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Explaining the Long-Term Care Insurance Puzzle: The Role of Preferences for Correlation and for Quality of Life over Wealth

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Abstract

The paper investigates the role of two demand-side determinants of long-term care insurance: correlation preference and relative preference for quality of life over wealth. We model the effect of those preferences on the joint decision to buy long-term care and long-term care insurance contract. We test the model using data from a laboratory experiment in France. While the experimental results offer only partial support for the theoretical predictions—specifically, correlation aversion does not account for over-insurance, our analysis provides evidence that correlation seeking and the relative preference for quality of life over wealth explain the limited uptake of long-term care insurance.

JEL: I13, C91, D90

Keywords: long-term care insurance demand, laboratory experiment, risk preference

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1 Introduction

In 2019, 1.5% of GDP was allocated to long-term care (LTC) across OECD countries including medical and nursing care, personal care and assistance services for people dependent on others for activities of daily living (Mueller and Morgan (2020)). Compared to other areas of health care, spending on LTC has seen the highest growth in recent years (OECD, 2021). The rise in the number of older adults who will need LTC, along with increased expectations for better quality of life in later years, and a possible decrease in informal caregiving, suggest that spending on LTC in OECD countries will increase in the upcoming years.

The high probability of becoming dependent combined with the high costs associated with old-age dependency provides a strong rationale for purchasing LTC insurance. Despite this, the demand for coverage against the financial consequences of dependency remains low, a phenomenon known as the LTC insurance puzzle. Our paper contributes to the literature that attempts to explain it.

Dependency primarily poses a risk to quality of life. Addressing its adverse effects *ex post* through LTC also renders it a financial risk, one that individuals can mitigate *ex ante* by purchasing LTC insurance contracts. Preferences related to quality of life and wealth are therefore central to the decision to purchase LTC insurance. Our paper examines two unexplored behavioral factors linked to specific features of the risk of dependency and likely to explain the LTC insurance puzzle, namely: (1) correlation preferences; (2) relative preference for quality of life over wealth (henceforth, preference for quality of life).

We begin by outlining the intuitive reasons why these two preferences are expected to affect the demand for LTC insurance. In economics, risk aversion explains why individuals buy insurance (Mossin (1968)). Yet, risk aversion alone cannot explain the weak demand for LTC insurance, given that other contracts such as flight insurance and warranty extensions are at the same time largely oversold. One reason may be that dependency affects not just financial consequences but also quality of life.

When individual preferences depend on multiple attributes (here wealth and quality of life), the literature (e.g., Cook and Graham (1977), Rey (2003)) demonstrates that the demand for insurance is driven by a combination of risk preference (typically, risk aversion) and a second preference: correlation preference or state-dependent utility. Both terms describe the same phenomenon¹, in which the marginal utility of wealth depends not only on wealth level but also on other dimensions of well-being, such as quality of life. Individuals are said to be correlation averse (or correlation seekers) if their marginal utility of wealth increases (or decreases) as quality of life worsens, *i.e.*, in the dependency state. Correlation-averse individuals value LTC

¹State-dependent utility is more common in health economics while correlation preference is mostly used in risk theory. In the remainder of the paper, we refer to correlation preferences (aversion and seeking), which is in line with the terminology used in the theoretical (Eeckhoudt et al. (2007)) and experimental (Attema et al. (2019)) contributions on which our analysis is based. In the literature using the term state-dependent utility, positive (negative) state dependence corresponds to correlation averse (seeking).

insurance because it transfers financial resources from the no-dependency state, where the marginal utility of wealth is lower, to the dependency state, where it is higher. Conversely, correlation seekers are less inclined to purchase such contracts for the same but opposite reason. Thus, while correlation aversion creates an additional incentive for purchasing LTC insurance beyond risk aversion, correlation seeking diminishes this motivation. Another specific feature of LTC likely to drive the demand for insurance is that it mitigates the detrimental effects of dependency. The propensity to resort to LTC in a situation of dependency however depends — among other things — on the individuals’ willingness to transform their financial resources into improvements in their quality of life. The wide range of LTC costs is indicative of significant variations in the quality of care and comfort levels². This implies that the extent of LTC spending can reflect the utility derived from the quality of care (Ameriks et al. (2020)), and therefore the preference for quality of life.

To investigate the role of correlation and quality of life preferences in explaining variations in LTC insurance coverage, we first establish a theoretical model including the two decisions that individuals make in relation to a future risk of dependency, *i.e.*, their anticipated demand for LTC and the associated current demand for LTC insurance. We derive four testable predictions: (1) correlation averse individuals are more likely to buy more than full insurance; (2) correlation seeker individuals are more likely to buy partial insurance; (3) individuals with higher preference for quality of life purchase more LTC and (4) more LTC insurance.

We conduct a laboratory experiment among students in France to test these predictions as no survey data includes the measure of all preferences required to test our model. Our measures of preferences are based on well-established practices in experimental economics, involving standard lottery choices with quality of life and monetary outcomes adapted from Attema et al. (2019)’s lotteries with longevity and monetary outcomes. The key advantage of our empirical approach is that it specifies individuals’ risk and correlation preferences via simple choices between two lotteries and outside any specification of a utility function. This enables us to evaluate how these two theoretically relevant preferences jointly impact the demand for LTC insurance. We also develop a simple lottery-based tool to compare the strength of risk and correlation preferences. As indicated by our model, this comparison is indeed useful to assess the effect of individuals’ preference for quality of life on the demand for LTC insurance. Our experimental approach also innovates by embedding dependency-related quality of life and monetary outcomes, allowing us to measure context-specific preferences. While the literature often finds correlation-seeking when both wealth and health enter the utility function (e.g., Viscusi and Evans (1990), Sloan et al. (1998), Carthy et al. (1999), Finkelstein et al. (2013), Gyrd-Hansen (2017), Viscusi (2019)),³ we find that most subjects are correlation averse when

²In terms of expenses in France, the median monthly price for a private room in a nursing home is 2,004€. This figure varies, with the lower 10% of prices at 1,724€ and the upper 10% at 2,909€ (CNSA (2021)). In comparison, Ameriks et al. (2020) report that in the United States, the average cost for a private room is \$7,667 per month, with a range from \$4,580 to \$20,800.

³Some studies, however, report evidence of correlation aversion, including Evans and Viscusi (1991), Lillard

choices involve quality of life.

Our experimental findings lend partial support to our theoretical predictions. Specifically, we observe that (1) correlation seekers are more inclined to choose partial insurance coverage, and (2) individuals with a higher preference for quality of life are more likely to improve their LTC insurance coverage, in anticipation of a future heightened demand for LTC. Therefore, our paper introduces two novel demand-side behavioral factors: correlation preference and the preference for quality of life. Our results should be interpreted as correlational, given potential endogeneity concerns—particularly the risk of omitted variable bias. Unobserved individual characteristics may influence both preference measures and decisions regarding LTCI. To address this issue, we conduct a robustness check that includes a range of sociodemographic and health-related controls. However, these variables may not fully account for all relevant confounders. For example, unmeasured factors such as cognitive biases or prior experiences with illness or hospitalization could affect individual preferences and LTCI uptake, thereby limiting our ability to draw causal conclusions. Although our results are correlational, they enrich the existing framework for explaining variations in LTC insurance uptake.

Our papers contribute to the literature on factors explaining the LTC insurance puzzle. Among the demand-side factors, it has been shown that intra-family interactions could explain the limited demand for LTC insurance. If parents prefer to receive informal care (from their children for instance) rather than formal care or moving to a nursing home, they could influence their relatives' decision to provide informal care by not subscribing to LTC insurance contracts. Empirical evidence of this mechanism — called intra-family moral hazard since its introduction in the literature by [Pauly \(1968\)](#) — needs to be bolstered: whereas [Mommaerts \(2024\)](#) indeed shows that the availability of potential informal caregivers reduces the demand for LTC insurance, [Coe et al. \(2023\)](#) qualify the dynamics of intra-family moral hazard to the extent that they do not observe that informal care declines in the presence of LTC insurance. The availability of public insurance programs is another potential theoretical explanation for the relatively low size of the LTC private insurance market. The empirical evidence for this crowding out effect is, however, weak. For example, based on survey data conducted in 15 European countries providing information on individuals' expectations regarding sources of financing for LTC, [Costa-Font and Courbage \(2015\)](#) observe that individuals anticipating higher payments under public insurance are not less likely to purchase private LTC insurance. Among the other behavioral factors explaining the low demand for LTC insurance are limited knowledge about LTC insurance products ([Boyer et al. \(2017\)](#)) and misperceptions about the risk of dependency ([Zhou-Richter et al. \(2010\)](#)). Additionally, the tendency to disregard information relevant to dependency, possibly related to intertemporal preferences ([Pestieau and Ponthière \(2012\)](#)), may reinforce this trend. The influence of preferences on the demand for LTC insurance was also examined; however, empirical evidence does not support risk aversion as a determinant (see for instance [Costa-Font and Rovira-Forns \(2008\)](#), and the survey provided by [Lambregts and Weiss \(1997\)](#), and [Edwards \(1997\)](#)).

Schut (2020)). On the supply-side, Brown and Finkelstein (2007) observe that US insurance companies offer, on the one hand, relatively limited coverage compared to the total expenditure in the event of dependency and, on the other hand, charge premiums substantially higher than the benefits expected from the contracts. These higher premiums might be explained by the over-representation of high-risk individuals in the insured population, resulting in adverse selection. This is supported by evidence suggesting that individuals purchasing LTC insurance are more likely to become dependent and in need of LTC than those who do not opt for such insurance contracts (Finkelstein et al. (2005)). From the policyholders' point of view, the contracts available on the market are thus unattractive.

The paper is organized as follows. Section 2 presents the theoretical model and section 3 the design of the experiment aiming at testing the theoretical predictions. Our empirical results are introduced in section 4 and discussed in section 5. Section 6 concludes the paper.

2 Theoretical setting

2.1 Correlation preferences: a definition

Correlation preference is central to our analysis. We provide in this section the formal definitions of correlation aversion, neutrality, and seeking. These definitions will be used in the experimental section of the paper to measure correlation preference.

Suppose that an individual's well being depends on two attributes: w for Wealth and q for Quality of life, such that $w_0 < w_1$ and $q_0 < q_1$. Correlation aversion is defined in the literature as the preference for the lottery A that gives an equal chance between (w_0, q_1) or (w_1, q_0) to the lottery B that gives an equal chance to (w_0, q_0) or (w_1, q_1) (Richard (1975)). In words, this means that the individual prefers dispersing losses related to wealth and quality of life across different states of the world rather than gathering them in the same state. Correlation seeking and correlation neutrality correspond, respectively, to the reverse preference and to indifference between the two lotteries. This choice between lotteries is used in experiments to determine subjects' correlation preferences (see Attema et al. (2019)).

