	-0.081***	0.093***
	(0.013)	(0.013)	(0.025)	(0.026)	(0.033)
$[\ln(\frac{PC2^f}{PC2^m})]^2$	0.001	-0.001	0.001	0.010	-0.009
	(0.005)	(0.007)	(0.011)	(0.013)	(0.016)
$[\ln(\frac{PC2^f}{PC2^m})]^3$	0.001	-0.007	0.004	0.012	-0.009
	(0.007)	(0.009)	(0.012)	(0.015)	(0.018)
Additional covariates	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes

Notes: Sample size of 1016 couples. Robust standard errors clustered at the household level are in parentheses. *PC*: principal component. Additional covariates: linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the square of husband's wage; husband's age and its square; husband's educational level; spouses' wage ratio; spouses' age ratio; spouses' educational level ratio; the number of children the couple has; the log of spouses' personality traits in levels and their squares; and marriage market personality ratios.
Significant with at least 90% of confidence: *
Significant with at least 95% of confidence: **
Significant with at least 99% of confidence: ***

Figure C1. Monotonicity between $\omega_{\ell m}$ and z_1



Notes: This figure shows the estimates from a semiparametric regression controlling for demographic variables and with distribution factor z_1 entering the model nonparametrically. The kernel regression is a Gaussian kernel-weighted local polynomial fit and the optimal bandwidth used minimizes the conditional weighted mean integrated squared error.

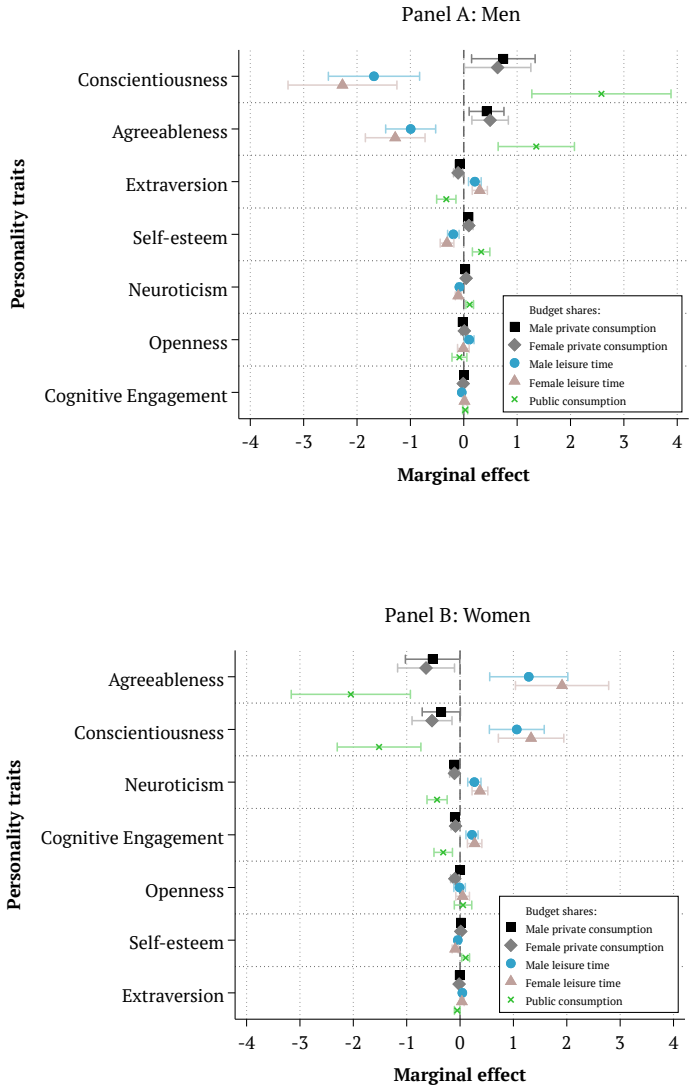
Appendix D. Additional estimates of the unconditional demand system

Table D1. OLS estimates of the effect of personality on household consumption. System of unconditional demand functions. *Restricted sample (N = 519).*

