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**Preparation for old age in France:
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Bénédicte H. Apouey

JEL Codes: I10, J26

**Keywords: Preparation for old age; risk aversion; time preference; altruism;
expected longevity**



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**Preparation for old age in France:
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Abstract

This article assesses the roles of preferences and expectations on preparation for old age, employing unique data on French individuals aged 50+. The data do not only contain information on the general feeling to prepare for old age and on specific preparation activities in various domains, but also on risk and time attitudes, family and social altruism, and expected disability and longevity. Half of the sample reports preparing for old age. Future orientation emerges as an important predictor of preparation. While risk attitudes and altruism also matter for preparation, their effect may be less systematic across outcomes than that of general future orientation. Individuals who expect to become disabled or to live longer are more likely to prepare for old age. Policies promoting healthy aging should include messages targeting present-oriented individuals and try to make people more future-oriented.

Keywords: Preparation for old age; risk aversion; time preference; altruism; expected longevity.

JEL codes: I10, J26.

Highlights

- We investigate the roles of preferences and expectations on preparation for old age.
- General future orientation emerges as an important predictor of preparation.
- Family altruism influences preparation in the financial domain.
- Policies promoting healthy aging should target present-oriented individuals.

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1. Introduction

The increase of life expectancy in the world's wealthiest nations remains as one of the biggest policy challenges. A stream of initiatives to promote "aging well" has emerged as a response to this evolution -- see for instance the French "Plan National "Bien Vieillir," 2007-2009." These initiatives involve actions of local and national authorities, but also entail individual responsibility, to address the risks of later life such as low income, social isolation, poor health, and disability (Street and Desai, 2011). At the individual level, response to a longer longevity requires preparation for old age in several domains (finances, housing, interpersonal relationships, health...). Because preparation for old age is critically important to well-being in later life (Adams and Rau, 2011; Noone et al., 2009), a better understanding of the determinants of preparation at the individual level may open up new perspectives for policies promoting aging well.

There is a substantial literature in Gerontology and Psychology on "preparation for retirement" and in particular on financial planning of retirement. This strand of research demonstrates that preparation for retirement depends on personal tastes, and more specifically on risk and time attitudes (Adams and Rau, 2011; Dulebohn, 2002). However, the concept of "financial preparation for retirement" is narrower than that of "preparation for old age," because it solely focuses on the exit from the workforce, and exclusively emphasizes planning in the financial domain. In contrast, the literature in these fields on "preparation for old age" that takes a unified approach on preparation in several domains is limited (Denton et al., 2004; Kornadt and Rothermund, 2014).

As far as we are aware, there is no study on preparation for old age per se in Economics. However, some outcomes that can be considered as components of preparation for old age -- such as savings behaviors, the uptake of long-term care insurance, lifestyles, and health -- are the subject of what is by now a very large literature. Risk aversion (i.e. the opposite of risk preference) and future orientation (i.e. the opposite of time preference or time discounting) emerge as key positive predictors of these outcomes (Dohmen et al., 2011; Jusot and Khlal, 2013; Peretti-Watel et al., 2013; Van Der Pol, 2011). A small number of studies also consider the role of preference with respect to family altruism (Fontaine et al., 2014).

Our objective is to investigate the roles of preferences and expectations on preparation for old age in France. We document correlations between preferences and expectations on the one hand and preparation of old age on the other hand. Our data come from an original survey on the customers of Harmonie Mutuelle (HM), which is the French largest “mutuelle” (i.e. not-for-profit insurance company), and our final sample contains 1244 mid-life and older individuals. The data include information on the overall feeling to prepare for old age or not, and on a range of specific activities such as long-term care insurance purchase, home adaptation, and efforts to maintain intellectual abilities and social ties. These specific outcomes thus pertain to several domains (finances, housing, social life, and health). Moreover, they relate to preparation of the third age (which is the period after retirement when individuals are healthy and remain active) and / or the fourth age (which is the stage of life when dependency and decrepitude issues become more serious). The survey also contains rich information on preferences (as defined in the economic literature), since we measure not only risk aversion and future orientation, but also family and social altruism. Regarding expectations, surveyed individuals indicate their expected disability and longevity. The data also provide information on myopia and denial regarding possible future disability. Myopia

corresponds to the tendency for individuals not to think that they could become disabled one day, and denial to the situation in which individuals do not want to hear of future possible disability.

We expect more risk-averse and future-oriented individuals to have a greater tendency to engage in preparation activities. In addition, more altruistic individuals, who internalize the negative impact of their non-preparation on their family and on the rest of society, should be more likely to prepare for old age. Compared with individuals who expect to become disabled, persons who are myopic or in denial should be less likely to prepare for old age. Finally, expected longevity should be positively associated with preparation, because a greater expected longevity increases the payoff of preparation. In other words, people with a higher life expectancy have more to lose not to prepare.

The contribution of our article is three-fold. First, we contribute to the small literature on preparation for old age (Denton et al., 2004; Kornadt and Rothermund, 2014). We focus on multiple specific aspects of preparation, which are generally not measured in a single survey. Second, we also extend the literature on the roles of preferences, that mainly focuses on the effect of risk and time preferences (Jusot and Khlal, 2013; Peretti-Watel et al., 2013; Van Der Pol, 2011). Indeed, because we focus on preparation for old age that may be motivated by altruism and expectations regarding old age, we believe we should also consider the roles of family and social altruism, as well as disability and longevity expectations, in our models. Finally, we contribute to the literature on aging well for France. To our knowledge, there has been no study on the role of preferences and expectations on preparation for France. A number of interesting articles using French data deal with the determinants of health in old

age and of life expectancy (Cambois et al., 2017; Cambois and Robine, 2011). We complement this literature by trying to improve the understanding of preparation for old age.

We find that future orientation (in the general context) is positively correlated with preparation. Moreover, family and social altruisms influence preparation, but in different domains: family altruism has an impact on preparation in the financial domain whereas social altruism does not; and there is some suggestive evidence that the effect of social altruism on efforts to maintain social ties and intellectual skills is greater than that of family altruism. Importantly, compared with the other preference measures, the impact of future orientation (in the general context) is more often significant across outcomes. Expected disability and longevity are positively associated with preparation, while individuals who are either myopic or in denial are less likely to engage in preparation activities.

The rest of the article is organized as follows: the next section provides background on preparation for old age; Section 3 describes the data and the empirical specification; Section 4 contains our results; and Section 5 discusses the results and contains some concluding remarks.

2. Background

A small literature shows that preparation for old age increases later-life well-being. For instance, using US data, Noone et al. (2009) find that pretirement preparation – discussing about retirement with spouse and having retirement superannuations or savings plans – in 1992 increases postretirement well-being in 2004. Similarly, preparedness increases life satisfaction for retirees in Australia (Noone et al., 2013). Finally, Ju et al. (2017) show an

association between (self-assessed) financial preparation for retirement and mental health, in a sample of newly retired Koreans. This literature provides a rationale for studying preparation for old age. In what follows, we present the previous literature on the role of preferences and expectations on preparation.

Preparation for retirement and savings behaviors

A sizable literature focuses on “preparation for retirement,” and in particular of financial planning of retirement (Adams and Rau, 2011). This is a narrower concept than that of “preparation for old age” in which we are interested here. Using data on 795 college and university employees in the US, Dulebohn (2002) shows that general risk propensity is positively correlated with employee’s risky investment behavior regarding retirement plans. DeVaney and Chiremba (2005) find that being more tolerant for risk in saving and investing increases the chances of financial preparation for retirement in the US.

Although they do not specifically focus on preparation for retirement or old age, some articles highlight the role of preferences in savings behaviors. In Germany, the willingness to take risks in general and the willingness to take risk in five contexts (car driving, financial matters, sports / leisure, career, and health) are significantly associated with the probability of holding stocks, shares, or stock options (Dohmen et al., 2011). For France, using the 1998-2011 waves of the “Patrimoine et préférences vis-à-vis du temps et du risque” (PATER) survey, Arrondel and Masson (2014) show that risk and time preferences and expectations in the financial domain (regarding stock market performance) are associated with savings behavior, while family altruism is not.

Long-term care insurance purchase

Closely related to our article is a work on the role of preferences and expectations on the probability of buying long-term care insurance (“assurance dépendance”) in France (Fontaine et al., 2014). The data come from the 2011 wave of the PATER / PATED survey. The study focuses on four types of preferences -- time preference, risk preference, family altruism, and the taste for informal help -- and on expected disability. Findings indicate that time preference is negatively associated with the probability of expecting to become disabled. Moreover, risk aversion, family altruism, and the taste of formal help are positively correlated with the likelihood of insurance uptake, while time preference is not.

Compared with these studies, our article focuses on preparation for old age across several domains and considers a broader set of preferences (that includes social altruism) as well as disability and longevity expectations.

Health and risky behaviors

The strand of literature on the effect of preferences and expectations on health and risky behaviors is also relevant to our study (Lawless et al., 2013). Using German data, Dohmen et al. (2011) find a significant correlation between risk attitudes and physical activity. In the Netherlands, risk and time preferences are both associated with poorer self-assessed health (Van Der Pol, 2011). In the US, risk preference is correlated with smoking, heavy drinking, overweight, and seat belt non-use (Anderson and Mellor, 2008); drinker drivers have greater rates of time preference, are more impulsive, and are more likely to show hyperbolic discounting (Sloan et al. 2014a); and a higher risk aversion, lower time preference, and

greater expected longevity are positively associated with breast cancer screening (Picone et al. 2004).

For France, using data from the 2008 French National Health, Health Care and Insurance Survey, Jusot and Khlal (2013) find that risk and time preferences are associated with current smoking. Employing data from a 2008 survey on 2000 French adults aged 18-75, Peretti-Watel et al. (2013) explore the impact of the planning horizon and impulsivity on smoking behaviors. Some articles also focus on the role of preferences on breast cancer screening (Goldzahl, 2015) and sexual behaviors (Guillon et al., 2016) in France.

Unified approaches on preparation for old age

In contrast with the sizable literature that focuses on what can be considered as one specific aspect of preparation (such as savings behaviors or health), research that takes a unified approach on preparation for old age by focusing on several dimensions of preparation is limited. Using data on 51 mid-life and older Canadians, a qualitative study by Denton et al. (2004) shows that planning for the future seems to be associated with taking a future-time perspective and having a sense of control over one's life. Compared with this study, our analysis employs a large sample of individuals and uses econometric techniques to assess the roles of demographic characteristics, preferences, and expectations on planning, all other things being equal.

Using data on individuals aged 30-80 years from two middle-sized cities in Germany, Kornadt and Rothermund (2014) assess changes in preparation in nine domains (finances, emergencies and exceptional circumstances, mental and physical fitness, housing, looks and

appearance, social relationships, health, leisure activities and lifestyle, and work and employment) across the life span, as well as the role of personality in preparation. Findings show that preparation for the third age mainly involves preparation in five domains while preparation for the fourth age relates to the four remaining domains. Personality traits influence either third- or fourth-age preparation. In contrast with this study, our article focuses on a range of specific preparation outcomes (like home adaptation and insurance uptake) instead of general domains, and pays attention to the role of preferences and expectations instead of personality traits.