In the expected utility model, whether individuals prefer A or B depends on the sign of the cross derivative of their utility function. The individual who prefers A over B (correlation aversion) has preferences represented by a utility function such that $u_{12}(w, q) < 0$, the preferences of the one who prefers B over A (correlation seeking) are such that $u_{12}(w, q) > 0$, while $u_{12}(w, q) = 0$ characterizes preference of the individual indifferent between A and B (correlation neutrality) (Richard, 1975).

As indicated by Eeckhoudt et al. (2007), among others, correlation preference reflects the way the marginal utility of wealth changes with the level of the other attributes of the utility function. More precisely, the preference for B over A (correlation aversion) indicates that the marginal utility of wealth is lower when quality of life is q_1 rather than q_0 , meaning the marginal

utility of wealth decreases as quality of life improves. Conversely, the preference for A over B (correlation seeking) means that the marginal utility of wealth is lower when quality of life is q_0 rather than q_1 , implying that the marginal utility of wealth increases with improvements in quality of life.

2.2 Assumptions and notations

Consider individuals maximizing their expected utility and deriving utility from their wealth (w) and quality of life (q), so that their utility function is denoted by $u(w, q)$. The latter is increasing with respect to its two arguments⁴ ($u_1(w, q) > 0$ and $u_2(w, q) > 0$). Since our analysis does not only consider risk averse individuals, we make no assumption about the signs of the second-order derivatives of the utility function. Individuals anticipate that they may become, with probability p , dependent. When this happens, quality of life is reduced from q to $q - m$, where m denotes the deterioration associated with the dependency state. In case of dependency, individuals have the opportunity to purchase LTC, the intensity of which is denoted by n . LTC reduces the detrimental effect of dependency on the quality of life: $m(n)$ thus corresponds to the burden of dependency, with $m'(n) < 0$ and $m''(n) > 0$ (the marginal return of LTC is decreasing). The unit cost of care, denoted by c , is constant, so that the total cost of care is $C = cn$, with $C \in [0, \bar{C}]$. Before the potential occurrence of dependency, individuals are offered LTC insurance at fair odds: when purchasing insurance contracts, individuals select a lump-sum indemnity ($I \in [0, \bar{I}]$ ⁵) they receive in case of dependency, in exchange for an insurance premium pI .

Finally, individuals make their decisions at two distinct points in time: the insurance contract is purchased before knowing whether they will become dependent, while the demand for LTC is determined only if dependency occurs. We assume that, at the time of purchasing LTC insurance, individuals anticipate their potential demand for LTC in the event of dependency.

2.3 The effect of preferences on LTC and LTC insurance

Given the assumptions made, the individual maximization program is given by:

$$\text{Max}_{I,n} EU = (1 - p)U(w - pI, q) + pU(w - pI - C + I, q - m(n))$$

We adopt the following notation: $A = (w - pI, q)$ and $B = (w - pI - C + I, q - m(n))$. The first order conditions related to this maximization program are given by:

$$\frac{\delta EU}{\delta I} = -(1 - p)pu_1(A) + (1 - p)pu_1(B) = 0 \quad (1)$$

⁴First and second derivatives of the utility function with respect to the first argument (wealth) are respectively denoted by $u_1(w, q)$ and $u_{11}(w, q)$. First and second derivatives of the utility function with respect to the second argument (quality of life) are respectively denoted by $u_2(w, q)$ and $u_{22}(w, q)$. The cross derivative of the utility function is denoted by $u_{12}(w, q)$.

⁵ \bar{I} being the highest insurance indemnity sold by companies.

$$\frac{\delta EU}{\delta n} = -pcu_1(B) - pm'(n)u_2(B) = 0 \quad (2)$$

When the Eqs.(1) and (2) define an interior solution, we suppose that the second order conditions are met, so that a maximum is obtained. Note that aversion to financial risk ($u_{11}(w, q) < 0$) and quality of life risk ($u_{22}(w, q) < 0$) are necessary for the second order conditions to be satisfied. Corner solutions will also be examined.

2.4 The effect of preferences on LTC and LTC insurance

The concept of correlation preferences, as defined in Subsection 2.1, can now be integrated with risk preferences to characterize individuals' LTC insurance purchase decision. We consider in turn the different individuals' preferences towards financial risks, namely risk aversion ($u_{11}(w, q) < 0$), risk neutrality ($u_{11}(w, q) = 0$) and risk seeking ($u_{11}(w, q) > 0$).

Risk aversion Let us first suppose that $u_{11}(w, q) < 0$. In case an interior solution prevails, regardless of the LTC intensity, we obtain $u_1(A) = u_1(B)$ from Eq.(1), so that LTC insurance indemnity depends on individuals' preferences towards correlation (see [Rey \(2003\)](#)). More precisely:

$$I \underset{\leq}{\cong} C \Leftrightarrow u_{12}(w, q) \underset{\geq}{\cong} 0$$

The demand for LTC insurance in bivariate environments is driven by preferences toward both risk and correlation. When, in addition to being risk averse ($u_{11}(w, q) < 0$), individuals are correlation neutral ($u_{12}(w, q) = 0$), they transfer wealth from the no-dependency state to the dependency state with the only purpose of reducing the financial risk they are exposed to (*i.e.*, the insurance decision is only driven by their risk preference). The greater the initial financial gap between the two states, the greater the effect of risk aversion of the insurance decision. This case corresponds to the insurance decision made in the one-dimensional context with utility functions only depending on wealth: as shown by [Mossin \(1968\)](#), if insurance premia are actuarially fair, risk averse individuals eliminate risks by purchasing full insurance coverage ($I = C$). When individuals have preferences towards correlation (*i.e.* if individuals are correlation averse or correlation seekers), this first incentive to transfer wealth to the dependency state is combined with another one. If they are correlation averse ($u_{12}(w, q) < 0$), their marginal utility of wealth is higher in the dependency state than in the no-dependency state ([Richard, 1975](#)), so that they have an additional incentive to transfer wealth from the latter state to the former. As a result, risk aversion combined with correlation aversion leads – when insurance contracts are purchased at fair odds – to more than full insurance ($I > C$). In contrast, when they are correlation seekers ($u_{12}(w, q) > 0$), individuals' marginal utility of wealth is higher in the no-dependency state than in the dependency state. Consequently, individuals do not buy full insurance coverage ($I < C$) as their preference towards correlation leads them to transfer

wealth to the no-dependency state. The greater the quality of life gap between the dependency and the no-dependency state, the greater the positive (resp. negative) effect of correlation aversion (resp. seeking) on the demand for insurance.

Note finally that the interior solutions $I < \bar{I}$ and $I > 0$ are not guaranteed when $u_{11}(w, q) < 0$ is combined with $u_{12}(w, q) \neq 0$: if the degree of risk aversion is not sufficiently strong relative to that of correlation attitude, the corner solutions $I = \bar{I}$ and $I = 0$ may occur, when $u_{12}(w, q) < 0$ and $u_{12}(w, q) > 0$, respectively.

Risk neutrality Suppose now that individuals are risk neutral ($u_{11}(w, q) = 0$), *i.e.*, they are indifferent to the spread of the distribution. In that case, their insurance demand is only driven by their preference towards correlation⁶ and corner solutions occur. Specifically, they purchase more than full insurance when their marginal utility of wealth is higher in the dependency state than in the no-dependency state (correlation aversion) and less than full insurance in the opposite case (correlation seeking). Eq. (1) confirms that the optimum corresponds to the corner solutions $I = \bar{I}$ and $I = 0$ if individuals are risk neutral and, respectively, correlation averse and correlation seekers. To see this, consider that $u_{11}(w, q) = 0$ and $u_{12}(w, q) < 0$, and evaluate Eq. (1) at $I = \bar{I}$:

$$\frac{\delta EU}{\delta I} = -u_1(w - p\bar{I}, q) + u_1(w - p\bar{I} - C + \bar{I}, q - m(n)) > 0 \quad (3)$$

Correlation averse individuals' expected utility increases whenever wealth is transferred from the no-dependency state to the dependency state. As a result, they select the highest available indemnity, *i.e.*, $I = \bar{I}$. The same rationale prevails when individuals are correlation seekers ($u_{12}(w, q) > 0$). In that case, by evaluating Eq. (1) at $I = 0$, we obtain:

$$\frac{\delta EU}{\delta I} = -u_1(w, q) + u_1(w - C, q - m(n)) < 0 \quad (4)$$

Correlation seekers' expected utility always increases when they transfer wealth from the dependency state to the no-dependency state, as their marginal utility of wealth is higher in the latter state than in the former. Therefore, they buy no insurance ($I = 0$).

Table 1 summarizes our results when individuals are risk averse or risk neutral.

Predictions H1 and H2 follow directly from Table 1.

H1 Among risk averse and risk neutral individuals, the propensity to buy more than full insurance is higher among correlation averse individuals than among those who are correlation neutral or seekers.

⁶The expected utility of individuals who are both correlation neutral and risk neutral does not change regardless of their insurance coverage. They are therefore indifferent to insurance.

Table 1: Insurance demand when individuals are risk averse/neutral

	Risk aversion	Risk neutrality
Correlation aversion	$I > C$	$I > C(I = \bar{I})$
Correlation neutrality	$I = C$	Indifference
Correlation seeking	$I < C$	$I < C(I = 0)$

H2 Among risk averse and risk neutral individuals, the propensity to buy partial insurance is higher among correlation seekers than among those who are correlation neutral or averse.

The analysis below reveals that straightforward results cannot be established when individuals are risk seekers.

Risk seeking Risk seekers ($u_{11}(w, q) > 0$) maximize the spread of the wealth distribution they are exposed to. In the particular context of our model, they maximize the gap between $w - pI$ and $w - pI - C + I$ or, equivalently, they maximize $|C - I|$. To reach this objective, they select - depending on their anticipated LTC - either $I = \bar{I}$ or $I = 0$ (*i.e.*, one of the two corner solutions). If $C > \frac{\bar{I}}{2}$ (resp. $C < \frac{\bar{I}}{2}$), maximizing $|C - I|$ is akin to choosing $I = 0$ (resp. $I = \bar{I}$). This is the only motivation of risk seeking and correlation neutral individuals. When, in addition to being risk seekers, individuals are correlation averse or correlation seekers, maximizing the spread of the wealth distribution is combined with another motivation: transferring wealth to the no-dependency state (if they are correlation seekers) or the dependency state (if they are correlation averse). These incentives are aligned when $C > \frac{\bar{I}}{2}$ and when agents are correlation seekers, implying that they have two reasons not to buy insurance ($I = 0$). Likewise, $C < \frac{\bar{I}}{2}$ and correlation aversion offer two incentives to buy full insurance ($I = \bar{I}$). Risk and correlation preferences lead to opposite incentives when $C > \frac{\bar{I}}{2}$ and agents are correlation averse, or when $C < \frac{\bar{I}}{2}$ and agents are correlation seekers. No predictions about the selected insurance indemnity can be made in that case.

Three cases must therefore be considered: $C = \frac{\bar{I}}{2}$, $C > \frac{\bar{I}}{2}$, $C < \frac{\bar{I}}{2}$. We summarize them in Table 2, which indicates that risk seeking does not lead to easily testable hypotheses about the demand for LTC insurance.