	Dependent variable: budget share				
	ω_{cm}	ω_{cf}	$\omega_{\ell m}$	$\omega_{\ell f}$	ω_C
Distribution factors:					
$\ln(\frac{PC1^f}{PC1^m})$	0.102**	0.143***	-282***	-0.386***	0.423***
	(0.052)	(0.057)	(0.100)	(0.104)	(0.116)
$\ln(\frac{PC2^f}{PC2^m})$	0.085**	0.080**	-0.203***	-0.243***	0.281***
	(0.036)	(0.041)	(0.071)	(0.072)	(0.084)
Additional covariates	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes
Proportionality test	$\chi^2(4) = 3.180$ (p–value = 0.528)				

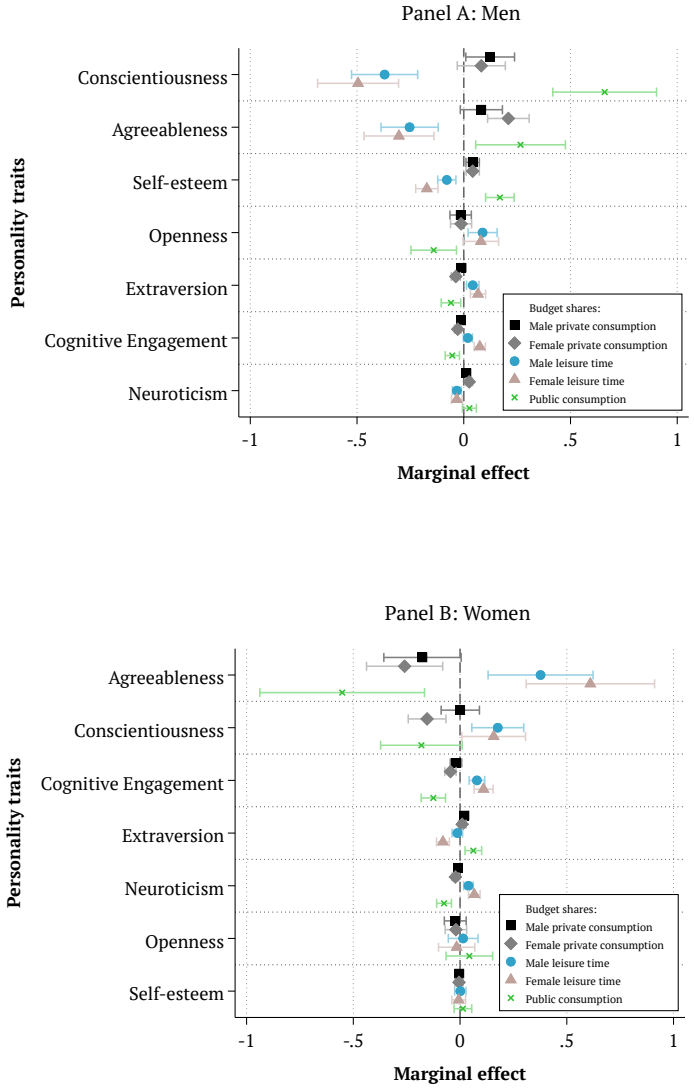
Notes: Sample size of 519 couples. Only couples for which their personality values have not been imputed. Robust standard errors clustered at the household level are in parentheses. This table puts together the results presented in Figure 3 and Table 3. *PC*: principal component. Additional covariates: linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the square of husband's wage; husband's age and its square; husband's educational level; spouses' wage ratio; spouses' age ratio; spouses' educational level ratio; the number of children the couple has; the log of spouses' personality traits in levels and their squares; and marriage market personality ratios. The proportionality test's p–value is estimated on its bootstrap distribution over 200 replications.
Significant with at least 90% of confidence: *
Significant with at least 95% of confidence: **
Significant with at least 99% of confidence: ***

Figure D1. OLS estimates of the effect of personality traits on preferences over consumed commodities. System of unconditional demand functions. *Restricted sample (N = 519).*



Notes: Estimated OLS coefficients of the system of unconditional demand functions in equation (8). Estimates are sorted by size. Sample size of 519 couples. Panel A: personality traits of the man. Panel B: personality traits of the woman. Additional controls: a linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; spouses' ages and their square; spouses' educational level; the number of children the couple has; and the marriage market personality ratios. Robust standard errors clustered at the household level are in parentheses. Confidence intervals constructed at 90% of confidence.