Description of preparation for old age in France

Recent reports provide descriptive statistics about preparation for old age in France. The Viavoice et al. (2013) study shows that 76% of individuals above 70 years of age have prepared for old age in general. Regarding specific preparation activities, 82% tried to maintain connections with other people, 74% did checkups and became homeowners, and 67% hold precautionary savings. Moreover, a survey by "CCAS de Brest" (2013) on 1401 individuals living in Brest and aged 60 to 74 shows that a large fraction of people lives in houses that do not suit an older person's needs, but only 9% of individuals believe that they need to adapt their home for old age. We complement these findings by analyzing the determinants of preparation, among others.

3. Data and method

3.1. Survey

We use data from an original survey that was carried out in 2016 among a sample of customers of HM. 10,721 customers aged 40-84 were contacted by phone by a polling institute on behalf of the insurance company and were asked whether they agreed to participate in the survey. 4811 individuals answered in the positive and were sent a paper questionnaire. 1769 individuals filled a questionnaire and sent it back to the polling institute. The total compliance rate is 16.50% ($=1769/10,721$). The final sample is representative of the customers of HM along three criteria (gender, age group, and type of insurance coverage i.e. individual vs. group insurance coverage). In this study, we focus on individuals aged 50+ and our sample contains 1244 individuals.

We believe that individuals felt free to give honest answers to the survey questions, without fearing any consequences for their insurance premia or contracts. Indeed, by definition, premia for “mutuelle” insurance companies do not depend on individual health risks and lifestyles. Unless premia remain unpaid, the insurer cannot cancel insurance contracts. Moreover, questionnaires were anonymous and a polling institute conducted the survey. For all these reasons, we think that individuals replied freely to the survey and we expect the desirability bias in responses to be negligible or small.

The data is unique in containing information on preparation for old age, preferences, expectations, and socio-demographic characteristics. The data have already been used to study subjective perceptions of aging well (Apouey, 2015a, 2017a) and needs in services for the elderly (Apouey, 2017b).

3.2. Preparation for old age

We first use information on general preparation for old age, that comes from the question: “To anticipate aging and prepare for old age, one may want to adapt her home, buy long-term care insurance, save money, be careful with her diet, do physical activity, etc. Do you think that you prepare, or have prepared, for old age (i.e. that you anticipate, or have anticipated, aging)?” We create a dummy for whether the answer is positive.

We complement this general piece of information with specific outcomes. The survey asks individuals whether:

- They save money for old age.
- They have bought long-term care insurance (“assurance dépendance”).
- They are homeowners.
- They have adapted their home for old age.
- They try to maintain or develop social ties.
- They are careful about their diet.
- They do physical activity.
- They try to maintain or develop intellectual skills.

Some of these preparation aspects have been studied in a recent report (Viavoice et al., 2013).

We create a series of dummies for whether the individual does the activities. The activities relate to several domains of preparation: finances (savings and insurance uptake), housing (homeownership and home adaptation), social life (efforts to maintain social ties), and health (healthy diet, physical activity, and efforts to maintain intellectual skills).

3.3. Preferences

Regarding preferences, we focus on the roles of risk aversion, future orientation, and family and social altruism. In our survey, questions on preferences are identical to questions from the PATER questionnaire (Arrondel and Masson, 2014), except for questions on social altruism.

Risk aversion

Our general risk measure is derived from the following question, in a 11-point Likert scale format: “On a scale from 0 to 10, do you think that in general you are prudent, you keep risks to a minimum (0), or, on the contrary, you like taking risks, you enjoy adventure and search for novelty and challenges (10)?” In our analysis, the score is reversed so that higher values indicate greater general risk aversion or smaller willingness to take risks.

Arrondel and Masson (2014) use an identical question in their study on savings behavior, while Dohmen et al. (2011), Dohmen et al. (2012) and Jusot and Khlal (2013) employ similar questions. Using a lottery experiment, Dohmen et al. (2011) show that this survey question is relevant, in the sense that it is a reliable measure of actual risk-taking behavior. A potential limitation of our measure is that it may also capture personality traits like (low) sensation seeking or (low) openness to experience, in addition to risk aversion.

Moreover, we also measure attitude towards risk by asking individuals whether they agree with a range of statements in the marriage and daily life contexts. For instance, in the daily life context, the statement is the following: “When you go out and the weather is unstable,

you try to protect yourself from rain (raincoat, umbrella).” The attitude variables go from 0 (“Never”) to 3 (“Often”).

Since 1998, Arrondel and Masson have developed a score that summarizes risk attitude in France, using a large number of variables, including the variables we just presented on daily life and marriage (see for instance Arrondel and Masson, 2014). Similarly, they also construct scores that capture time preferences and family altruism. In our article, we choose to study these variables as is, rather than create a score. Indeed, quality scores would require a greater number of questions than the number of questions available in our survey. In particular, relevant questions should not already capture preparation for old age per se.

Time preferences

General information on time preferences is first derived from the following question on a 11-point scale: “On a scale from 0 to 10, do you think that you live your life day by day (0) or, on the contrary, that you are farsighted (10)?” This question captures farsightedness and future orientation in general. Using French data, Arrondel and Masson (2014) use an identical question in their study on savings behavior, whereas Jusot and Khlal (2013) employ a similar question to investigate the role of preferences in smoking status. In addition, for Germany, Vischer et al. (2013) validate a similar measure of time preference (patience) by showing that it predicts actual behavior in an intertemporal choice experiment.

Second, respondents’ time attitudes are measured by asking individuals whether they agree with a range of statements. In particular, we use the following statement to capture planning in general: “You are the kind of person who makes plans.” The questionnaire also contains

statements belonging to the leisure and old age domains. In the leisure domain, the statement is the following: “In general, you prepare for your holidays in advance” whereas in the old age domain, they are: “You are worried about ending up in a nursing home” and “One should prepare for retirement a long time in advance.” These variables go from 0 (“Not at all”) to 3 (“Yes exactly”).

Family altruism

Regarding family altruism, respondents are asked whether they agree with a series of statements. One of these statements is on a 11-point format: “On a scale from 0 to 10, do you think that “leaving an inheritance for your descendants” is not an important reason at all to save money (0) or, on the contrary, is a very good reason to save money (10)?” This variable is also used to capture family altruism in Fontaine et al. (2014). Except for this measure, the rest of our family altruism variables range from 0 (not altruistic) to 3 (altruistic).

Social altruism

To measure social altruism, we use responses to this 11-point scale question: “On a scale from 0 to 10, beyond your family, do you think that you are rather egoistic, or on the contrary altruistic (10)?” This is an original question we developed for our survey. A potential limitation of the question is that the word “egoistic” may bring a negative connotation to the question that could bias responses.

Moreover, respondents’ social altruism is also quantified by asking respondents whether they agree with four statements. The statements are the following: “I help others even when there

is no direct benefit to me,” “If someone I do not know asks me for help, I will immediately help them,” “When I see individuals in need, I think about how to relieve their distress or meet their needs,” and “I can relinquish my material goods in favor of the common good.” Options for answers are: “Never,” “Rarely,” “Sometimes,” and “Often.” The variables are created by coding the response items from 0 (“Never”) to 3 (“Often”). These statements are borrowed from a previous study on altruism in adolescence (Büssing et al., 2013). The objective of this study was to develop an altruism score, which was constructed using seven questions in total -- the four questions presented above plus three additional questions. For space reasons, we could not include the seven questions in our questionnaire. We study the responses to the questions separately, and we also sum the responses to create a social altruism score. Note that we checked that the correlation between these four questions is large, that the score is unidimensional, and that its scale reliability is acceptable.

We standardize our preferences variables, so that their mean equals zero and their standard deviation equals one. We report results using standardized and unstandardized variables. Standardized variables enable us to compare the size of the effects between preference variables and regression models.

3.4. Expected disability and longevity, myopia, and denial

On expected disability, the survey asks: “Do you think that you could become disabled one day?” Options for answers are “Yes,” “No,” and “You do not want to hear of that.” The first option corresponds to expected disability, the second to myopia, and the third to denial (Fontaine et al., 2014). We create three dummy variables and use potential disability as our

reference category. A similar question can be found in the 2011 PATER / PATED survey (Fontaine et al., 2014).

To elicit the person's assessment of her life expectancy, respondents are asked the following series of questions: "Do you think that you will live longer than 70 years? ...80 years? ... 90 years? ... 100 years?" The questions could be answered in the positive or in the negative. Because very few individuals believe that they will live less than 70 years or more than 100 years, we create three binary indicators for whether the individual thinks he will live less than 80 years (reference), between 80 and 90 years, and more than 90 years.

Additional details about the variables of interest are provided in Appendix A.

3.5. Control variables

Our models include control variables for gender, age, marital status (marital life or not), education (low education (less than "baccalauréat," reference category); medium education ("baccalauréat" graduate); high education (more than "baccalauréat")), labor market status (employed (reference); retired; unemployed or not in the labor force (NLF) but not retired), and the logarithm of income.

When an explanatory variable (like income) has more than 75 observations with missing values, we create a dummy variable for whether information is missing and include it in our models.

3.6. Method and empirical issues

Although we are interested in the causal effect of preferences and expectations, we acknowledge that our study is mainly descriptive and shows correlations between preferences and expectations on the one hand and preparation behavior on the other hand. Indeed, preferences (and expectations) may be endogenous in our regressions for two reasons. First, it is entirely possible that preparation influences our right-hand side indicators, in particular expectations. Indeed, some individuals may have started preparing for old age a long time before the interview; as a result, they may be healthier by the time of the interview, and so that they may be less likely to expect to become disabled and they may report a longer longevity. Because our data is not longitudinal, we cannot solve reverse causation by measuring preferences and expectations before individuals start preparing for old age. Second, although we include a number of right-hand side variables, the correlation between preferences (or expectations) and preparation may be due to the omission of third common hidden factors. However, using a procedure developed by Oster (2016), we show that our results are not entirely due to unobserved heterogeneity (see the end of Section 4 and Appendix F for more details). We estimate our regressions using linear probability models.

4. Results

4.1. Descriptive analysis

Descriptive statistics for the variables of interest are presented in Table 1. In our sample, half individuals (50%) consider that they prepare for old age. 15% declare that they have bought insurance and 31% adapted their home. Lifestyles seem rather healthy: 83% report being

careful about diet, 61% do physical activity, and 82% try to maintain or develop intellectual abilities.

The average individual is risk averse, future oriented, and altruistic. Indeed, preference scores are all greater than their middle categories -- for instance, on a scale from 0 to 10 (the middle equals 5.5), the level of risk aversion equals 5.86. Approximately two third of the sample think they could become disabled (67%), and the rest is equally divided between myopia (17%) and denial (15%). Finally, half of the individuals (51%) expect to live between 80 and 90 years.

[Insert Table 1 here]

Regarding the evolution of preparation with age, we generally find that preparation strengthens with age, at least for the younger age groups (see Appendix B).

Correlation matrices for preference variables are presented in Appendix C. In general, correlation between risk variables is low, which motivates the need for a separate analysis of the variables. Similarly, the correlation between time preference variables and between family altruism measures is low. In contrast, the correlation between the four social altruism questions is larger. This is one of the reasons why we use a score for social altruism.