2.5 LTC and LTC insurance relationship

According to Eq. (2), the LTC intensity decision is made in a certainty situation (*i.e.* when the individual is dependent). Therefore, it is not directly driven by preferences toward risk or

Table 2: LTC insurance demand when individuals are risk seekers

	$C < \frac{\bar{I}}{2}$	$C = \frac{\bar{I}}{2}$	$C > \frac{\bar{I}}{2}$
Correlation aversion	$I > C(I = \bar{I})$	$I > C(I = \bar{I})$	No prediction
Correlation neutrality	$I > C(I = \bar{I})$	$I > C(I = \bar{I})$ or $I < C(I = 0)$	$I < C(I = 0)$
Correlation seeking	No prediction	$I < C(I = 0)$	$I < C(I = 0)$

correlation. Eq. (2) can be rewritten $-\frac{c}{m'(n)} = \frac{u_2(B)}{u_1(B)}$, showing that the only preference that directly influences the LTC intensity is the preference for quality of life over wealth, measured by the ratio $\frac{u_2(B)}{u_1(B)}$. The marginal utilities of wealth ($u_1(w, q)$) and quality of life ($u_2(w, q)$) being both decreasing, it is straightforward to show from Eq. (2) that the equilibrium value of n increases (decreases) as $\frac{u_2(B)}{u_1(B)}$ increases (decreases). This leads directly to our prediction H3:

H3 Subjects with higher preference for quality of life buy more LTC.

However, preferences toward risk and correlation have an indirect impact on LTC through their effect on the selected insurance indemnity. Likewise, the preference for quality of life has an indirect impact on the demand for insurance. To measure these indirect effects, we must determine how the demand for LTC and that of insurance indemnity influence each other.

Suppose that Eqs. (1) and (2) define an interior solution, which implies that individuals are risk averse. In that case, the direction of this interaction depends on the sign of Eq. (5):

$$\frac{\delta EU}{\delta I \delta n} = (1-p)p[-cu_{11}(B) - m'(n)u_{12}(B)] \quad (5)$$

Using Eq. (2), it can be shown that the sign of $\frac{\delta EU}{\delta I \delta n}$, which indicates whether reaction functions are upward- or downward-sloping, depends on the relative intensity of preferences toward risk and correlation:

$$\frac{\delta EU}{\delta I \delta n} \leq 0 \Leftrightarrow \frac{-u_{11}(B)}{u_1(B)} \leq \frac{-u_{12}(B)}{u_2(B)} \quad (6)$$

If individuals are risk averse and correlation seekers, the reaction functions are upward sloping, *i.e.* the sign of the association between LTC intensity and insurance indemnity is positive ($u_{11}(w, q) < 0 < u_{12}(w, q) \Leftrightarrow \frac{-u_{11}(B)}{u_1(B)} > \frac{-u_{12}(B)}{u_2(B)} \Leftrightarrow \frac{\delta EU}{\delta I \delta n} > 0$). If individuals are risk averse and correlation averse, the sign of $\frac{\delta EU}{\delta I \delta n}$ depends on the relative intensities of their absolute risk aversion ($\frac{-u_{11}(B)}{u_1(B)}$) and absolute correlation aversion ⁷ ($\frac{-u_{12}(B)}{u_2(B)}$). This result is explained as follows.

⁷This ratio corresponds to one particular way of measuring the intensity of preferences towards correlation

The increase in LTC increases the financial gap between the dependency and non-dependency states, which increases the demand for insurance indemnity by risk averse individuals. At the same time, the increase in LTC reduces the quality of life gap between the dependency and non-dependency states, thereby reducing the demand for insurance indemnity by correlation averse individuals. How the insurance indemnity evolves with the intensity of LTC ultimately depends on how individuals respond to the increase in the financial gap and the narrowing in the quality of life gap and, consequently, on the relative intensity of risk and correlation aversion.

Our last testable hypotheses, which only apply to risk-averse individuals, are summarized in the three parts of prediction H4:

H4 *For risk averse individuals:*

- a** Among subjects who are more risk averse than correlation averse, if the preference for quality of life increases, they purchase more LTC insurance.
- b** Among subjects who are as correlation averse as risk averse, if the preference for quality of life increases, there is no change in the purchase of LTC insurance.
- c** Among subjects who are more correlation averse than risk averse, if the preference for quality of life increases, they purchase less LTC insurance.

Finally, when individuals are risk neutral or risk seekers, so that corner solutions occur, changes in the LTC intensity do not modify the insurance indemnity, either because individuals already purchase the highest available indemnity ($I = \bar{I}$) or because they do not want to be insured ($I = 0$).

3 Experimental design

The experiment was programmed in oTree ([Chen et al., 2016](#)) and conducted in 8 online sessions over three days in June 2023. A researcher was in the Zoom session with the subjects during all sessions. Participants were recruited through a faculty internal recruitment system available to all people registered in the database of the LEEP (Paris Experimental Economics Laboratory) at the Université Paris 1 Panthéon-Sorbonne. As an incentive for taking part, participants were awarded 10 euros by bank transfer upon completion. A total of 391 subjects took part in the study.

([Crainich et al., 2020](#)).

3.1 Procedure

Most tasks in this experiment involve trade-offs between money⁸ and quality of life. Incentivizing individuals to make decisions that affect their quality of life presents significant ethical and methodological challenges⁹. While it was possible to introduce incentives for monetary aspects of decision-making, doing so would have created incentive imbalances in trade-offs between quality of life and monetary aspects. Therefore, all choices under consideration are hypothetical. To improve the likelihood of truthful responses, subjects were asked to sign a form indicating their solemn commitment to answer truthfully. Previous research has shown that such a solemn commitment enhances participants' diligence in responding (Jacquemet et al., 2019, 2021).

Before the start of the experiment, subjects were instructed by the researcher in the Zoom session on how to complete preference elicitation tasks, LTC insurance and LTC choices. Subjects were given a comprehension test regarding LTC and LTC insurance choices. The comprehension questions aimed to confirm that subjects had understood two key points: (a) indemnity payments are made only when the subject is dependent, and (b) if a subject chooses a LTC insurance contract, the premium must be paid regardless of whether she is dependent. If a subject fails a comprehension question, she is provided with the correct answer and detailed explanations. The subject is not allowed to proceed with the experiment until she has answered all questions correctly.

The structure of the experiment is the following. First, subjects performed the tasks to elicit LTC choices and LTC insurance, and preference for quality of life. The order of those two tasks was randomized, and the questions within each task were randomized (each question uses a different budget)¹⁰. Second, they undertook the tasks to measure risk and correlation preferences and the relative strength of correlation over risk aversion¹¹. The order of the three tasks, as well as the sequence of questions within each task, were randomized. Additionally, the positioning of each lottery option (left or right) was also randomized to ensure unbiased responses. Following these tasks, subjects were required to complete a brief socio-demographic questionnaire.

⁸To be consistent the literature in insurance theory, we use the word wealth in the theoretical model, while we refer to budget in the experimental setting. This is because we wanted to ease subject's comprehension and decision setting.

⁹One reason for this complexity is the multifaceted nature of quality of life, where individuals assign varying levels of importance to its various aspects. As a result, designing any form of incentive system for quality of life decisions is likely to face compatibility issues.

¹⁰Within each preference measure, questions were not interspersed to avoid subjects having to switch between tasks continuously.

¹¹The elicitation of the preference for quality of life needs to come before the other preference measures because the value of L is required to calibrate the measure of the relative preference for correlation over risk aversion.

3.2 Stimuli for experimental measures

All tasks involve trade-offs between monetary and quality of life outcomes. For quality of life levels, we vary three aspects of health-related quality of life: mobility, ability to perform usual activities and pain are three of the five quality of life dimensions of the EQ-5D (EUROQOL) used by Gyrð-Hansen (2017) to measure correlation preference. Quality of life 1 offers the best quality of life, and quality of life 4 the worst¹². Quality of life levels are described as follows¹³.

- Quality of life 1 [Q1 hereafter]: You can walk around without limitations and carry out your usual activities (work or study, leisure activities, etc.). You do not suffer from pain or fatigue.
- Quality of life 2 [Q2 hereafter]: You can walk for a maximum of 4 hours and climb stairs. You can carry out your usual activities for a maximum of 8 hours a day (work or study, leisure activities, etc.). You experience very slight pain and fatigue.
- Quality of life 3 [Q3 hereafter]: You can walk for a maximum of 2 hours and climb stairs. You can carry out your usual activities for a maximum of 4 hours a day (work or study, leisure activities, etc.). You experience slight pain and fatigue.
- Quality of life 4 [Q4 hereafter]: You can walk for a maximum of 1 hour, but cannot climb more than one flight of stairs. You can carry out your usual activities for a maximum of 2 hours a day (work or study, leisure activities, etc.). You experience moderate pain and fatigue.

For the sake of simplicity, we keep the same probabilities throughout the experiment. We prevent any difference in personal income from affecting preferences by setting a budget to the subject for each task. Monthly budgets were 1500, 2000, 2500 and 3000€ such that for each preference task we have 4 measurements, and 3 measurements for the LTC and LTC insurance task (we exclude the 3000€ budget). Despite variations in the budget, all monetary losses in preference measures, along with all LTC costs and LTC insurance premiums, maintain a consistent proportion to the budget (see detailed proportions in Table A.1 of the Appendix). The multiple preference measures enable us to categorize subjects based on their preference types.

3.3 Preference elicitation tasks

Following the literature in contingent valuation to elicit the willingness to pay for health improvements (e.g. Fleurbaey et al. (2013)), the preference for quality of life is measured

¹²While Q4 is the worst quality of life in our experimental setting, we acknowledge that a considerable share of LTC patients find themselves in a worse state. The rationale for deviating from a real-life setting is to avoid describing qualities of life that would be perceived as so extreme that subjects would allocate their entire budget to change them.

¹³The EQ-5D quality of life assessment involves subjects rating each dimension on a scale. Instead, our measure details the extent to which individuals are facing challenges within each specific dimension of their quality of life.

with the answer to the following question (for each of the four hypothetical budget $i = \{1500; 2000; 2500; 3000\}$): "Your budget is $i\text{€}$ and your quality of life is Q3. How much would you be willing to pay to have the quality of life Q1?". Participants had to move a slider between 0 and $i\text{€}$ ¹⁴. The amount chosen by the subject is denoted L_i . All fictional situations last a month.

Risk and correlation preferences are measured in the loss domain as our focus is on LTC which results from a decline of quality of life requiring LTC spending (*i.e.* potential monetary loss). They are elicited using choices between binary lotteries with equally likely outcomes represented in Table 3. An example of an item revealing risk preference for monetary outcome is the following (Table 3 panel A). Here, the risk averse individual would choose option A, because it offers the same expected monetary outcome as option B (*i.e.*, 1700€), but with a lower spread. Had the individual chosen option B, she would be classified as a risk seeker.