Figure D2. OLS estimates of the effect of personality traits on preferences over consumed commodities. System of unconditional demand functions. *Personality imputation: median*



Notes: Estimated OLS coefficients of the system of unconditional demand functions in equation (8). Estimates are sorted by size. Sample size of 519 couples. Panel A: personality traits of the man. Panel B: personality traits of the woman. Additional controls: a linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; spouses' ages and their square; spouses' educational level; the number of children the couple has; and the marriage market personality ratios. Robust standard errors clustered at the household level are in parentheses. Confidence intervals constructed at 90% of confidence.

Table D2. OLS estimates of the effect of personality on household consumption. System of unconditional demand functions. *Personality imputation: median*

	Dependent variable: budget share				
	ω_{cm}	ω_{cf}	$\omega_{\ell m}$	$\omega_{\ell f}$	ω_C
Distribution factors:					
$\ln(\frac{PC1^f}{PC1^m})$	0.009	0.050***	-0.064**	-0.065**	0.069**
	(0.014)	(0.012)	(0.023)	(0.029)	(0.033)
$\ln(\frac{PC2^f}{PC2^m})$	0.016	0.024**	-0.056**	-0.065***	0.078***
	(0.012)	(0.010)	(0.023)	(0.024)	(0.029)
Additional covariates	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes
Proportionality test	$\chi^2(4) = 2.640$ (p–value = 0.619)				

Notes: Sample size of 1016 couples. Robust standard errors clustered at the household level are in parentheses. This table shows alternative results to those presented in Figure 3, Table 3, and Table C1 after imputing personality traits with the median values (see Section 3 for more discussion on the imputation of personality). *PC*: principal component. Additional covariates: linear control function for full income and its square instrumented with household potential income; the log of spouses' wages and the interaction between them; the square of husband's wage; husband's age and its square; husband's educational level; spouses' wage ratio; spouses' age ratio; spouses' educational level ratio; the number of children the couple has; the log of spouses' personality traits in levels and their squares; and marriage market personality ratios. The proportionality test's p–value is estimated on its bootstrap distribution over 200 replications.
Significant with at least 90% of confidence: *
Significant with at least 95% of confidence: **
Significant with at least 99% of confidence: ***

Appendix E. Goodness-of-fit measures across models

Overall, as shown in Table E1, the original model has a better fit than the alternative model. The original model has a larger proportion of the variance in all five budget shares equations that is explained by the set of independent variables. When we adjust for the number of predictors, only the budget share equation for male consumption presents a slight decrease in the fit. Finally, the original model has a smaller prediction error than the alternative model, as described by the Root Mean Squared Error (RMSE).[25]

[25]The full set of estimates of the alternative model are available upon request.

Table E1. Goodness-of-fit measures comparing the estimation of the unconditional demand system under two models.

	Dependent variable: budget share				
	ω_{cm}	ω_{cf}	$\omega_{\ell m}$	$\omega_{\ell f}$	ω_C
Original model					
R^2	0.215	0.265	0.901	0.847	0.655
Adj–R^2	0.157	0.210	0.894	0.835	0.629
RSME	0.016	0.016	0.022	0.029	0.036
Alternative model					
R^2	0.202	0.238	0.897	0.831	0.628
Adj–R^2	0.163	0.200	0.892	0.822	0.610
RSME	0.016	0.016	0.023	0.030	0.037

Notes: Sample size of 1016 couples. Goodness-of-fit measures comparing the estimation of equation (8) under two models. R^2: R-squared. Adj-R^2: adjusted R-squared. RSME: Root Mean Squared Error. The original model refers to the model presented throughout the paper, where distribution factors are constructed using a subset of four personality traits. The alternative model includes all seven measures to construct the distribution factors.

Appendix F. Distribution of female personality fractions and RICEBs

Table F1. Summary statistics for female personality fractions (r_p) and RICEBs measures (N = 1016 couples)

	Mean	Std. Dev.	Min	p25	Median	p75	Max
$RICEB^f$	0.606	0.070	0.273	0.563	0.609	0.653	0.802
$RICEB^m$	0.598	0.072	0.323	0.551	0.595	0.644	0.839
Female fractions (r_p):							
Neuroticism	0.529	0.073	0.309	0.476	0.530	0.577	0.773
Agreeableness	0.508	0.025	0.413	0.491	0.509	0.521	0.636
Conscientiousness	0.506	0.032	0.356	0.489	0.507	0.528	0.612
Cognitive Engagement	0.482	0.058	0.330	0.440	0.481	0.519	0.630