4.2. Main regression analysis

We first estimate the regression model using the following preference measures: the general risk aversion measure, the variables for whether the individual makes plans (to capture

planning) and thinks that giving money to her children is a good reason to save money (to capture family altruism), and the social altruism score. The results are presented in Table 2. Panel A shows the results for unstandardized preference variables, whereas Panel B contains the findings for standardized variables.

General risk aversion is not associated with our preparation outcomes, except for savings (and the association is only significant at the 0.10 level). In contrast, planning is a robust predictor of preparation for old age, since it is positively and significantly associated with eight outcomes out of nine, at the 0.01 significance level. Moreover, the role of planning is important: when this explanatory variable increases by 1, the probability of preparing for old age in general increases by 8.8 percentage points (Panel A), and when it increases by one standard deviation, general preparation increases by 7.5 percentage points (Panel B). In contrast, there is no evidence that planning matters for buying insurance.

Family altruism has a positive effect on general preparation, savings behavior, insurance uptake, and efforts to maintain intellectual skills. The effect of family altruism is thus less systematic across outcomes than that of planning. Moreover, results for standardized variables in Panel B suggest that the effect of family altruism on general preparation and on efforts to maintain intellectual skills is smaller than that of planning. For instance, when family altruism increases by one standard deviation, general preparation only increases by 4.3 percentage points. However, the effect of family altruism on preparation in the financial domain (savings, insurance) seems greater than the effect of planning.

Social altruism is positively and significantly associated with three outcomes: efforts to maintain social ties, efforts related to intellectual skills, and healthy diet. Unlike family

altruism, social altruism is not correlated with preparation in the general and financial domains. Panel B highlights that the effect of social altruism on efforts to maintain social ties has the same magnitude as the effect of planning, whereas the impact of social altruism on efforts to maintain intellectual skills is larger than that of planning or of family altruism.

Regarding the roles of expectations, myopia, and denial, we find that compared to individuals who think they could become disabled in the future, myopic individuals are less likely to prepare for old age (general preparation, savings behaviors, insurance uptake, home adaptation, and social ties). These effects are economically significant: in particular, myopia decreases the likelihood of preparing for old age in general by 11.8 percentage points, i.e. by 23.23% ($100 * 11.8 / 50.79 = 23.23$), that of saving money for old age by 29.12% ($100 * 14.3 / 49.10 = 29.12$), and that of adapting home by 38.40% ($100 * 12.1 / 31.51 = 38.40$). For a number of outcomes, being in denial also decreases the likelihood of preparation: for instance, denial decreases the likelihood of preparing for old age in general by 14.3 percentage points.

Expected longevity is positively associated with preparation activities in general and in the financial, housing, and health domains. These results make sense since a greater expected longevity increases the payoff of preparation. The probability that an individual who expects to live between 80 and 90 years prepares for old age in general is 10.4 percentage points higher than that of an individual who expects to live less than 80 years. For individuals who expect to live more than 90 years, the effect is even greater. However, there is no evidence that expected longevity is associated with efforts to maintain social ties and intellectual skills.

Males are less likely to prepare for old age (home adaptation, maintaining social ties and intellectual abilities, and being careful about diet) than females. For instance, the probability of home adaptation is 5.2 percentage points lower for males, that of being careful with diet, 12.0 points lower, and that of trying to maintain intellectual skills, 10.3 points lower. Moreover, for a number of outcomes, preparation increases with age (general preparation, savings, insurance, homeownership, home adaptation, and intellectual skills). Individuals who live alone are less likely to engage in preparation activities (savings, homeownership, home adaptation, and diet). In general, a higher socioeconomic status strengthens preparation activities: income is positively associated with homeownership, efforts to maintain social ties and intellectual skills, and physical activity, while education is positively associated with homeownership, a healthy diet, physical activity, and efforts to maintain intellectual skills. Note however that education is negatively correlated with general preparation and home adaptation (more educated individuals may already live in houses that are well suited for old age). Retirement increases the likelihood of doing physical activity.

[Insert Table 2 here]

Results when we adjust for the Bonferroni correction to deal with multiple testing are reported in Appendix D.

4.3. Regression analysis using alternative measures for preferences

We now re-estimate our models using alternative preferences variables. The results are presented in Table 3. When we use only 11-point scales to measure preferences in Panel A, we still find that farsightedness is positively correlated with most outcomes, and there is

suggestive evidence that farsightedness has a greater impact on preparation than risk aversion, family altruism (except for insurance and social ties), and social altruism (except for social ties).

Results using the remaining preference variables are presented in Panel B. In contrast with Table 2 and Table 3, Panel A, our risk and time preference variables in Table 3, Panel B, do not capture general risk and time attitudes, but risk and time attitudes in several contexts: marriage and daily life (for risk attitudes), and leisure and old age (for time attitudes). Preference variables from the old age context are endogenous by definition. We must be ready for the possibility that the effect of risk aversion in some contexts is greater than the effect of time attitudes in other contexts, even if general planning and farsightedness have a greater impact than general risk aversion.

Risk and time attitudes in these contexts are significantly associated with preparation. Indeed, risk attitudes in the marriage and daily life contexts are significantly linked to preparation in general. This finding is in stark contrast to the absence of correlation between general risk aversion (measured using the 11-point scale) and general preparation. Time attitude in the leisure and old age contexts are also significantly associated with preparation in general.

Some family altruism measures are positively correlated with preparation in the financial and housing domains, while social altruism variables are not. Finally, all four social altruism variables are positively correlated with efforts to maintain social ties and intellectual skills.

[Insert Table 3 here]

To assess the contribution of the variables of interest to the model, we compute coefficients of partial determination for preferences and expectations. The results are presented in Appendix E. They highlight that preferences and expectations are useful predictors and that their roles are economically significant.

We also check whether our results on the impact of preferences are robust to a test for omitted variable bias proposed by Oster (2016). The results are reported in Appendix F: the signs of the estimated effects remain the same, lending additional credibility to our findings on the role of preferences.

5. Discussion and conclusion

Using original data from a French “mutuelle,” this paper takes a unified approach to study the roles of preferences and expectations on preparation for old age in France. While 67% of individuals think they could become disabled in the future, only half of individuals (50%) say that they engage in preparation behaviors. General preparation strengthens with age: 38% of individuals say they prepare at ages 50-59, but 66% at ages 70-84. The increase in preparation could come from the increase in the probability of needing preparation as individuals grow older. Regarding specific preparation outcomes, we find that some choices or activities are rather rare, like the uptake of an insurance or home adaptation, while other are very frequent, like homeownership, efforts to maintain social ties and intellectual abilities, and a healthy diet.

Our article provides some explanations for the relatively low rate of general preparation for old age. There are several potential reasons why half of individuals do not prepare for old age: low income, high cost of preparation, great risk and time preference, selfishness, low

subjective probability of becoming disabled, and a short expected longevity. First, we find a positive association between income and some preparation outcomes. This finding is in line with previous evidence: for instance, a higher income is associated with reflexive planning for later life in Canada (Denton et al., 2004). More generally, the positive link between income and preparation is consistent with social inequalities in morbidity and mortality in old age (Apouey, 2010, 2015b). Assuming that income captures the unobserved cost of preparation, our finding also implies that the cost of preparation may be a barrier to preparation.

While general risk aversion does not explain preparation, risk attitude in some specific contexts may matter. This effect is in line with other studies on the role of risk preference on lifestyles and risky behaviors (Barsky et al., 1997).

Family and social altruism matters for preparation of old age, or, equivalently, selfishness increases the odds of non-preparation. Family altruism influences general preparation (whereas social altruism does not). In addition, both types of altruism play a positive role in efforts to maintain social ties and intellectual skills. Interestingly, family altruism and social altruism have different influences on preparation activities: family altruism is positively linked to preparation in the financial domain (savings behaviors and insurance uptake) whereas social altruism is not; and the effect of social altruism on efforts to maintain social ties is often stronger than that of family altruism.

We find that more future-oriented individuals are more likely to prepare for old age, consistent with previous results for Canada (Denton et al., 2004). Symmetrically, high time preference is a robust predictor of non-preparation. The role of future orientation (in the general context) on general preparation is more systematic across outcomes than that of the

other preferences variables, and there is suggestive evidence that the effect of future orientation is often greater than that of general risk aversion or altruism.

Individuals who think they will become disabled in the future are more likely to engage in preparation for old age, like individuals who expect to live longer. In contrast, myopia, denial, and a short expected longevity increase the likelihood of non-preparation.

Females are more likely than males to prepare for old age in the housing, social-life, and health domains. In the social relationships domain, the gap between females and males may reflect the differential socialization of females and males, which emphasizes social skills for females. The gender gap in health-related behaviors is consistent with the common findings that women are more likely to adopt a positive health behavior (Lundborg and Andersson, 2008). There is no difference between females and males regarding financial preparation (savings, insurance), which is also consistent with some previous findings (Petkoska and Earl, 2009). Finally, our study shows that individuals who do not live alone are more likely to engage in preparation for old age (in particular in the housing domain), which is in line with previous results (Denton et al., 2004).

Our results have implications for the design of policies promoting healthy aging. Indeed, policies should stress the role of preferences. Preferences result from genetic or environment factors, in particular early in life. In the long run, policies could try to improve environment factors (for instance at school) to strengthen future-orientation. In addition, in the short run, an avenue for policies could be to manipulate preferences to make people adopt more future-oriented behavior. Finally, information campaigns to enhance preparation should be tailored to the needs of present-oriented individuals.

We acknowledge some weaknesses on our study, mostly due to data limitations. First, our sample was not designed to be representative of the entire French population, but of the customers of a large insurance company. In particular, compared with the French population of the same age group, the average individual in our sample is more likely to be married and to be a homeowner. For this reason, our results should be interpreted with some caution and further research should check whether our findings can be replicated for a nationally representative sample. A second limitation of our study is related to our preferences measures. Indeed, we use a limited number of variables to measure preferences. Additional variables have been developed to measure risk and time preferences (Barsky et al., 1997; Holt and Laury, 2002; Lawless et al., 2013; Strathman et al., 1994) and should be used to check the robustness of our results. On a related matter, due to data limitation, our study does not examine the role of time inconsistent preferences on preparation. Finally, our article is mainly descriptive and does not quantify the causal impact of preferences and expectations. Indeed, even if our regressions include a number of controls, preferences and expectations may still be endogenous.

In closing, individuals are increasingly responsible to prepare for old age. In spite of this, limited research has explored the factors influencing this preparation. Our article takes a unified approach to assess the role of preferences and expectations on multiple aspects of preparation. Findings indicate that not only do risk and time preferences matter, but family and social altruism also play a significant role. Among preferences characteristics, time preference seems to have a more systematic effect than the other types of preferences. Moreover, expected disability and longevity also correlate with preparation. Preferences and

expectations represent an important ingredient in the design of effective programs promoting successful aging.