An example of an item revealing correlation preference between quality of life and wealth is the following (Table 3 panel B). Here the correlation averse individual would choose option A, because it offers more money when quality of life deteriorates. Therefore, the individual has a higher marginal utility of wealth when her quality of life is lower. Had the individual chosen option B, she would be considered as correlation seeker as she preferred having more money with higher quality of life.

An example of an item revealing the relative preference of correlation over risk aversion is the following (Table 3 panel C). Here, the individual who is more risk averse than correlation averse would choose option B, because they prefer to spread the risk over having more money when in a lower quality of life (the full theoretical background to this measure is detailed in Appendix B). The amount L corresponds to how much the subject was ready to pay to change their quality of life from Q3 to Q1 in the task measuring the preference for quality of life. Table A.2 details all stimuli used for the correlation and risk preferences tasks.

3.4 LTC and LTC insurance choice task

In this task, subjects have a hypothetical budget ($i = \{1500; 2000; 2500\}$) and a 50% chance of having Q1 or Q4, respectively the best and the worst quality of life. In this situation, subjects have to make a joint decision of LTC and LTC insurance. They have the choice between 3 LTC levels where total cost increases with the beneficial effect of LTC on quality of life (from Q3 to Q1). Participants are also given the opportunity to select from 8 LTC insurance contracts (including no insurance coverage), where the insurance premium rises in proportion to the level of

¹⁴The implementation of the slider addresses the effect of anchoring in two ways. First, there is no value on the slider when it is first presented. The subject must click to set an initial value. Second, the subject has to move the slider from this initial value before recording a response.

Table 3: Questions to test for risk and correlation preferences

A. Risk preference	
Your budget is 2000€ and you have Q3. Which option do you prefer?	
Option A	Option B
50%: 2000€ – 400€ with Q3	50%: 2000€ – 500€ with Q3
50%: 2000€ – 200€ with Q3	50%: 2000€ – 100€ with Q3
B. Correlation preference	
Your budget is 2000€. Which option do you prefer?	
Option A	Option B
50%: 2000€ – 400€ with Q1	50%: 2000€ with Q1
50%: 2000€ with Q3	50%: 2000€ – 400€ with Q3
C. Relative preference for correlation over risk aversion	
Your budget is 2000€. Which option do you prefer?	
Option A	Option B
50%: 2000€ – 2L€ with Q1	50%: 2000€ – L€ with Q3
50%: 2000€ with Q3	50%: 2000€ – L€ with Q1

indemnity provided in the event of LTC needs. The range of contract gives the choice between no insurance (no premium and no indemnity), partial insurance contract (where the indemnity only partially covers LTC costs), a full insurance contract (the indemnity equals the LTC cost) and over-insurance contracts (where the indemnity covers more than LTC costs). The indemnity amounts were chosen to ensure that for any LTC level, the subject always has at least one partial insurance, full insurance, and one over-insurance contract available. All LTC levels and LTC insurance contracts are displayed in Table A.3 in the Appendix. LTC choice impacts both one’s budget and quality of life, while LTC insurance solely influences one’s budget. The task allows the subject to get experience with different answers for LTC and LTC insurance contracts and dynamically displays the trade-offs. Consequences of LTC and LTC insurance choices on their financial resources and quality of life were directly observable on the screen (instructions are available in Appendix D.2.2).

Our elicitation task for LTC insurance and LTC choices differs from existing work attempting to measure these choices. First, we provide little context on LTC by focusing on physical limitations that hinder individuals from continuing their usual activities¹⁵. Second, our experiment simplifies the healthcare and social insurance system as well as the time dynamics between LTC and LTC insurance (*i.e.* there is no time lag between them) while Ameriks et al. (2020) provide extensive details. These simplifications are intentional, as the primary goal of the experiment is to test theoretical predictions. Consequently, our decision framework more closely resembles the experimental design used in studies by Kairies-Schwarz et al. (2017) and Mimra et al. (2020). Third, for many dependent individuals, LTC does not improve health

¹⁵This approach is chosen for its ease of understanding by participants, though we acknowledge that mental health issues and dementia, which are not included in this framing, are prevalent in older age.

related quality of life outcomes, as dependency is often an absorbing state. Instead, LTC helps maintain the status quo or slows further decline. However, LTC can still enhance functional and mental health by enabling individuals with severe conditions to perform daily activities, as supported by several studies (e.g. [Forder et al. \(2018\)](#), [Barnay and Juin \(2016\)](#), [Coe et al. \(2021\)](#)). Our model and experimental design, therefore, operate under the assumption that LTC consumption enhances quality of life. This simplification helps participants better understand dependency consequences, especially those who may not fully appreciate the permanence of dependency in certain cases.

3.5 Analysis

Our pre-analysis plan registered on Open Science Framework platform and available [here](#) specifies how we select our working sample, construct the variables and test our hypotheses derived from the theoretical model. We make no deviation from our pre-analysis plan, however, we introduce additional, ad-hoc robustness checks to test the sensitivity of our results. These analyses were not pre-registered and were developed post hoc to further ensure the validity of our findings.

3.5.1 Sample selection

We select the full sample unless consistency across preference measures is insufficient. Consistency is checked with two preference measures that were repeated in the experiment. Consistency is considered insufficient if qualitatively larger than [Attema et al. \(2019, 2022\)](#) who elicit preferences in a similar manner. In this case, we drop observations of subjects who failed both consistency checks.

3.5.2 Construction of variables

Preference variables We use the number of choices (out of 4) that are compatible with a given preference over risk and correlation. In our analysis, a subject is classified according to a preference if the majority of her choices is consistent with that particular preference. Thus, for example, an individual is classified as being risk averse (seeking) if most of her choices are compatible with risk aversion (seeking). If a subject answered twice as being risk averse and twice as being risk seeker, she is classified as risk neutral¹⁶. The same holds for correlation preference and the relative preference for correlation over risk aversion. Regarding the preference for quality of life, we compute for each subject the share of budget devoted to improving one’s quality of life averaged over the four iterations of this task ($\text{PrefQoL} = \frac{\sum_{i=1500}^{i=3000} \frac{L_i}{i}}{4}$).

¹⁶We also analyse our results by using decisions as observations instead of classifying individuals. Results remain the same.

LTC and LTC insurance variables We use the number of choices (out of 3) that are compatible with a given insurance profile: over-insured, fully insured and partially insured. We classify participants as partially insured (fully insured or over-insured) if the majority of choices is consistent with partial insurance (fully insured or over-insured)¹⁷. If the participant’s response to this question corresponds to a different insurance profile each time, then the subject is classified as fully insured¹⁸. We also compute the share of budget devoted to buy LTC or LTC insurance averaged over the three tasks (respectively denoted Share LTC and Share LTCI).

Although not pre-registered, we perform chi-squared tests to check whether the observed distribution of preferences differs from the distribution that would be observed if subjects chose randomly.

3.5.3 Testing hypotheses

Table 4 summarises how we intend to empirically test the theoretical predictions. For example for hypothesis 1, we restrict the sample to risk averse and risk neutral subjects, we test the difference in proportion of over-insured among correlation averse individuals against those who are correlation neutral and seekers using a Proportion Test.

Table 4: Summary of prediction testing

Hyp.	Sample	Analysis	Test
1	RA & RN	$P(OverInsu)^{CA} - P(OverInsu)^{CS+CN}$	Proportion test
2	RA & RN	$P(PartialInsu)^{CS} - P(PartialInsu)^{CA+CN}$	Proportion test
3	All	corr(PrefQoL ; Share LTC)	OLS
4(a)	RA & More RA than CA	corr (PrefQoL ; Share LTCI)	OLS
4(b)	RA & More CA than RA	corr (PrefQoL ; Share LTCI)	OLS
4(c)	RA & as RA as CA	corr (PrefQoL ; Share LTCI)	OLS

Note: RA (CA) stands for risk (correlation) averse, RN (CN) for risk (correlation) neutral, RS (CS) for risk (correlation) seekers. PrefQoL stands for the preference for quality of life. Share LTCI corresponds to the share of budget devoted to pay the insurance premium, and Share LTC corresponds to the share of budget used to buy LTC.

3.5.4 Robustness checks

We distinguish between robustness checks that assess if our results are robust to econometric specification changes, and those that assess robustness to sample selection modifications. First, we add socio-demographic variables as controls in the models testing our hypotheses. Control variables include age, gender, self-assessed health, chronic illness, monthly budget, and having complementary health insurance. Then, we adopt a different approach by considering decision

¹⁷We measure each preference four times to be able to categorize neutrality. This was not required for the LTC and LTC insurance choices, as we only needed to have at least 2 consistent insurance profiles. Therefore, we have three LTC and LTC insurance questions using three different budgets.

¹⁸This only happened for N=20, and our results are robust to dropping those subjects.

as unit of observations rather than individuals. Second, we assess the robustness of our results to including individuals who failed the consistency checks, excluding subjects whose experiment duration falls within the bottom 10%, excluding those who made more than one mistake in at least two out of five comprehension questions¹⁹, and excluding subjects whose insurance profile differs in each LTC and LTC insurance task.

4 Results

4.1 Sample selection and description

Consistency is assessed by checking subjects' consistency in answering the same two preference measures twice. We find that 69% of our subjects were consistent in both repeated measures, 26% in one, and 5% failed both consistency checks²⁰. Our subjects are significantly less consistent across their answers than in similar settings in the literature (Attema et al. (2019, 2022) find respectively 77.44%, and 75.38%)²¹. Therefore, we exclude from the sample those who failed both consistency checks (N=19) and end up with a final sample of 372 subjects.

The average age of subjects was 22 years (SD = 2.25) and 67 % were women. Eighty-four percent of subjects were students. Eighteen percent of participants reported a physical health condition (see Table C.1). Among all subjects, only one did not sign the solemn commitment to answer truthfully.

4.2 Preferences, LTC and LTC insurance measures

4.2.1 LTC and LTC insurance

Figure 1 shows the distributions of LTC and LTC insurance choices. On average, the premium of the LTC insurance contract chosen represents 9% of a given budget (Figure 1a). The average share of budget devoted to LTC is 22%, with most individuals choosing to spend 20% (Figure 1b). Our main outcome variable is the difference between the indemnity level of LTC insurance and the cost of LTC. Table 5 presents the aggregate proportions of choices in column 2 and the subjects' classification according to their preferences in column 3. In the aggregate, 45% of choices made are consistent with partial insurance, 41% correspond to full insurance and 14% to over-insurance (column 2 of Table 5). When categorizing at the individual level, we observe a similar distribution (column 3 of Table 5). Almost 5% of subjects chose once each possible insurance profile and are then classified as fully insured. The fourth column of Table 5

¹⁹Subjects could not move forward from a comprehension question until they answered correctly. They could have as many tries as they wanted to answer the question correctly. Making more than one mistake refers to the fact of not being able to answer correctly after the first mistake and so answering incorrectly at least twice.

²⁰Consistency rates slightly differ between the tasks: 79% for the risk preferences and 85% for correlation preferences.

²¹We test whether our percentage is different from the ones of the literature with a proportion test.

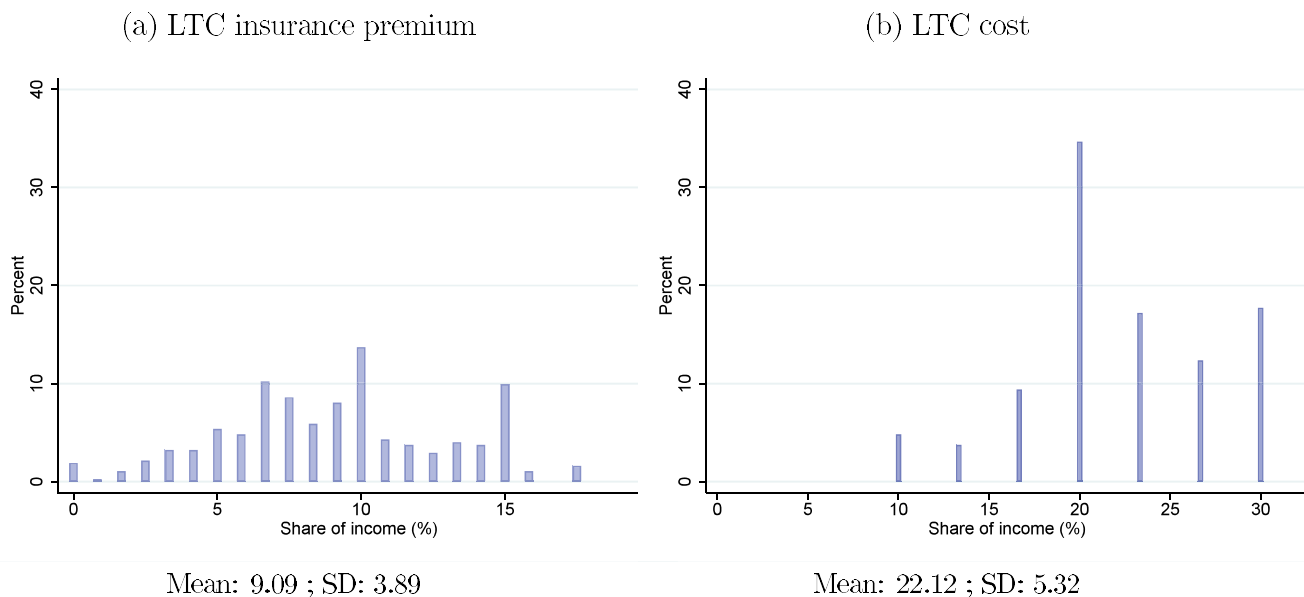
shows the p -value of a one-sided binomial test comparing the proportion of individuals to 33% *i.e.* the proportion if choices were random. The systematic deviation from 33% indicates that the choices were not made at random.

Table 5: LTC and LTC insurance choices and preferences

	Aggregate results	Individual classification	
	Proportion	Proportion	p -value
Partial Insurance	45.07	46.51	<0.001
Full insurance	41.13	44.09	<0.001
Overinsurance	13.80	9.41	<0.001
Risk seeker	35.15	23.39	<0.001
Risk neutral		18.01	<0.001
Risk averse	64.85	58.60	<0.001
Correlation seeker	30.44	25.81	<0.01
Correlation neutral		6.99	<0.001
Correlation averse	69.56	67.20	<0.001
More risk than correlation averse	73.72	71.77	<0.001
As correlation as risk averse		11.56	<0.001
More correlation than risk averse	26.28	16.67	<0.001

Notes: For the preferences measures (risk, correlation and relative strength of correlation over risk aversion), neutrality is not a possible choice therefore it does not appear in the aggregate results. Individuals are categorized as neutral if their choices were twice consistent with risk aversion and twice consistent with risk seeking. The same holds for the two other preferences.

Figure 1: Distributions of shares of income in LTC insurance premium and in LTC cost



4.2.2 Preferences

Figure 2 shows the distribution of the number of choices consistent with risk aversion (Figure 2a), correlation aversion (Figure 2b) and stronger correlation than risk aversion (Figure 2c). Individuals who have either 0 or 4 choices were consistent across all choices in a given preference measure. They represent 45% of the sample in the risk preference, almost 75% in correlation preference, and 55% for the relative preference for correlation over risk aversion. If subjects chose randomly, the distribution of choices would follow the distribution of a binomial with four repetitions and a chance of success of 0.5. The chi-squared tests show no evidence of random choices²².

We test if the proportion of individuals equals 33% and find that they systematically differ from it. Overall, we find that subjects are mainly risk averse (58.6%) and correlation averse (67.2%)²³. Regarding the relative preference for correlation over risk aversion, we find that subjects are mainly less correlation than risk averse (71.8%).

Figure 2d shows the distribution of the preference for quality of life. On average, subjects chose to spend 35% of their budget to improve quality of life from Q3 to Q1, with a minimum of 2.4% and a maximum of 100%²⁴.

4.3 Hypotheses testing

The sample for hypotheses 1 and 2 is restricted to risk averse and neutral subjects (N=285). Hypothesis 1 posits that the proportion of correlation averse who over-insure is higher than the one of correlation neutrals and seekers. Figure 3a shows overinsurance contracts were selected by 8% of correlation averse against 11% of correlation neutrals and seekers. The difference between the two proportions is not statistically different from zero (p -value 0.459). According to hypothesis 2, the proportion of correlation seekers who buy partial insurance is higher than that of correlation averse and neutral subjects. As shown in Figure 3b, we find that 55% of correlation seekers buy partial insurance while 44% of correlation averse and neutral do so. This 11% points difference is significant at the 10% level (p -value 0.079). Our empirical findings offer partial confirmation of our theoretical predictions regarding correlation preference.

According to hypothesis 3, subjects with a higher preference for quality of life spend a higher share of their budget on LTC. In column 2 of Table 6, the positive and significant coefficient

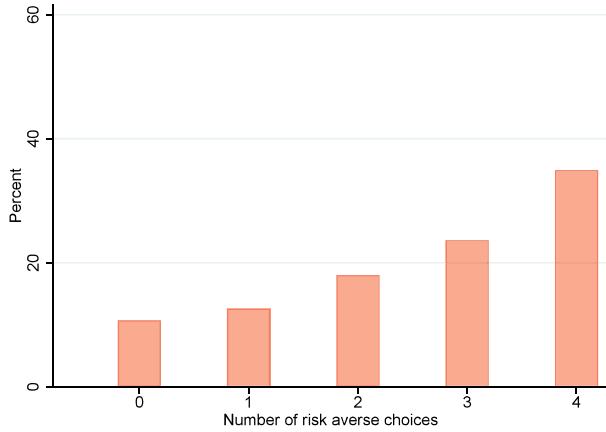
²²The chi-squared tests are run for the distribution of risk averse choices, correlation averse choices and more correlation than risk averse choices. The Pearson chi-square statistics are respectively ≈ 560 (p -value <0.001), ≈ 1600 (p -value <0.001) and ≈ 1100 (p -value <0.001)

²³The distribution of preferences differs from preferences over monetary and longevity outcomes in [Attema et al. \(2019\)](#). They found that 49% of subjects were risk averse and 29% were correlation averse. Although the design of the tasks was very similar, these discrepancies might originated from differences in the experimental setting (quality of life versus longevity, allowing for neutrality, subjects pool).

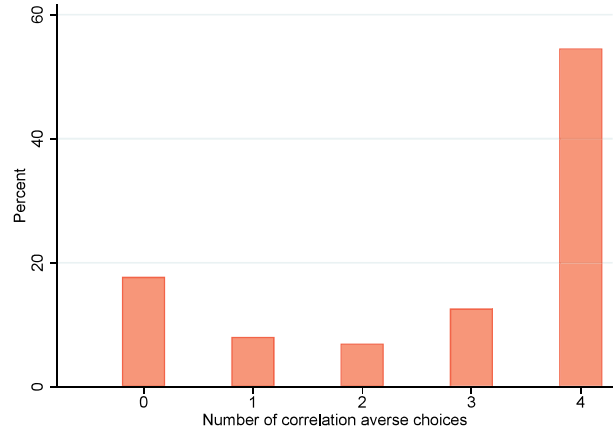
²⁴7 subjects chose consistently to spend 100% of their budget across the 4 iterations of the task.