References

- Adams, G. A., & Rau, B. L. (2011). Putting off tomorrow to do what you want today: Planning for retirement. *American Psychologist*, 66(3), 180–192.
- Anderson, L. R., & Mellor, J. M. (2008). Predicting health behaviors with an experimental measure of risk preference. *Journal of Health Economics*, 27, 1260–1274.
- Apouey, B. H. (2010). On measuring and explaining socioeconomic polarization in health with an application to French data. *Review of Income and Wealth*, 56(1), 141–170.
- Apouey, B. H. (2015a). Le bien vieillir et les services associés : Revue de littérature et pistes de réflexion. *Chaire Transitions Démographiques Transitions Economiques. E-Note*.
- Apouey, B. H. (2015b). Les disparités sociales de santé perçue au cours de la vie : Le cas de la France (2004-2012). *Bulletin Épidémiologique Hebdomadaire*, 24–25, 456–465.
- Apouey, B. H. (2017a). Conditions économiques et définitions subjectives du « bien vieillir » : Résultats d'une enquête quantitative. *Paris School of Economics. Working Paper*.
- Apouey, B. H. (2017b). Les attentes en termes de services pour les séniors : Le rôle de l'altruisme et de quelques autres facteurs explicatifs. *Paris School of Economics. Working Paper*.
- Arrondel, L., & Masson, A. (2014). Mesurer les préférences des épargnants. Comment et pourquoi (en temps de crise) ? *Economie et Statistique*, 467, 5–49.
- Barsky, R., Kimball, M., Juster, F., & Shapiro, M. (1997). Preference parameters and behavioral heterogeneity: An experimental approach in the health and retirement study. *Quarterly Journal of Economics*, 112(2), 537–580.
- Büssing, A., Kerksieck, P., Günther, A., & Baumann, K. (2013). Altruism in adolescents and young adults: Validation of an instrument to measure generative altruism with structural equation modeling. *International Journal of Children's Spirituality*, 18(4), 335–350.
- Cambois, E., Garrouste, C., & Pailhé, A. (2017). Gender career divide and women's disadvantage in depressive symptoms and physical limitations in France. *SSM - Population Health*, 3, 81–88.
- Cambois, E., & Robine, J.-M. (2011). Pour qui la retraite sonnera ? Les inégalités d'espérance de vie en bonne santé avant et après 65 ans. *Bulletin Épidémiologique Hebdomadaire*, 8–9.
- CCAS de Brest. (2013). Enquête sur le bien vieillir. Analyse des besoins sociaux. Synthèse de l'enquête auprès des 60-74 ans.
- Denton, M. A., Kemp, C. L., French, S., Gafni, A., Joshi, A., Rosenthal, C. J., & Davies, S. (2004). Reflexive planning for Later Life. *Canadian Journal on Aging / La Revue Canadienne Du Vieillissement*, 23(5), S71–S82.
- DeVaney, S. A., & Chiremba, S. T. (2005). Comparing the retirement savings of the baby boomers and other cohorts. *US Bureau of Labor Statistics*. Retrieved from <https://www.bls.gov/opub/mlr/cwc/comparing-the-retirement-savings-of-the-baby-boomers-and-other-cohorts.pdf>
- Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2012). The intergenerational transmission of risk and trust attitudes. *Review of Economic Studies*, 79(2), 645–677.
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association*, 9(3), 522–550.
- Dulebohn, J. H. (2002). An investigation of the determinants of investment risk behavior in employer-sponsored retirement plans. *Journal of Management*, 28(1).
- Fontaine, R., Plisson, M., & Zerrar, N. (2014). Dans quelle mesure les préférences individuelles contraignent-elles le développement du marché de l'assurance dépendance ? *Economie et Statistique*, 474, 35–68.

- Goldzahl, L. (2015). Are perceptions and preferences channels of transmission for social inequalities in breast cancer screening attendance? *Working Paper. Centre d'Economie de La Sorbonne*.
- Guillon, M., Fouéré, S., Segouin, C., & Simon, A. (2016). Risky sexual behaviors: The role of time and risk preferences in condom use. *Working Paper*. Retrieved from <https://afse2016.sciencesconf.org/97999/document>
- Holt, C. A., & Laury, S. K. (2002). Risk aversion and incentive effects. *American Economic Review*, 92(5), 1644–1655.
- Ju, Y. J., Kim, W., Lee, S. A., Lee, J. E., Yoon, H., & Park, E.-C. (2017). Lack of retirement preparation is associated with increased depressive symptoms in the elderly: Findings from the Korean Retirement and Income Panel Study. *Journal of Korean Medical Science*, 32(9), 1516–1521.
- Jusot, F., & Khlal, M. (2013). The role of time and risk preferences in smoking inequalities: A population-based study. *Addictive Behaviors*, 38, 2167–2173.
- Kornadt, A. E., & Rothermund, K. (2014). Preparation for old age in different life domains: Dimensions and age differences. *International Journal of Behavioral Development*, 38(3), 228–238.
- Lawless, L., Drichoutis, A. C., & Nayga Jr, R. M. (2013). Time preferences and health behaviour: A review. *Agricultural and Food Economics*, 1(17), 1–19.
- Lundborg, P., & Andersson, H. (2008). Gender, risk perceptions, and smoking behavior. *Journal of Health Economics*, 27, 1299–1311.
- Noone, J. H., Stephens, C., & Alpass, F. M. (2009). Preretirement planning and well-being in later life. *Research on Aging*, 31(3), 295–317.
- Noone, J., O'Loughlin, K., & Kendig, H. (2013). Australian baby boomers retiring “early”: Understanding the benefits of retirement preparation for involuntary and voluntary retirees. *Journal of Aging Studies*, 27(3), 207–217.
- Oster, E. (2016). Unobservable selection and coefficient stability: Theory and evidence. *Brown University Working Papers*.
- Peretti-Watel, P., L'Haridon, O., & Seror, V. (2013). Time preferences, socioeconomic status and smokers' behaviour, attitudes and risk awareness. *European Journal of Public Health*, 23(5), 783–788.
- Petkoska, J., & Earl, J. K. (2009). Understanding the influence of demographic and psychological variables on retirement planning. *Psychology and Aging*, 24(1), 245–251.
- Picone, G., Sloan, F., & Taylor JR, D. (2004). Effects of risk and time preference and expected longevity on demand for medical tests. *Journal of Risk and Uncertainty*, 28(1), 39–53.
- Sloan, F. A., Eldred, L. M., & Xu, Y. (2014). The behavioral economics of drunk driving. *Journal of Health Economics*, 35, 64–81.
- Strathman, A., Gleicher, F., Boninger, D. S., & Edwards, C. S. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology*, 66(4), 742–752.
- Street, D., & Desai, S. (2011). Planning for old age. In R. A. Settersten Jr & J. L. Angels (Eds.), *Handbook of Sociology of Aging* (pp. 379–397).
- Van Der Pol, M. (2011). Health, education and time preference. *Health Economics*, 20, 917–929.
- Viavoice, Harmonie Mutuelle, France 2, & Le Monde. (2013). L'observatoire de la révolution de l'âge. Etude d'opinion auprès des personnes ayant 70 ans et plus et des personnes ayant entre 40 et 70 ans. Retrieved from https://www.aidautonomie.fr/IMG/pdf/La_Revolution_de_l_age_Sondage_Viavoice-HarmonieMutuelle-France2-LeMonde_Juillet_2013.pdf

Vischer, T., Dohmen, T., Falk, A., Huffman, D., Schupp, J., Sunde, U., & Wagner, G. G.
(2013). Validating an ultra-short survey measure of patience. *Economics Letters*, *120*(2),
142–145.

TABLES

Table 1. Descriptive statistics

Variable	Min-max	Proportion or mean (standard error)
<i>Preparation for old age</i>		
General preparation	0-1	50.79%
Savings	0-1	49.10%
Insurance	0-1	15.87%
Homeowner	0-1	79.58%
Home adaptation	0-1	31.51%
Social ties	0-1	74.72%
Diet	0-1	83.94%
Physical activity	0-1	61.90%
Intellectual skills	0-1	82.54%
<i>Preferences</i>		
Risk - General context - Risk aversion (11-point scale)	0-10	5.86 (2.48)
Time - General context - Farsightedness (11-point scale)	0-10	7.06 (2.24)
Time - General context - Is the kind of person who makes plans	0-3	1.72 (0.86)
Family altruism - Thinks that giving money to children is an important reason to save money (11-point scale)	0-10	6.13 (2.67)
Social altruism (11-point scale)	0-10	6.78 (2.10)
Social altruism score	0-12	7.54 (2.41)
<i>Expectations, myopia and denial</i>		
Expected disability. Reference	0-1	67.01%
Myopia	0-1	17.50%
Denial	0-1	15.47%
Expected longevity < 80. Reference	0-1	21.21%
Expected longevity 80-90	0-1	51.54%
Expected longevity > 90	0-1	27.25%

Notes. Standard errors for continuous variables are reported in parentheses.