Figure 2: Distributions of preferences

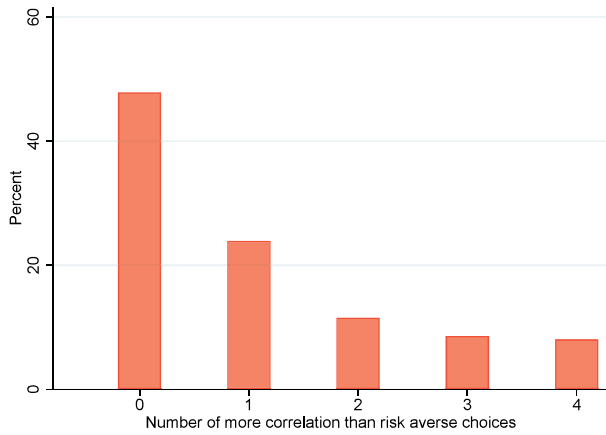
(a) Risk aversion



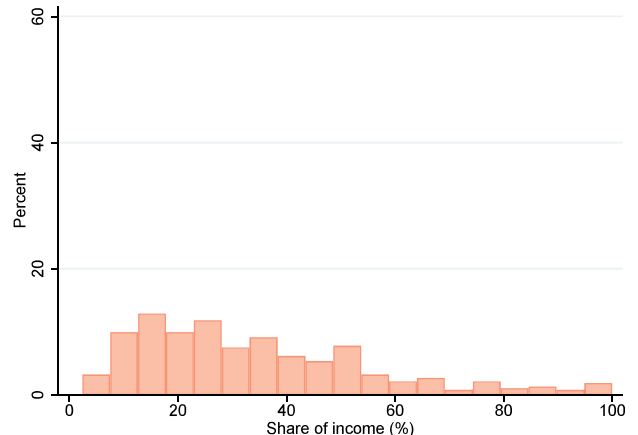
(b) Correlation aversion



(c) Relative preference for correlation over risk aversion



(d) Preference for quality of life

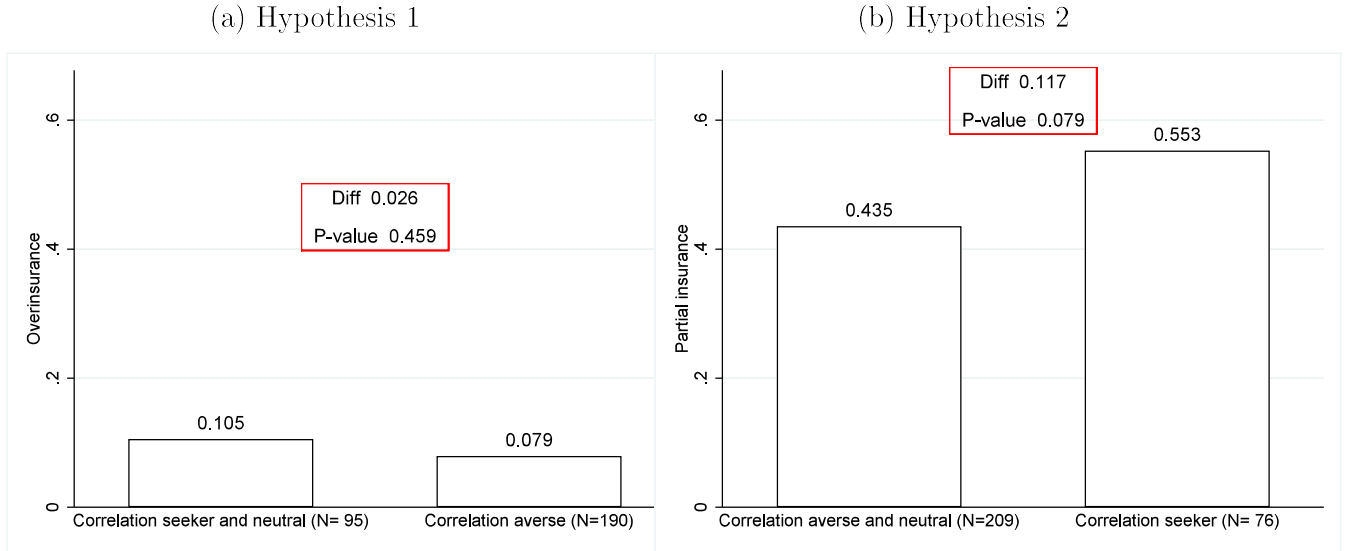


Mean: 34.57 ; SD: 21.80

(p -value < 0.001) suggests that our data supports this hypothesis. Hypothesis 4 explores the association between the preference for quality of life and the percentage of budget used to buy LTC insurance contracts. The model indicates that the sign of the association depends on the relative preference for correlation over risk aversion: the sign is positive for more risk than correlation averse subjects (Hypothesis 4a), there is no association for those who are as correlation as risk averse (Hypothesis 4b) and the sign is negative for more correlation than risk averse subjects (Hypothesis 4c). In column 3, 4, and 5 of Table 6, we present the results for hypotheses 4a, 4b and 4c respectively. While the first two ones are consistent with our theoretical predictions the third one is not. However, the results for hypotheses 4b and 4c should be taken with caution as the sample size is small (respectively 21 and 30 observations). By combining the results of hypotheses 3 and 4, we indeed find an indirect effect of the preference for quality of life on LTC insurance purchase going through the demand for LTC. However, this effect does not seem to depend on the relative preference for correlation over risk aversion.

In other words, independently of the latter preference, a higher relative preference for quality of life increases insurance coverage since most subjects seem to consider LTC and LTC insurance as complements (as suggested by the positive coefficients across hypotheses 4a, 4b and 4c).

Figure 3: Tests of hypothesis 1 and 2



Note: The difference between the proportions is tested with a proportion test for which the p -value is reported. "N" is the number of observations.

Table 6: Results of regressions testing hypothesis 3 and 4

Outcome	Hypothesis 3	Hypothesis 4		
	% of budget in LTC cost	% of budget in LTC insurance premium		
		(a) Less correlation than risk averse	(b) Neutral	(c) More correlation than risk averse
Preference for quality of life	0.056*** (0.0123)	0.044*** (0.0154)	0.021 (0.0333)	0.059* (0.0344)
N	372	167	21	30
R-squared	0.052	0.046	0.021	0.096

Notes: Hypotheses are tested using OLS regressions, each coefficient and standard error (in parenthesis) corresponds to a different regression. Hypothesis 4 requires restricting the sample to risk averse subjects.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. "N" is the number of observations.

4.4 Robustness checks

First, we test whether the results hold once controlling for individual characteristics (sex, age, self-assessed health, chronic illness, having complementary health insurance, and monthly budget) and we replicate our analysis at the decision level instead of the individual level. Table 7

Table 7: Robustness of hypotheses to specification

	Main specification		With covariates		Decision level	
		N		N		N
H1	-0.026 (0.0356)	<i>285</i>	-0.018 (0.0363)	<i>285</i>	-0.018 (0.0312)	<i>855</i>
H2	0.117* (0.0667)	<i>285</i>	0.112 (0.0689)	<i>285</i>	0.095** (0.0474)	<i>855</i>
H3	0.056*** (0.0123)	<i>372</i>	0.054*** (0.0122)	<i>372</i>	0.050*** (0.0123)	<i>1,116</i>
H4a	0.044*** (0.0154)	<i>167</i>	0.047*** (0.0156)	<i>167</i>	0.038** (0.0185)	<i>501</i>
H4b	0.021 (0.0333)	<i>21</i>	0.040 (0.0490)	<i>21</i>	0.019 (0.0382)	<i>63</i>
H4c	0.059* (0.0344)	<i>30</i>	0.056 (0.0395)	<i>30</i>	0.050* (0.0264)	<i>90</i>

Notes: Each row displays the test of a hypothesis. Column "Main" displays the main results. Column "With covariates" reproduces the main results adjusted for control variables (sex, age, self-assessed health, chronic illness, having complementary health insurance, and monthly budget). Column "Decision level" considers observation at the decision level rather than at the individual level. In plain text: coefficients resulting from OLS regressions. Standard errors in parentheses (clustered standard errors at the subject level for the decision level analysis). In italics in columns "N": number of observations. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

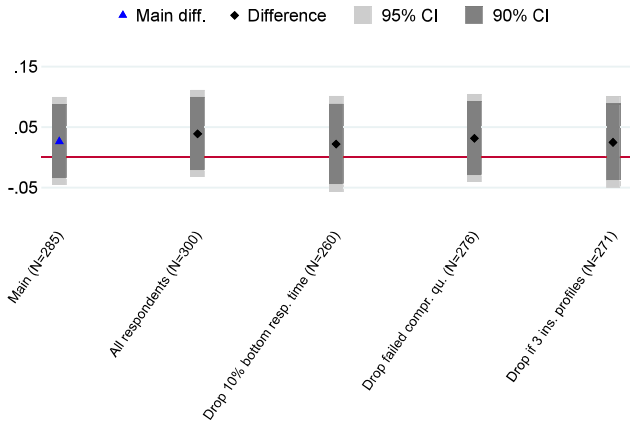
shows that our results are robust to these changes in specifications²⁵.

Second, we assess the sensitivity of our results to the selected working sample and explore five alternatives by varying aspects of data quality. All data quality indicators are detailed in Appendix C.2. Figure 4 presents our results and includes our main specification to ease comparison. We explore if our results are sensitive to including all observations (*i.e.* those who failed both consistency checks). Then, we assess the robustness of our results to the exclusion of observations for which quality can be questioned. We alternatively drop those who have the 10% lowest completion time, those who made more than one mistake in at least two comprehension questions, and finally those who chose a different insurance profile for each of the three LTC and LTC insurance questions. Hypotheses 1 and 4c are consistently not verified while Hypotheses 3, 4a and 4b are. While the significance of the test for Hypothesis 2 varies, point estimates are quite similar. The robustness analysis provides qualitatively similar results to those of our main analysis.

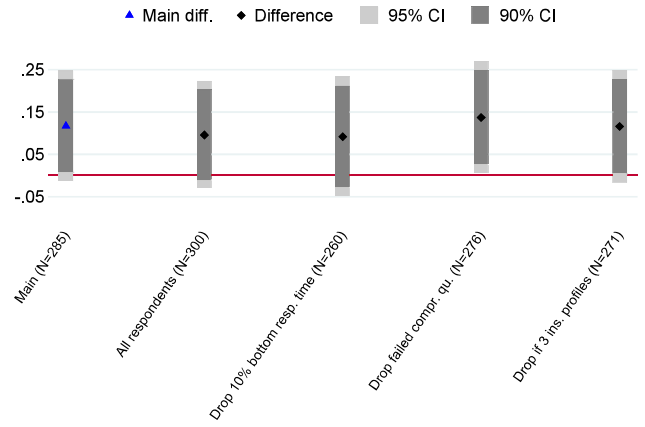
²⁵In Table 7, H1 and H2 are tested using linear probability models and not proportion tests like in the main results. This is for ease of presentation and comparison between the different specifications.