Table 2. Main model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	General preparation	Savings	Insurance	Home- owner	Home adaptation	Social ties	Diet	Physical activity	Intellectual skills
Panel A. Unstandardized preference variables									
Preferences (unstandardized)									
General context - Risk aversion (11-point scale)	0.008 (0.006)	0.011* (0.006)	-0.002 (0.005)	-0.000 (0.005)	0.005 (0.005)	0.002 (0.005)	0.001 (0.004)	-0.004 (0.006)	0.001 (0.004)
General context - Planning	0.088*** (0.017)	0.059*** (0.018)	0.013 (0.013)	0.068*** (0.014)	0.059*** (0.016)	0.079*** (0.015)	0.027** (0.013)	0.105*** (0.016)	0.037*** (0.013)
Family altruism - Giving money to children (11-point scale)	0.016*** (0.005)	0.023*** (0.006)	0.009** (0.004)	0.005 (0.004)	-0.002 (0.005)	0.008 (0.005)	-0.002 (0.004)	-0.001 (0.005)	0.007* (0.004)
Social altruism score	0.001 (0.006)	-0.002 (0.007)	-0.008 (0.005)	-0.002 (0.005)	-0.002 (0.006)	0.025*** (0.006)	0.008* (0.004)	0.007 (0.006)	0.018*** (0.005)
Panel B. Standardized preference variables									
Preferences (standardized)									
General context - Risk aversion (11-point scale)	0.019 (0.014)	0.026* (0.015)	-0.006 (0.011)	-0.000 (0.011)	0.013 (0.013)	0.004 (0.013)	0.002 (0.010)	-0.009 (0.013)	0.002 (0.010)
General context - Planning	0.075*** (0.014)	0.050*** (0.015)	0.011 (0.011)	0.057*** (0.012)	0.049*** (0.013)	0.066*** (0.013)	0.023** (0.011)	0.088*** (0.014)	0.031*** (0.011)
Family altruism - Giving money to children (11-point scale)	0.043*** (0.014)	0.060*** (0.015)	0.024** (0.010)	0.014 (0.012)	-0.004 (0.013)	0.021 (0.013)	-0.005 (0.010)	-0.004 (0.014)	0.018* (0.011)
Social altruism score	0.002 (0.015)	-0.005 (0.016)	-0.019 (0.013)	-0.005 (0.011)	-0.006 (0.014)	0.062*** (0.013)	0.019* (0.010)	0.018 (0.014)	0.045*** (0.011)
Expectations, myopia and denial									
Expected disability	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Myopia	-0.118*** (0.038)	-0.143*** (0.041)	-0.054* (0.028)	-0.032 (0.030)	-0.121*** (0.033)	-0.068* (0.035)	-0.012 (0.029)	-0.003 (0.037)	0.019 (0.028)
Denial	-0.143*** (0.039)	-0.046 (0.043)	-0.087*** (0.029)	-0.056* (0.032)	-0.185*** (0.033)	-0.052 (0.036)	-0.032 (0.031)	-0.026 (0.039)	-0.085** (0.034)
Longevity <80	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Longevity 80-90	0.104** (0.042)	0.120*** (0.045)	0.027 (0.031)	0.064* (0.036)	0.079** (0.036)	-0.038 (0.038)	0.099*** (0.035)	0.059 (0.042)	-0.018 (0.033)
Longevity >90	0.152*** (0.047)	0.124** (0.052)	0.095** (0.038)	0.071* (0.040)	0.093** (0.042)	-0.006 (0.041)	0.108*** (0.037)	0.134*** (0.046)	0.007 (0.036)
Controls									
Male	-0.008 (0.029)	0.018 (0.032)	-0.012 (0.024)	-0.010 (0.022)	-0.052* (0.027)	-0.061** (0.025)	-0.120*** (0.022)	-0.031 (0.028)	-0.103*** (0.022)
Age 50-59	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Age 60-69	0.108* (0.059)	0.104* (0.062)	0.087* (0.047)	0.080* (0.042)	0.108** (0.051)	0.050 (0.052)	0.117*** (0.036)	0.035 (0.055)	0.066 (0.044)
Age 70+	0.224*** (0.068)	0.168*** (0.072)	0.182*** (0.056)	0.080* (0.049)	0.219*** (0.060)	0.089 (0.058)	0.102** (0.041)	-0.067 (0.063)	0.086* (0.049)
Living alone	-0.015 (0.033)	-0.110*** (0.037)	0.009 (0.028)	-0.177*** (0.030)	-0.068** (0.030)	0.027 (0.029)	-0.041* (0.024)	-0.018 (0.031)	-0.020 (0.025)
Low edu	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Medium edu	0.000 (0.037)	0.029 (0.041)	0.006 (0.032)	0.046* (0.027)	-0.009 (0.036)	0.033 (0.033)	0.040 (0.026)	0.102*** (0.036)	0.027 (0.028)
High edu	-0.072** (0.037)	-0.024 (0.042)	-0.037 (0.028)	0.047* (0.026)	-0.090*** (0.034)	0.001 (0.031)	0.054** (0.025)	0.158*** (0.034)	0.046* (0.025)
Employed	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Retired	0.050 (0.061)	-0.046 (0.064)	-0.017 (0.049)	-0.028 (0.043)	0.027 (0.053)	0.010 (0.053)	0.021 (0.035)	0.114** (0.056)	0.033 (0.044)
Unemployed or NLF	0.028 (0.055)	0.053 (0.062)	-0.020 (0.038)	0.021 (0.047)	0.067 (0.052)	-0.055 (0.053)	-0.009 (0.049)	0.111* (0.057)	0.088** (0.043)
Ln(income+1)	0.023 (0.014)	0.031 (0.021)	-0.007 (0.010)	0.074*** (0.022)	-0.005 (0.017)	0.036** (0.015)	-0.000 (0.013)	0.045*** (0.016)	0.028* (0.016)
Obs	1,181	1,037	1,026	1,231	1,209	1,234	1,244	1,240	1,240

Notes. Dummies for missing information on income and family altruism are included. In Panel B, the preference variables are standardized. Standardized variables have a mean of 0 and a standard deviation of 1. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Results using alternative measures of preferences

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	General preparation	Savings	Insurance	Home -owner	Home adaptation	Social ties	Diet	Physical activity	Intellectual skills
Panel A. Standardized 11-point scales									
General context - Risk aversion (11-point scale)	0.011 (0.014)	0.020 (0.015)	-0.004 (0.012)	-0.004 (0.011)	0.009 (0.013)	-0.010 (0.013)	-0.004 (0.010)	-0.017 (0.014)	-0.007 (0.010)
General context - Farsightedness (11-point scale)	0.087*** (0.014)	0.092*** (0.016)	0.018* (0.011)	0.037*** (0.013)	0.029** (0.013)	0.007 (0.013)	0.048*** (0.012)	0.016 (0.015)	0.022* (0.012)
Family altruism - Giving money to children (11-point scale)	0.033** (0.014)	0.049*** (0.016)	0.023** (0.010)	0.015 (0.012)	-0.004 (0.014)	0.024* (0.014)	-0.012 (0.010)	0.001 (0.014)	0.016 (0.011)
Social altruism (11-point scale)	-0.017 (0.015)	-0.021 (0.015)	-0.017 (0.011)	-0.026** (0.012)	-0.006 (0.013)	0.052*** (0.013)	0.010 (0.010)	-0.019 (0.014)	0.006 (0.011)
Panel B. Other standardized preference variables									
<i>Risk</i>									
Marriage context - Thinks that homogamy increases the length of a couple relationship	0.042*** (0.015)	0.017 (0.018)	0.026** (0.012)	0.029** (0.012)	-0.004 (0.015)	-0.001 (0.014)	0.009 (0.012)	0.031** (0.015)	0.003 (0.012)
Marriage context - Believes that marriage is a security	0.041*** (0.015)	0.039** (0.017)	-0.006 (0.013)	0.030** (0.012)	0.047*** (0.014)	0.015 (0.014)	0.001 (0.011)	0.023 (0.015)	-0.003 (0.012)
Daily life context - Takes precautions against an uncertain weather	0.043*** (0.015)	0.033** (0.016)	0.005 (0.011)	-0.004 (0.012)	0.013 (0.014)	0.020 (0.013)	0.020* (0.012)	0.017 (0.014)	0.025** (0.011)
<i>Time</i>									
Leisure context - Prepares for her holidays in advance	0.054*** (0.014)	0.045*** (0.015)	0.019* (0.011)	0.003 (0.011)	0.016 (0.013)	0.017 (0.013)	0.013 (0.011)	0.041*** (0.014)	0.013 (0.011)
Old age context - Is worried about ending up in a nursing home	-0.000 (0.014)	0.044*** (0.015)	0.022** (0.011)	0.016 (0.012)	0.017 (0.013)	0.015 (0.013)	0.004 (0.011)	-0.009 (0.014)	0.009 (0.011)
Old age context – Believes that one should prepare for retirement a long time in advance	0.088*** (0.014)	0.081*** (0.014)	0.005 (0.011)	0.021* (0.012)	0.023* (0.013)	0.012 (0.013)	0.025** (0.011)	0.017 (0.014)	0.018 (0.011)
<i>Family altruism</i>									
Thinks that parents should try to leave their children an inheritance	0.039*** (0.015)	0.057*** (0.016)	0.018 (0.011)	0.027** (0.011)	0.002 (0.013)	0.011 (0.013)	0.002 (0.010)	0.020 (0.014)	-0.001 (0.011)
Tries to foster a sense of family in her children	0.021 (0.015)	0.007 (0.015)	-0.004 (0.011)	-0.007 (0.011)	0.029** (0.013)	0.049*** (0.013)	0.017 (0.011)	-0.033** (0.014)	-0.009 (0.010)
Agrees that having children is a commitment for life	-0.012 (0.014)	0.049*** (0.015)	-0.009 (0.012)	0.009 (0.012)	0.014 (0.012)	0.021 (0.013)	0.026** (0.012)	-0.003 (0.013)	0.011 (0.011)
<i>Social altruism</i>									
Helps others when there is no direct benefit for her	0.025* (0.014)	-0.018 (0.016)	-0.002 (0.012)	-0.005 (0.012)	0.002 (0.014)	0.053*** (0.013)	0.019* (0.011)	0.021 (0.014)	0.039*** (0.011)
Helps someone she does not know who asks for help	-0.014 (0.014)	-0.018 (0.016)	-0.028** (0.012)	-0.009 (0.011)	-0.024* (0.014)	0.023* (0.013)	0.002 (0.010)	0.008 (0.014)	0.027** (0.011)
Thinks about how to relieve the distress of individuals in need	0.025* (0.015)	0.017 (0.016)	-0.016 (0.013)	0.006 (0.011)	0.012 (0.014)	0.039*** (0.013)	0.018* (0.011)	0.007 (0.014)	0.033*** (0.012)
Can relinquish her material good in favor of the common good	-0.029** (0.014)	0.001 (0.015)	-0.014 (0.011)	-0.002 (0.011)	-0.006 (0.013)	0.061*** (0.013)	0.005 (0.010)	0.006 (0.014)	0.022** (0.011)

Notes. Preference variables are standardized. Standardized variables have a mean of 0 and a standard deviation of 1. Controls for socio-demographic characteristics, expectations and myopia are included. In Panel B, we control for the remaining preference variables: risk aversion (11-point scale), time preferences (makes plans), family altruism (11-point scale) and the social altruism score. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

**Preparation for old age in France:
The roles of preferences and expectations**

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Appendix A. Definitions of the variables of interest

Table A1. Definitions of the main variables

Variable label	Definition	Survey question in French
<i>Preparation for old age</i>		
General preparation	=1 if she prepares or prepared for old age	Pour anticiper son vieillissement et préparer ses « vieux jours », une personne peut par exemple adapter son logement (salle de bain aménagée, ...), souscrire à un contrat d'assurance dépendance, mettre spécialement de l'argent de côté, surveiller spécialement son alimentation, pratiquer spécialement une activité physique, etc. Avez-vous le sentiment de préparer, ou d'avoir préparé, vos « vieux jours » (d'anticiper, ou d'avoir anticipé, votre vieillissement) ? Oui tout à fait / Oui plutôt / Non plutôt pas / Non pas du tout
Savings	=1 if she saved money	Mettez-vous de l'argent de côté, spécialement pour vos « vieux jours » (votre vieillissement) ? Oui / Non
Insurance	=1 if she bought a long-term care insurance	Avez-vous souscrit à un contrat d'assurance dépendance ? Oui / Non
Homeowner	=1 if she is a homeowner	Etes-vous propriétaire d'un logement ? Oui / Non
Home adaptation	=1 if she adapted her home	Avez-vous adapté votre logement (salle de bain aménagée, rampe d'escalier adaptée...) spécialement pour préparer vos « vieux jours » (anticiper votre vieillissement) ? Oui / Non
Social ties	=1 if she tries to maintain or develop social ties	Cherchez-vous à maintenir ou développer un lien social avec des gens ? Oui / Non
Diet	=1 if she is careful about diet	Faites-vous attention à votre alimentation ? Oui / Non
Physical activity	=1 if does physical activity	Pratiquez-vous une activité physique ? Oui / Non
Intellectual skills	=1 if she tries to maintain or develop intellectual abilities	Cherchez-vous à maintenir ou à développer vos capacités intellectuelles ? Oui / Non
<i>Preferences</i>		
<i>Risk</i>		
General context - Risk aversion (11-point scale)	Score from 0 to 10 (risk averse)	Sur une échelle de 0 à 10, vous considérez-vous de manière générale comme quelqu'un de prudent(e), limitant au maximum les risques, ou inversement comme quelqu'un qui aime prendre des risques, qui aime l'aventure et recherche la nouveauté et les défis ? Echelle (inversée) de 0 à 10
<i>Time</i>		
General context - Farsightedness (11-point scale)	Score from 0 to 10 (farsighted)	Sur une échelle de 0 à 10, vous considérez-vous plutôt comme quelqu'un vivant au jour le jour, ou inversement comme quelqu'un qui pense à l'avenir et qui est prévoyant(e) ? Echelle de 0 à 10
General context – Makes plans	Score from 0 (Not at all) to 3 (Yes, always)	Vous êtes quelqu'un qui fait des projets. Non, pas du tout / Non, plutôt pas / Oui, plutôt / Oui, tout à fait
<i>Family altruism</i>		
Family altruism - Thinks that giving money to children is an important reason to save money (11-point scale)	Score from 0 (not altruistic) to 10 (altruistic)	Sur une échelle de 0 à 10, considérez-vous que « transmettre à vos descendants » est une raison d'épargner pas du tout importante, ou inversement très importante ? Echelle de 0 à 10