Figure 4: Robustness of hypotheses testing to selected sample

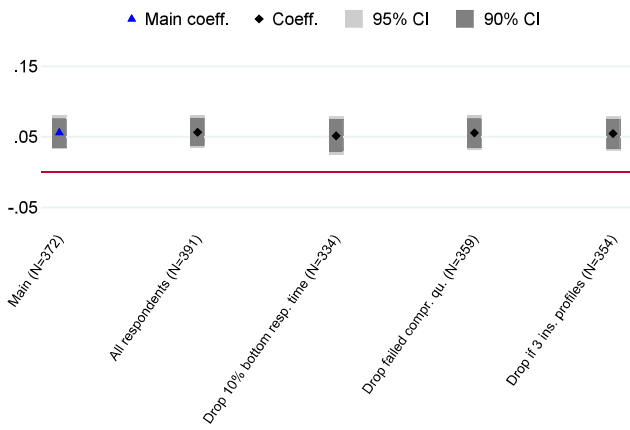
(a) Hypothesis 1



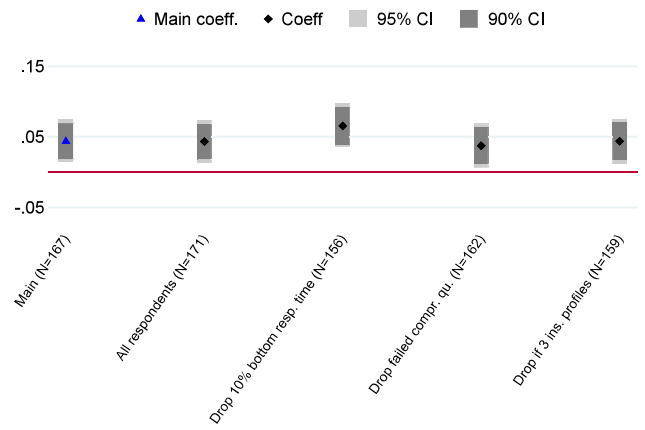
(b) Hypothesis 2



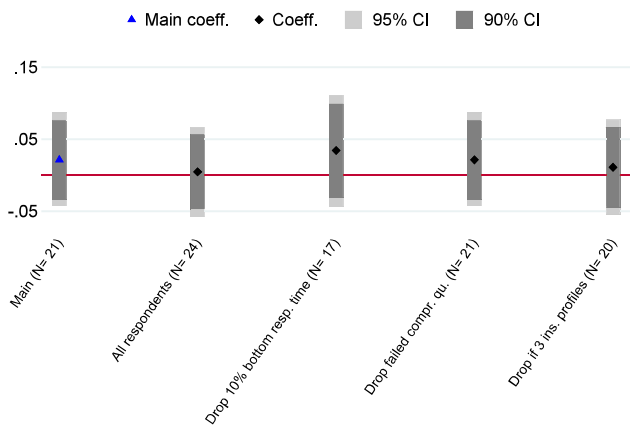
(c) Hypothesis 3



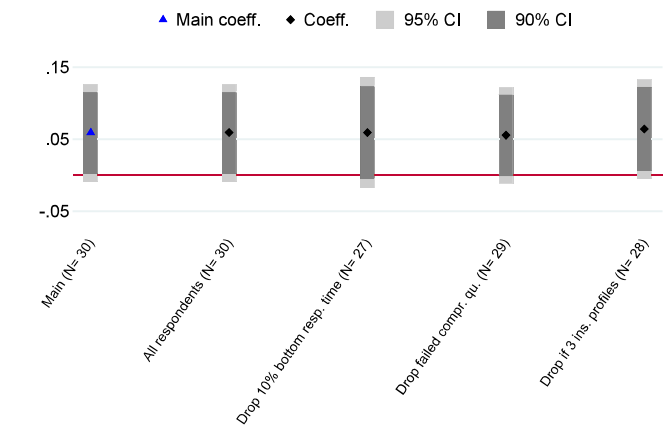
(d) Hypothesis 4a



(e) Hypothesis 4b



(f) Hypothesis 4c



Notes: Figures 4a and 4b show difference in proportions, while Figures 4c, 4d, 4e and 4f show the coefficient of a linear regression. The label of the x-axis indicates the sample used. "Main" refers to the main sample, which excluded respondents who failed the two attention checks. "All respondents" includes all subjects. The other samples add restrictions to the main sample: "Drop 10% bottom resp. time" excludes respondents who were the 10% fastest in response time, "Drop failed compr. qu." excludes respondents who made more than one mistake in at least two comprehension questions, "Drop if 3 ins. profiles" excludes respondents who had three different insurance profiles and were classified as full insurance. The numbers N in parentheses are the number of observations.

5 Discussion

This study investigates two underexplored determinants of LTC insurance demand: correlation preferences and preference for quality of life. We develop a theoretical model linking these preferences to LTC and LTC insurance choices and test its predictions through a lab experiment. Our first key finding is that correlation seekers are more likely to choose partial LTC insurance coverage compared to those who are correlation averse or neutral. Moreover, correlation seeking is largely observed across various studies (71% in loss contexts as reported by [Attema et al. \(2019\)](#), aligning with research by [Finkelstein et al. \(2013\)](#) and [Kojien et al. \(2016\)](#), which finds people to be on average correlation seekers)). This highlights that heterogeneity in correlation preference influences the optimal level of LTC insurance coverage across individuals.

A policy implication of this finding arises in the context of evaluating mandatory LTC insurance policies used to address low LTC insurance coverage. Our results suggest that such mandates could reduce the welfare for individuals who would benefit more from partial insurance coverage. Thus, uniform insurance requirements may fail to account for preference diversity and could lead to suboptimal outcomes for part of the population.

Our second key finding relates to the indirect influence of the preference for quality of life on LTC insurance choices. Although the impact of this preference on LTC insurance seems intuitively straightforward, our model reveals that its influence through increased LTC demand is conditional upon LTC and LTC insurance demands being complementary. Our empirical evidence indicates, however, that the preference for quality of life increases LTC insurance coverage regardless of the interplay between LTC and LTC insurance demands.

This suggests that limited uptake of LTC insurance may stem from low preference for quality of life. Specifically, individuals may place limited monetary value on quality-of-life improvements—even when in poor health—as shown by [Fleurbaey et al. \(2013\)](#), where respondents were unwilling to spend more than 10–11% of their income to reach perfect health regardless of their position in the income distribution. Mandatory coverage could even reduce welfare for individuals with such preference. Should the goal be to increase LTC insurance uptake, our result highlights the potential value of targeted interventions that shift perceptions around the monetary value of quality of life.

Limitations of this study, including the composition, statistical power, and the simplification of LTC insurance choices, may affect the external validity of the results. Most of our sample consists of students, whereas LTC insurance is typically bought by individuals aged 40 and older. Despite this, our findings remain qualitatively robust even after accounting for socio-economic and health characteristics, suggesting that these factors do not drive our results. In our experimental design, we also reduced the complexity of LTC insurance choice abstracting from real world issues such as interdependence between healthcare and LTC needs and costs, as well as the misperception of dependency consequences in terms of quality of life and LTC costs, etc.

Our setting allowed for over-insurance, which involves compensation greater than the financial consequences of the damage. This type of insurance contract is rarely offered in practice and infrequently selected in our experiment (14% of insurance coverage choices). This represents a possible explanation for the fact that we did not find that correlation averse individuals are more likely to buy over-insurance contracts. To support this interpretation, note that correlation averse subjects are in our experiment more likely than the others to purchase full insurance contracts, *i.e.* the contracts closest to their preferences among those that they are used to being offered. Finally, this empirical evidence remains correlational, as it may be influenced by potential omitted variable biases.

6 Conclusion

Our research presents two principal findings regarding LTC insurance coverage. First, our theoretical model replicates previous results showing the direct impact of correlation preferences on LTC insurance decisions and extend it to a case where individuals can reduce the extent of the loss by buying LTC. Empirical evidence supports our hypothesis that correlation seekers are more inclined to buy partial insurance coverage. This indicates that individuals who derive greater marginal utility from wealth when their quality of life is higher are more likely to purchase partial insurance coverage. Second, we find that the effect of the preference for quality of life on LTC insurance coverage occurs through changes in LTC demand. The sign of this effect theoretically depends on the complementarity between LTC and LTC insurance. However, we find that the preference for quality of life increases LTC insurance coverage whatever the relationship between LTC and LTC insurance demands.

Overall, preferences for correlation and quality of life emerge as key factors in explaining the low uptake of LTC insurance. We believe that our results yield some qualitative external validity (*i.e.*, the sign of the estimated effect) which is what matters in a theory-testing experiment (Kessler and Vesterlund (2015)). Our experimental design can be regarded as a kind of wind tunnel before bringing it to the field, and already yield valuable new insights for future research. To build upon our findings, future research could focus on integrating measures of these preferences into broader population surveys on LTC and LTC insurance. By doing so, researchers could more effectively assess LTC and LTC insurance patterns, thereby enabling a more comprehensive welfare analysis of LTC insurance policies.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used Chat GPT to assist them with language editing and proofreading. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Appendix

A Experimental design

Table A.1: Parameters values in tasks LTC insurance and LTC, risk preferences and correlation preference

<u>Parameters for the LTCI and LTC choices</u>	
Probability to be sick	50%
Share of budget allocated to LTC 1	10%
Share of budget allocated to LTC 2	20%
Share of budget allocated to LTC 3	30%
<u>Parameter for risk preference task</u>	
Share of budget for option A - Top	20%
Share of budget for option A - Bottom	10%
Share of budget for option B - Top	25%
Share of budget for option B - Bottom	5%
<u>Parameter for correlation preference</u>	
Share of budget loss	20%

Table A-2: Stimuli for the preferences for correlation and risk and the relative strength of correlation over risk aversion tasks

Task	Trait	Budget	Option A	Option B
1*	Risk pref.	2000	[(50%, -400) ; (50%, -200)]	[(50%, -500); (50%, -100)]
2	Risk pref.	1500	[(50%, -300) ; (50%, -150)]	[(50%, -375) ; (50%, -75)]
3	Risk pref.	2500	[(50%, -500) ; (50%, -250)]	[(50%, -625) ; (50%, -125)]
4	Risk pref.	3000	[(50%, -600) ; (50%, -300)]	[(50%, -750) ; (50%, -150)]
5*	Correlation pref.	2000	[(50%, Q3 2000) (50%, Q1 1600)]	[(50%, Q3 1600) (50%, Q1 2000)]
6	Correlation pref.	1500	[(50%, Q3 1500) (50%, Q1 1200)]	[(50%, Q3 1200) (50%, Q1 1500)]
7	Correlation pref.	2500	[(50%, Q3 2500) (50%, Q1 2000)]	[(50%, Q3 2000) (50%, Q1 2500)]
8	Correlation pref.	3000	[(50%, Q3 3000) (50%, Q1 2400)]	[(50%, Q3 2400) (50%, Q1 3000)]
9	Correlation vs. risk aversion.	2000	[(50%, Q3 2000) (50%, Q1 2000-2L ₂₀₀₀)]	[(50%, Q3 2000-L ₂₀₀₀) (50%, Q1 2000-L ₂₀₀₀)]
10	Correlation vs. risk aversion.	1500	[(50%, Q3 1500) (50%, Q1 1500-2L ₁₅₀₀)]	[(50%, Q3 1500-L ₁₅₀₀) (50%, Q1 1500-L ₁₅₀₀)]
11	Correlation vs. risk aversion.	2500	[(50%, Q3 2500) (50%, Q1 2500-2L ₂₅₀₀)]	[(50%, Q3 2500-L ₂₅₀₀) (50%, Q1 2500-L ₂₅₀₀)]
12	Correlation vs. risk aversion.	3000	[(50%, Q3 3000) (50%, Q1 3000-2L ₃₀₀₀)]	[(50%, Q3 3000-L ₃₀₀₀) (50%, Q1 3000-L ₃₀₀₀)]

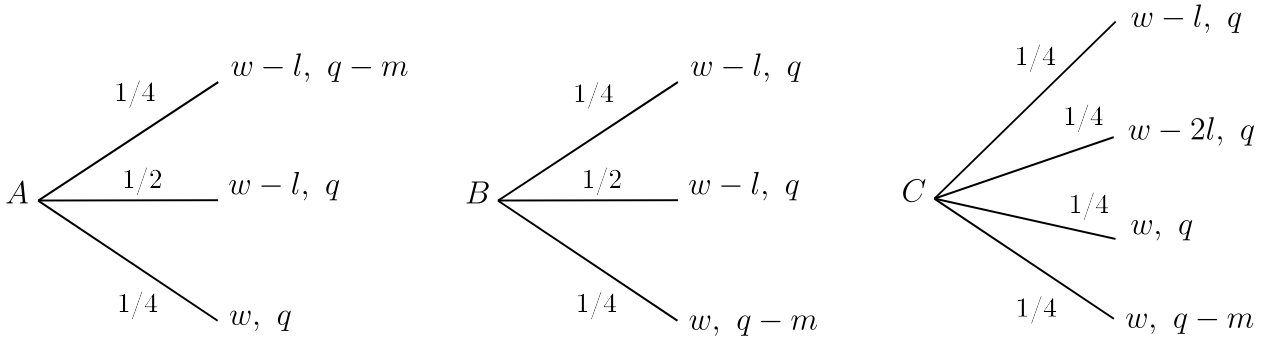
Note: An asterisk indicates that the choice task was repeated once as a consistency check. Abbreviation: Q for quality of life.