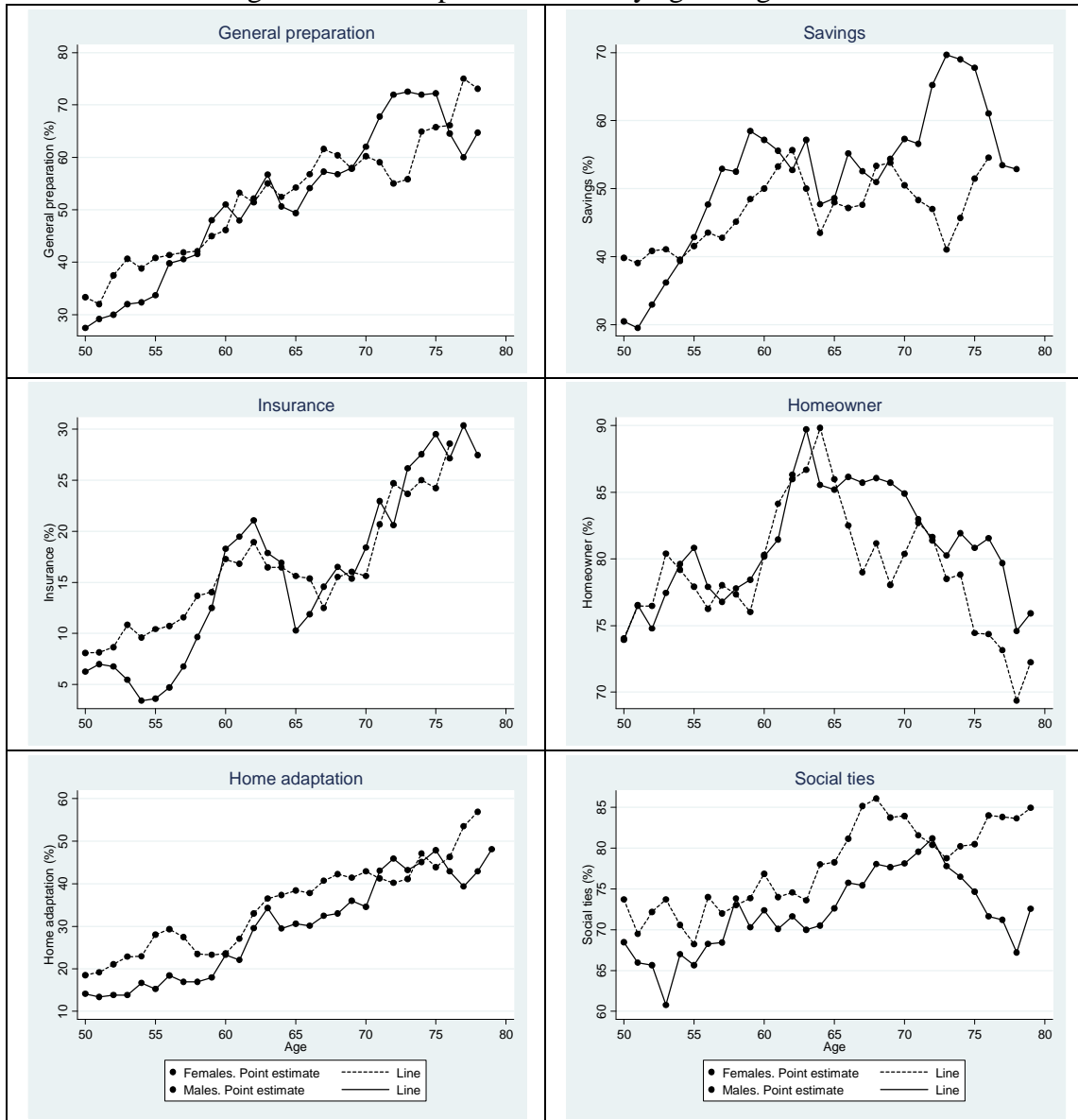
<i>Social altruism</i>		
Social altruism (11-point scale)	Score from 0 (not altruistic) to 10 (altruistic)	Sur une échelle de 0 à 10, au-delà de votre cercle familial, vous considérez-vous plutôt comme quelqu'un d'égoïste, ou inversement comme quelqu'un d'altruiste ? Echelle de 0 à 10
Social altruism score	We aggregate responses to the four questions Score from 0 (not altruistic) to 12 (altruistic)	The score is constructed using the following questions: Nous souhaitons savoir à quelle fréquence vous faites les choses suivantes. (1) Vous aidez autrui même quand cela ne vous rapporte rien personnellement. (2) Si un inconnu vous demande de l'aide, vous l'aidez immédiatement. (3) Lorsque vous voyez des personnes dans le besoin, vous réfléchissez à des façons de répondre à leur détresse et à leurs besoins. (4) Vous faites passer vos possessions matérielles au second plan pour favoriser le bien commun. Jamais / Rarement / Parfois / Souvent
<i>Expectations, myopia and denial</i>		
Expected disability	=1 if she thinks she could become disabled	Vous-mêmes, avez-vous envisagé qu'un jour vous pourriez devenir dépendant ? Oui / Non / Vous ne souhaitez pas en entendre parler
Myopia	= 1 if she does not think she could become disabled. Reference category	
Denial	=1 if she does not want to hear of disability	
Expected longevity < 80	=1 if she believes that her longevity is less than 80 years Reference category	Pensez-vous que vous allez vivre au-delà de : (i) 70 ans ? (ii) 80 ans ? (iii) 90 ans ? (iv) 100 ans ? Oui / Non
Expected longevity 80-90	=1 if she believes that her longevity is between 80 and 90 years	
Expected longevity > 90	=1 if she believes that her longevity is greater than 90 years	

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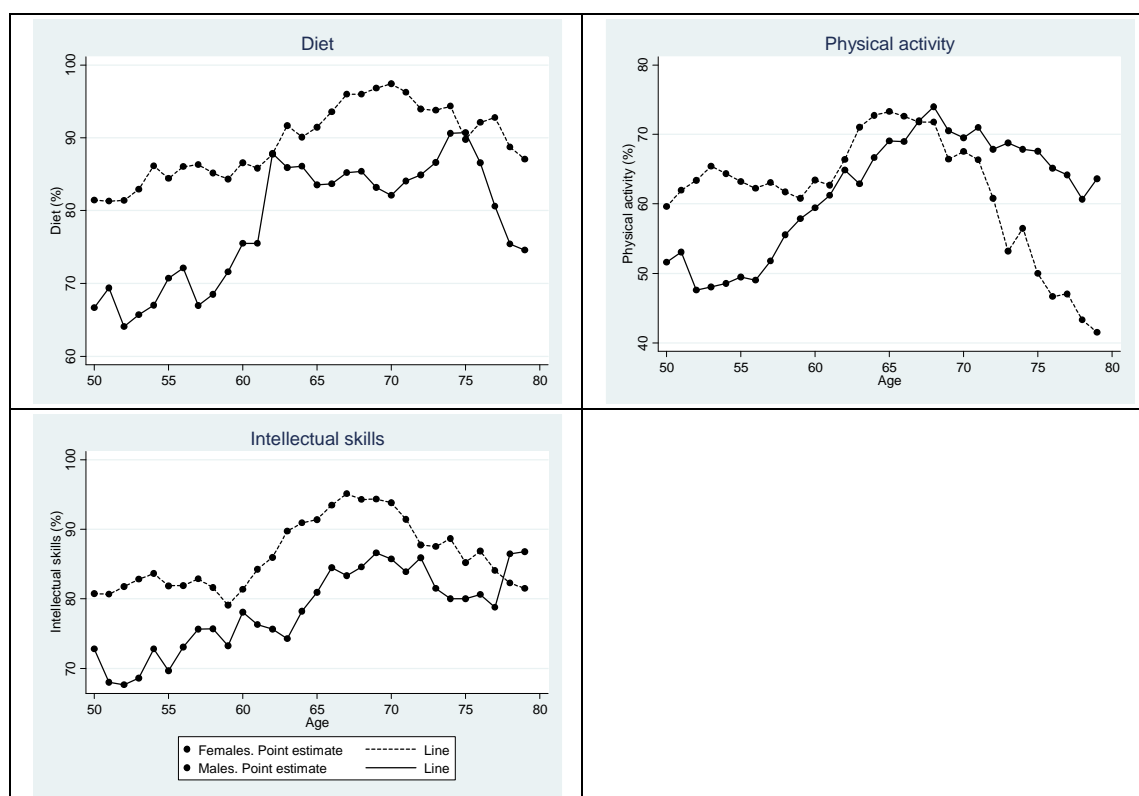
Appendix B. Evolution of the outcomes with age

In the graphs below, a dot at age “x” represents the average preparation rate for individuals aged “x-2” to “x+2”. For example, a dot at age 50 represents the average preparation level for individuals aged 48 to 52.

Figure B1. Descriptive statistics by age and gender



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Regarding the evolution of preparation with age, we generally find that preparation strengthens with age, at least for the younger age groups. Indeed, the general preparation variable increases for females while it increases and then becomes stable (or decreases) around age 70 for males. Among females, 35% report that they prepare for old age at ages 48-52, versus 54% at ages 63-67 and 65% at ages 73-77. The figures for males are respectively 26%, 49%, and 72%.

Moreover, we find that the probability of insurance uptake (for females) and home adaptation (females) significantly increases with age. In addition, for some other outcomes, preparation increases and then remains stable: this is true for savings behaviors (females and males), insurance uptake (males), homeownership (males), home adaptation (males), social ties (females), diet (females and males) and physical activity (males). Homeownership (females) increases and then decreases with age, while efforts to maintain intellectual skills (females) first remain stable, then increase and finally decrease with age.

However, for the remaining outcomes, we do not find any evidence of an increase with age, even for younger individuals: physical activity (females) remains stable and then decreases with age, while efforts to maintain social ties (males) and intellectual skills (males) remain constant for all age groups.

The evolution of preparation activities with age may capture either an age effect or a cohort effect. Assuming that they only reflect an age effect, differences between the evolutions of outcomes with age could be due to differences between preparation of the third and of the fourth age. Indeed, the results show that the likelihood of third-age preparation (captured by physical activity and efforts to maintain intellectual skills) first increases with age and then

either becomes stable or decrease. This may mean that individuals first make efforts to compensate for physical and intellectual losses, and then reach their limits. In contrast, for outcomes related to the preparation of the fourth age (like insurance uptake or home adaptation), we find that preparation continuously increases with age, which means that this type of preparation remains important even for older individuals. This difference in the evolution of third- and fourth-age preparation with age is consistent with previous findings for Germany (Kornadt and Rothermund, 2014).

It is also possible that the evolution of preparation with age reflects a cohort effect rather than an age effect: older individuals may prepare more (or less, depending on activities) than younger individuals not because they are older, but because they grew up in a particular period of time and were socialized in a different manner. Longitudinal data are needed to disentangle age effects from cohort effects.

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Appendix C. Correlation matrices for preference variables

The preference variables below are not standardized.

Risk preferences

	General context – Risk aversion (11-point scale)	Daily life context - Takes precautions against an uncertain weather	Marriage context - Thinks that homogamy increases the length of a couple relationship	Marriage context - Believes that marriage is a security
General context – Risk aversion (11-point scale)	1.0000			
Daily life context - Takes precautions against an uncertain weather	0.0937	1.0000		
Marriage context - Thinks that homogamy increases the length of a couple relationship	0.0749	0.0821	1.0000	
Marriage context - Believes that marriage provides security	0.1052	0.1644	0.2651	1.0000

Time preferences

	General context – Farsightedness (11-point scale)	General context - Makes plans	Leisure context - Prepares for her holidays in advance	Old age context - Is worried about ending up in a nursing home	Old age context - Believes that one should prepare for retirement a long time in advance
General context – Farsightedness (11-point scale)	1.0000				
General context – Makes plans	0.1441	1.0000			
Leisure context - Prepares for her holidays in advance	0.1623	0.4496	1.0000		
Old age context - Is worried about ending up in a nursing home	0.0725	0.0373	0.0520	1.0000	
Old age context - Believes that one should prepare for retirement a long time in advance	0.2305	0.1199	0.1098	0.0447	1.0000

Family altruism

	Thinks that giving money to children is an important reason to save money (11-point scale)	Thinks that parents should try to leave their children an inheritance	Tries to foster a sense of family in her children	Agrees that having children is a commitment for life
Thinks that giving money to children is an important reason to save money (11-point scale)	1.0000			
Thinks that parents should try to leave their children an inheritance	0.3848	1.0000		
Tries to foster a sense of family in her children	0.1367	0.1207	1.0000	
Agrees that having children is a commitment for life	0.1157	0.0698	0.1680	1.0000

Social altruism

	Helps others when there is no direct benefit for her	Helps someone she does not know who asks for help	Thinks about how to relieve the distress of individuals in need	Can relinquish her material good in favor of the common good	Social altruism score
Helps others when there is no direct benefit for her	1.0000				
Helps someone she does not know who asks for help	0.3933	1.0000			
Thinks about how to relieve the distress of individuals in need	0.4536	0.4320	1.0000		
Can relinquish her material good in favor of the common good	0.3426	0.2604	0.4129	1.0000	
Social altruism score	0.7308	0.7157	0.7756	0.7070	1.0000

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Appendix D. Accounting for multiple testing

To deal with multiple testing, we re-estimate the models adjusting for the Bonferroni correction. The results are presented in the table below.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	General preparation	Savings	Insurance	Home- owner	Home adaptation	Social ties	Diet	Physical activity	Intellectual skills
Panel A. Unstandardized preference variables									
Preferences (unstandardized)									
General context - Risk aversion (11-point scale)	0.008 (0.006)	0.011* (0.006)	-0.002 (0.005)	-0.000 (0.005)	0.005 (0.005)	0.002 (0.005)	0.001 (0.004)	-0.004 (0.006)	0.001 (0.004)
General context - Planning	<u>0.088***</u> (0.017)	<u>0.059***</u> (0.018)	0.013 (0.013)	<u>0.068***</u> (0.014)	<u>0.059***</u> (0.016)	<u>0.079***</u> (0.015)	<u>0.027**</u> (0.013)	<u>0.105***</u> (0.016)	<u>0.037***</u> (0.013)
Family altruism - Giving money to children (11-point scale)	<u>0.016***</u> (0.005)	<u>0.023***</u> (0.006)	0.009** (0.004)	0.005 (0.004)	-0.002 (0.005)	0.008 (0.005)	-0.002 (0.004)	-0.001 (0.005)	0.007* (0.004)
Social altruism score	0.001 (0.006)	-0.002 (0.007)	-0.008 (0.005)	-0.002 (0.005)	-0.002 (0.006)	<u>0.025***</u> (0.006)	0.008* (0.004)	0.007 (0.006)	<u>0.018***</u> (0.005)
Panel B. Standardized preference variables									
Preferences (standardized)									
General context - Risk aversion (11-point scale)	0.019 (0.014)	0.026* (0.015)	-0.006 (0.011)	-0.000 (0.011)	0.013 (0.013)	0.004 (0.013)	0.002 (0.010)	-0.009 (0.013)	0.002 (0.010)
General context - Planning	<u>0.075***</u> (0.014)	<u>0.050***</u> (0.015)	0.011 (0.011)	<u>0.057***</u> (0.012)	<u>0.049***</u> (0.013)	<u>0.066***</u> (0.013)	<u>0.023**</u> (0.011)	<u>0.088***</u> (0.014)	<u>0.031***</u> (0.011)
Family altruism - Giving money to children (11-point scale)	<u>0.043***</u> (0.014)	<u>0.060***</u> (0.015)	0.024** (0.010)	0.014 (0.012)	-0.004 (0.013)	0.021 (0.013)	-0.005 (0.010)	-0.004 (0.014)	0.018* (0.011)
Social altruism score	0.002 (0.015)	-0.005 (0.016)	-0.019 (0.013)	-0.005 (0.011)	-0.006 (0.014)	<u>0.062***</u> (0.013)	0.019* (0.010)	0.018 (0.014)	<u>0.045***</u> (0.011)
Expectations, myopia, and denial									
Myopia	-0.118*** (0.038)	- 0.143*** (0.041)	-0.054* (0.028)	-0.032 (0.030)	-0.121*** (0.033)	-0.068* (0.035)	-0.012 (0.029)	-0.003 (0.037)	0.019 (0.028)
Denial	-0.143*** (0.039)	-0.046 (0.043)	- 0.087*** (0.029)	-0.056* (0.032)	-0.185*** (0.033)	-0.052 (0.036)	-0.032 (0.031)	-0.026 (0.039)	-0.085** (0.034)
Longevity 80-90	0.104** (0.042)	0.120*** (0.045)	0.027 (0.031)	0.064* (0.036)	0.079** (0.036)	-0.038 (0.038)	0.099*** (0.035)	0.059 (0.042)	-0.018 (0.033)
Longevity >90	0.152*** (0.047)	0.124** (0.052)	0.095** (0.038)	0.071* (0.040)	0.093** (0.042)	-0.006 (0.041)	0.108*** (0.037)	0.134*** (0.046)	0.007 (0.036)

Notes. Control variables are included. Dummies for missing information on income and family altruism are also included. In Panel B, the preference variables are standardized. Standardized variables have a mean of 0 and a standard deviation of 1. Robust standard errors are reported in parentheses. Coefficients on preferences, expectations, myopia and denial which are significant when adjusting for the Bonferroni correction are underlined. *** p<0.01, ** p<0.05, * p<0.1.

Planning is a robust predictor of preparation for old age, since it is positively and significantly associated with eight outcomes out of nine, at the 0.01 significance level. Note that the association is still significant in six cases when we adjust for the Bonferroni correction.

Social altruism is positively and significantly associated with three outcomes: efforts to maintain social ties, efforts related to intellectual skills (even when using the Bonferroni adjustment) and healthy diet (at the 10% significance level only).

Note that the Bonferroni correction reduces the risk of false positive findings, but it increases the risk of false negative results.

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Appendix E. Coefficients of partial determination

To show that preferences and expectations-myopia-denial are useful predictors, we compute coefficients of partial determination. First, we use the model presented in Table 2, Panel B, which includes controls, preferences, and expectations-myopia-denial, as our full model. We estimate three reduced models: (i) a model without preferences, (ii) a model without expectations-myopia-denial, and (iii) a model with neither preferences nor expectations-myopia-denial. Using the residual sum of squares of the full and reduced models, we compute the coefficients of partial determination associated with preferences, with expectations-myopia-denial, and with preferences and expectations-myopia-denial. These coefficients are reported at the top of Table E1. Between 3.0% and 8.9% of the variation cannot be explained in the reduced model without preferences, but can be explained in the full model. Moreover, between 5.8% and 11.1% of the variation cannot be explained in the reduced model without preferences and expectations-myopia-denial, but can be explained in the full model. These figures show that preferences and expectations-myopia-denial are useful predictors; their roles are economically significant.

Second, we assume that the model presented in Table 3, Panel A (which contains a different set of preference variables) is our full model. We follow the same steps and report the coefficients of partial determination at the bottom of Table E1. The results are in line with the above conclusion.

Table E1. Coefficients of partial determination

	(1) General preparation	(2) Savings	(3) Insurance	(4) Home- owner	(5) Home adaptation	(6) Social ties	(7) Diet	(8) Physical activity	(9) Intellectual skills
Model from Table 2, Panel B									
Coefficients of partial determination									
Preferences	0.06029	0.05974	0.03071	0.08937	0.04248	0.08606	0.04909	0.06989	0.08398
Expectations, myopia, and denial	0.03312	0.02396	0.02623	0.01549	0.04014	0.01523	0.02282	0.01747	0.02340
Preferences, expectations, myopia, and denial	0.09859	0.08699	0.05817	0.11035	0.08993	0.11037	0.07762	0.09532	0.11142
Model from Table 3, Panel A									
Coefficients of partial determination									
Preferences	0.07156	0.08188	0.03020	0.06808	0.03733	0.06072	0.06866	0.04198	0.07031
Expectations, myopia, and denial	0.03220	0.02219	0.02742	0.01475	0.04058	0.01742	0.01826	0.02048	0.02380
Preferences, expectations, myopia, and denial	0.10940	0.10848	0.05767	0.08955	0.08504	0.08571	0.09660	0.06818	0.09816

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Appendix F. Coefficient robustness to omitted variable bias

We evaluate the robustness to omitted variables bias of our results (on the role of preferences) reported in Table 2, Panel B, and in Table 3, Panel A. To do so, we compute bounds for the coefficients on preferences, using the procedure developed by Oster (2016). In this approach, the sensitivity of a coefficient to the inclusion of controls can be assessed using two pieces of information: (1) movements in the coefficient of interest between the adjusted and the unadjusted models, and (2) movements in R-squared between the adjusted and the unadjusted models.

To compute the bounds, we use the “psacalc” command in Stata, which was developed by Oster. For the “psacalc” command to work, we must restrict our list of controls – we thus remove labor market status and income from the controls.

The top of Table F1 first reports results from Table 2, Panel B. It also contains results when labor market status and income are excluded from the controls. We find that coefficients remain very similar when we exclude labor market status and income. Moreover, R-squared are almost unaffected (note that the interpretation of R-squared when the dependent variable is binary, i.e. in linear probability models like ours, is different from its interpretation when the dependent variable is continuous). Similarly, Table F2 reports results from Table 3, Panel A, and also shows that the results remain very similar when we exclude labor market status and income. This new model is thus our adjusted model in what follows.

At the bottom of Tables F1 and F2, we generate intervals for the coefficients on preferences. These intervals depend on the degree of selection on observed and unobserved variables on the one hand, and on the R-squared from the hypothetical regression of preparation outcomes on observed and unobserved variables on the other hand.

δ denotes the relative degree of selection on observed and unobserved variables. Oster suggests that $\delta = 1$ (which means that selection on unobservables is equal to selection on observables) is an adequate upper bound on δ . In our approach, δ varies from 0 to 1.

\tilde{R} denotes the R-squared from the adjusted model. R_{max} denotes the R-squared from the hypothetical regression on the observed and unobserved variables. R_{max} is between \tilde{R} and 1 by definition. The lower bound of R_{max} is \tilde{R} . Oster generates an upper bound which is smaller than 1. She writes that $R_{max} = \pi \tilde{R}$. Using a sample of articles using randomized control trials, she shows that 90% of randomized results would survive for $\pi = 1.3$ and she thus suggests that $\min(1.3 \times \tilde{R}, 1)$ is an appropriate upper bound for R_{max} . We thus use $\min(1.3 \times \tilde{R}, 1)$.

One bound is the coefficient from the adjusted model. This bound corresponds to the case when $R_{max} = \tilde{R}$ or $\delta = 0$. The other bound is obtained when $\delta = 1$ and $R_{max} = \min(1.3 \times \tilde{R}, 1)$.

The results of the bounding exercise are shown at the bottom of Tables F1 and F2. If zero is not in the interval, then the result is robust. We find that for Table 2, Panel B, all significant results on the roles of risk aversion, planning, and altruism are robust (Table F1);

they are not entirely due to unobserved selection. Results from Table 3, Panel A, are also robust (Table F2).

Note that we apply Oster's approach to dichotomous dependent variables (linear probability models), which is somewhat speculative but still informative (Scott-Clayton and Minaya, 2014).¹

Table F1. Test of the robustness of the coefficients from Table 2, Panel B

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	General preparation	Savings	Insurance	Home- owner	Home adaptation	Social ties	Diet	Physical activity	Intellectual skills
Standardized preference variables									
Same model as in Table 2, Panel B									
General context - Risk aversion (11-point scale)	0.0192 (0.0138)	0.0261* (0.0152)	-0.0060 (0.0114)	-0.0002 (0.0110)	0.0126 (0.0128)	0.0042 (0.0125)	0.0024 (0.0099)	-0.0093 (0.0134)	0.0024 (0.0101)
General context - Planning	0.0745*** (0.0144)	0.0501*** (0.0155)	0.0106 (0.0114)	0.0573*** (0.0120)	0.0494*** (0.0134)	0.0664*** (0.0129)	0.0228** (0.0108)	0.0884*** (0.0138)	0.0308*** (0.0110)
Family altruism - Giving money to children (11-point scale)	0.0427*** (0.0139)	0.0599*** (0.0153)	0.0241** (0.0104)	0.0142 (0.0116)	-0.0041 (0.0131)	0.0208 (0.0134)	-0.0046 (0.0103)	-0.0039 (0.0138)	0.0179* (0.0106)
Social altruism score	0.0017 (0.0148)	-0.0048 (0.0162)	-0.0194 (0.0133)	-0.0054 (0.0113)	-0.0059 (0.0138)	0.0617*** (0.0134)	0.0187* (0.0103)	0.0177 (0.0143)	0.0447*** (0.0115)
Observations	1,181	1,037	1,026	1,231	1,209	1,234	1,244	1,240	1,240
R-squared	0.1248	0.0918	0.0670	0.1462	0.1117	0.0936	0.0834	0.1162	0.0935
Same model as in Table 2, Panel B, but without controls for labor market status and income									
General context - Risk aversion (11-point scale)	0.0208 (0.0137)	0.0279* (0.0151)	-0.0063 (0.0114)	0.0033 (0.0110)	0.0119 (0.0129)	0.0067 (0.0125)	0.0026 (0.0098)	-0.0067 (0.0134)	0.0037 (0.0101)
General context - Planning	0.0757*** (0.0143)	0.0497*** (0.0154)	0.0101 (0.0113)	0.0595*** (0.0120)	0.0497*** (0.0134)	0.0673*** (0.0131)	0.0229** (0.0108)	0.0897*** (0.0138)	0.0308*** (0.0110)
Family altruism - Giving money to children (11-point scale)	0.0428*** (0.0139)	0.0600*** (0.0152)	0.0245** (0.0104)	0.0151 (0.0117)	-0.0054 (0.0133)	0.0226* (0.0134)	-0.0044 (0.0103)	-0.0032 (0.0139)	0.0185* (0.0107)
Social altruism score	0.0014 (0.0147)	-0.0059 (0.0161)	-0.0189 (0.0132)	-0.0081 (0.0113)	-0.0060 (0.0138)	0.0610*** (0.0134)	0.0189* (0.0103)	0.0181 (0.0144)	0.0450*** (0.0114)
R-squared	0.1230	0.0885	0.0660	0.1253	0.1078	0.0833	0.0828	0.1049	0.0860
Bounds									
General context - Risk aversion (11-point scale)	[0.0208, 0.0214]	[0.0279, 0.0283]	[-0.0070, -0.0063]	[0.0033, 0.0036]	[0.0111, 0.0119]	[0.0067, 0.0084]	[0.0023, 0.0026]	[-0.00667, -0.00665]	[0.0037, 0.0041]
General context - Planning	[0.0743, 0.0757]	[0.0409, 0.0497]	[0.0099, 0.0101]	[0.0526, 0.0595]	[0.0497, 0.0505]	[0.0607, 0.0673]	[0.0195, 0.0229]	[0.0894, 0.0897]	[0.0261, 0.0308]
Family altruism - Giving money to children (11-point scale)	[0.0405, 0.0428]	[0.0567, 0.0600]	[0.0245, 0.0250]	[0.0120, 0.0151]	[-0.0062, -0.0054]	[0.0195, 0.0226]	[-0.0064, -0.0044]	[-0.00328, -0.00322]	[0.0163, 0.0185]
Social altruism score	[-0.0054, 0.0014]	[-0.0059, -0.0104]	[-0.0199, 0.0189]	[-0.0122, -0.0081]	[-0.0087, -0.0060]	[0.0517, 0.0610]	[0.0144, 0.0189]	[0.0179, 0.0181]	[0.0394, 0.0450]

Notes. *** p<0.01, ** p<0.05, * p<0.1. In the first model, control variables are included. In the second model, control variables, except labor market status and income, are included.

¹¹ Scott-Clayton, J., & Minaya, V. (2014). Should student employment be subsidized? Conditional counterfactuals and the outcomes of work-study participation. *CAPSEE Working Papers*.

Table F2. Test of the robustness of the coefficients from Table 3, Panel A

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	General preparation	Savings	Insurance	Home -owner	Home adaptation	Social ties	Diet	Physical activity	Intellectual skills
Standardized 11-point scales									
Same model as in Table 3, Panel A									
General context - Risk aversion (11-point scale)	0.0111 (0.0138)	0.0198 (0.0154)	-0.0040 (0.0115)	-0.0039 (0.0113)	0.0089 (0.0129)	-0.0096 (0.0129)	-0.0037 (0.0097)	-0.0168 (0.0136)	-0.0067 (0.0103)
General context - Farsightedness (11-point scale)	0.0872*** (0.0143)	0.0919*** (0.0158)	0.0181* (0.0106)	0.0372*** (0.0131)	0.0290** (0.0133)	0.0069 (0.0134)	0.0475*** (0.0123)	0.0163 (0.0145)	0.0218* (0.0120)
Family altruism - Giving money to children (11- point scale)	0.0331** (0.0143)	0.0486*** (0.0157)	0.0229** (0.0105)	0.0154 (0.0119)	-0.0044 (0.0136)	0.0236* (0.0139)	-0.0117 (0.0104)	0.0014 (0.0141)	0.0163 (0.0111)
Social altruism (11-point scale)	-0.0172 (0.0146)	-0.0205 (0.0153)	-0.0167 (0.0108)	-0.0260** (0.0119)	-0.0058 (0.0134)	0.0517*** (0.0133)	0.0097 (0.0103)	-0.0186 (0.0137)	0.0063 (0.0109)
Observations	1,177	1,032	1,022	1,226	1,203	1,230	1,239	1,235	1,235
R-squared	0.1323	0.1090	0.0704	0.1281	0.1023	0.0634	0.0978	0.0843	0.0722
Same model as in Table 3, Panel A, but without controls for labor market status and income									
General context - Risk aversion (11-point scale)	0.0123 (0.0137)	0.0212 (0.0154)	-0.0042 (0.0115)	-0.0008 (0.0112)	0.0083 (0.0130)	-0.0078 (0.0129)	-0.0038 (0.0096)	-0.0141 (0.0136)	-0.0053 (0.0103)
General context - Farsightedness (11-point scale)	0.0879*** (0.0143)	0.0925*** (0.0156)	0.0175* (0.0106)	0.0404*** (0.0134)	0.0283** (0.0133)	0.0089 (0.0134)	0.0474*** (0.0123)	0.0180 (0.0146)	0.0223* (0.0121)
Family altruism - Giving money to children (11- point scale)	0.0330** (0.0143)	0.0484*** (0.0156)	0.0236** (0.0105)	0.0157 (0.0120)	-0.0057 (0.0138)	0.0251* (0.0139)	-0.0115 (0.0104)	0.0019 (0.0142)	0.0168 (0.0112)
Social altruism (11-point scale)	-0.0170 (0.0145)	-0.0199 (0.0152)	-0.0174 (0.0107)	-0.0244** (0.0121)	-0.0044 (0.0134)	0.0502*** (0.0133)	0.0090 (0.0103)	-0.0189 (0.0137)	0.0058 (0.0110)
R-squared	0.1305	0.1066	0.0692	0.1093	0.0984	0.0542	0.0969	0.0727	0.0653
Bounds									
General context - Risk aversion (11-point scale)	[0.0105, 0.0123]	[0.0192, 0.0212]	[-0.0047, -0.0042]	[-0.0014, -0.0008]	[0.0061, 0.0083]	[-0.0087, -0.0078]	[-0.0058, -0.0038]	[- 0.0141, -0.0140]	[-0.0066, -0.0053]
General context - Farsightedness (11-point scale)	[0.0684, 0.0879]	[0.0724, 0.0925]	[0.0110, 0.0175]	[0.0327, 0.0404]	[0.0173, 0.0283]	[-0.0001, 0.0089]	[0.0406, 0.0474]	[0.0143, 0.0180]	[0.0162, 0.0223]
Family altruism - Giving money to children (11- point scale)	[0.0274, 0.0330]	[0.0406, 0.0484]	[0.0236, 0.0243]	[0.0096, 0.0157]	[-0.0079, -0.0057]	[0.0220, 0.0251]	[-0.0166, -0.0115]	[- 0.0017, 0.0019]	[0.0132, 0.0168]
Social altruism (11-point scale)	[-0.0253, -0.0170]	[-0.0284, -0.0199]	[-0.0202, -0.0174]	[-0.0297, -0.0244]	[-0.0086, -0.0044]	[0.0465, 0.0502]	[0.0036, 0.0090]	[- 0.0225, -0.0189]	[0.0015, 0.0058]

Notes. *** p<0.01, ** p<0.05, * p<0.1. In the first model, control variables are included. In the second model, control variables, except labor market status and income, are included.