Table A.3: Stimuli for the LTC and LTC insurance tasks

Budget €2000		Budget €1500		Budget €2500	
LTC					
Cost	Quality	Cost	Quality	Cost	Quality
200	Q 3	150	Q 3	250	Q 3
400	Q 2	300	Q 2	500	Q 2
600	Q 1	450	Q 1	750	Q 1
LTC insurance					
Premium	Indemnity	Premium	Indemnity	Premium	Indemnity
0	0	0	0	0	0
50	100	37.5	75	62.5	125
100	200	75	150	125	250
150	300	112.5	225	187.5	375
200	400	150	300	250	500
250	500	187.5	375	312.5	625
300	600	225	450	375	750
350	700	262.5	525	437.5	875

B Slope of the reaction functions

Whether the reaction functions $I(n)$ and $n(I)$ are upward or downward sloping depends on the respective values of $-\frac{u_{11}(B)}{u_1(B)}$ and $-\frac{u_{12}(B)}{u_2(B)}$, i.e., on the relative intensities of risk aversion and of correlation aversion. In this Appendix, we identify a simple choice between two lotteries likely to reveal this preference. Consider first the three distributions A, B, and C where w, q and m denote, respectively, the initial wealth, the initial quality of life, and the potential quality of life deterioration that are used to measure the preference for quality of life (see section 3.3). Using these parameters, l is the amount of money the individual is willing to pay to move from $q - m$ to q , (i.e., l is elicited in such a way that: $u(w - l, q) = u(w, q - m)$). In the particular task proposed to subjects, q is the quality of life 1 and $q - m$ is the quality of life 3, while w depends on the version of the task.



In the expected utility model, $B \succ A \Leftrightarrow u_{12} < 0$ (the intermediate branches of the two lotteries being common, they can be canceled) and $B \succ C \Leftrightarrow u_{11} < 0$ (by cancelling the upper and lower branches of each lotteries, which are the same). One way to express the intensity of the preference for B over A is given by the value of π^{CA} meeting the following condition:

$$\frac{1}{4}u(w-l, q) + \frac{1}{2}u(w-l, q - \pi^{CA}) + \frac{1}{4}u(w, q-m) = \frac{1}{4}u(w-l, q-m) + \frac{1}{2}u(w-l, q) + \frac{1}{4}u(w, q)$$

Using this equality and several first order approximations (among others, approximating $u(w-l, q - \pi^{CA})$ around $u(w-l, q)$), it can be shown that:

$$\pi^{CA} \cong -\frac{ml u_{12}(w-l, q)}{2 u_2(w-l, q)}$$

Likewise, one way to express the intensity of the preference for B over C is given by the value of π^{RA} meeting the following condition:

$$\frac{1}{4}u(w-l, q) + \frac{1}{2}u(w-l - \pi^{RA}, q) + \frac{1}{4}u(w, q-m) = \frac{1}{4}u(w-l, q-m) + \frac{1}{4}u(w-2l, q) + \frac{1}{4}u(w, q) + \frac{1}{4}u(w, q-m)$$

Using this equality and approximating $u(w-l - \pi^{RA}, q)$ up to the first order around $u(w-l, q)$, it can be shown that:

$$\pi^{RA} \cong -\frac{l^2 u_{11}(w-l, q)}{2 u_1(w-l, q)}$$

Suppose that a given subject displays a preference for A over C . Using the above expressions providing the intensity of the preference for B over A and the intensity of the preference for B over C , we know that, for these subjects:

$$\frac{1}{4}u(w-l, q) + \frac{1}{2}u(w-l, q - \pi^{CA}) + \frac{1}{4}u(w, q-m) > \frac{1}{4}u(w-l, q) + \frac{1}{2}u(w-l - \pi^{RA}, q) + \frac{1}{4}u(w, q-m)$$

Simplifying, we get:

$$u(w-l, q - \pi^{CA}) > u(w-l - \pi^{RA}, q)$$

which is equivalent to:

$$u(w-l, q) - \pi^{CA}u_2(w-l, q) > u(w-l, q) - \pi^{RA}u_1(w-l, q)$$

Using the above defined approximated values of π^{CA} and π^{RA} , the inequality becomes:

$$\frac{ml}{2} \frac{u_{12}(w-l, q)}{u_2(w-l, q)} u_2(w-l, q) > \frac{l^2}{2} \frac{u_{11}(w-l, q)}{u_1(w-l, q)} u_1(w-l, q)$$

or:

$$mu_{12}(w-l, q) > lu_{11}(w-l, q)$$

Knowing that the value of l is such that:

$$u(w-l, q) = u(w, q-m)$$

so that:

$$u(w, q) - lu_1(w, q) = u(w, q) - mu_2(w, q)$$

or:

$$lu_1(w, q) = mu_2(w, q)$$

Inserting the last expression in the above inequality, we obtain that the preference for A over C implies:

$$-\frac{u_{12}(w-l, q)}{u_2(w, q)} < -\frac{u_{11}(w-l, q)}{u_1(w, q)}$$

Establishing the preference of prospect A $[\frac{1}{4}(w-l, q-m); \frac{1}{2}(w-l, q); \frac{1}{4}(w, q)]$ over prospect C $[\frac{1}{4}(w-l, q); \frac{1}{4}(w-2l, q); \frac{1}{4}(w, q); \frac{1}{4}(w, q-m)]$ allows us to uncover the sign of the reaction functions. Rewriting prospect A $[\frac{1}{4}(w-l, q-m); \frac{1}{4}(w-l, q); \frac{1}{4}(w-l, q); \frac{1}{4}(w, q)]$, we can see that:

$$A \succ C \Leftrightarrow [\frac{1}{4}(w-l, q-m); \frac{1}{4}(w-l, q)] \succ [\frac{1}{4}(w-2l, q); \frac{1}{4}(w, q-m)]$$

or:

$$-\frac{u_{12}(w-l, q)}{u_2(w, q)} < -\frac{u_{11}(w-l, q)}{u_1(w, q)} \Leftrightarrow [\frac{1}{2}(w-l, q-m); \frac{1}{2}(w-l, q)] \succ [\frac{1}{2}(w-2l, q); \frac{1}{2}(w, q-m)]$$

We use the choice between the prospects $[\frac{1}{2}(w-l, q-m); \frac{1}{2}(w-l, q)]$ and $[\frac{1}{2}(w-2l, q); \frac{1}{2}(w, q-m)]$ as a measure of the slope of the reaction functions.

C Results

C.1 Descriptive statistics sample characteristics

Table C.1: Characteristics

Variable	Mean	SD
Age (years)	22.07	(2.25)
Woman (yes/no)	0.67	(0.47)
Student (yes/no)	0.84	(0.36)
Complementary health insurance		
No	0.10	(0.30)
Yes	0.85	(0.36)
Don't know	0.05	(0.21)
Self-assessed health		
Very bad/Bad	0.03	(0.16)
Good enough	0.13	(0.33)
Good	0.46	(0.50)
Very good	0.39	(0.49)
Has a chronic illness		
Yes	0.18	(0.38)
No	0.73	(0.45)
Don't know	0.09	(0.29)
Monthly budget (in euros)		
No answer	0.03	(0.16)
Less than 250	0.32	(0.47)
250 to 499	0.42	(0.49)
500 to 999	0.18	(0.38)
1000 to 1499	0.04	(0.19)
More than 1500	0.02	(0.15)

C.2 Data quality

Comprehension questions: These questions assessed the overall understanding of care and insurance choices (questions are available in the script of the experiment in Appendix D). On average, subjects failed to answer correctly to one out of five comprehension questions (Mean: 1.04, SD: 1.12, Min: 0, Max: 5). Less than half (41%) of subjects made no mistakes. After each mistaken answer, subjects were provided with a detailed explanation of why the answer is incorrect and then made a new attempt to answer correctly. Making more than one mistake on the same question shows either a lack of understanding or attention. Still, 21.5% of subjects had more than one mistake to the same question. This is why we assess the robustness of our results to excluding them.

Response time: We are concerned that having a low total response time denotes a lack of commitment and that consequently, the answers provided were not thought-through. On average, participants spent 7.8 minutes (SD: 4, Min: 1.3, Max: 27.8) doing the LTC insurance

and preference tasks. The 10% fastest answered in less than 3.9 min, meaning these participants spent on average less than 20 seconds answering each question.

D Instructions

The experiment was in French, this is the English version of the instructions, the translation was made by the authors.

The section names are indicative and were not part of the instructions shown to the subjects.

D.1 Introduction

D.1.1 Oath

Before you begin, do you solemnly swear that you will tell the truth and answer questions truthfully for the duration of the experience?

(You will be allowed to continue the experiment regardless of your answer to this question)

Yes No

[Next](#)

D.1.2 Welcome

Welcome and thank you for agreeing to participate.

We are interested in your choices in fictitious situations.

You will answer questions about what you would rather do in fictional situations.

Take the time to read and carefully consider each situation before responding. This questionnaire is anonymous and we are interested in your choices, so there are no right or wrong answers.

You won't be able to go back to your previous answers.

You can click "Next" to read the rest of the instructions.

[Next](#)

D.1.3 Quality of life states description

Description of fictitious situations

In each fictitious situation, you have to imagine that your choices will have an effect on your budget (in euros) and your quality of life. Your quality of life includes aspects related to your mobility, your ability to carry out your usual activities (work, school, leisure) and whether you feel pain or fatigue.

Some of the effects on your budget or quality of life depend on chance. Uncertainty about your quality of life may stem from whether or not an illness occurs. Uncertainty about the amount of your budget can come from decreases or increases in your income depending on the economic

cycle. The amount of your budget is out of your control, and does not depend on your skills or effort.

Each fictitious situation lasts for one month.

During this month, you have a budget, and your quality of life can reach the following levels:

- **Quality of life 1:** You can walk around without limitations and carry out your usual activities (work or study, leisure, etc.). You do not suffer from pain or fatigue.
- **Quality of life 2:** You can walk for a maximum of 4 hours and climb stairs. You can carry out your usual activities for a maximum of 8 hours a day (work or study, leisure activities, etc.). You experience very slight pain and fatigue.
- **Quality of life 3:** You can walk for a maximum of 2 hours and climb stairs. You can carry out your usual activities for a maximum of 4 hours a day (work or study, leisure activities, etc.). You experience slight pain and fatigue.
- **Quality of life 4:** You can walk for a maximum of 1 hour, but you cannot climb more than one flight of stairs. You can carry out your usual activities for a maximum of 2 hours a day (work or study, leisure activities, etc.). You experience moderate pain and fatigue.

Quality of life 1 offers the best quality of life, and quality of life 4 offers the worst quality of life.

In the fictional situations you will be facing, you will be able to click on the quality of life levels in order to bring up the associated description on the screen.

To check that you are paying attention to the descriptions and choices offered in the fictitious situations, the same fictitious situation will be offered twice.

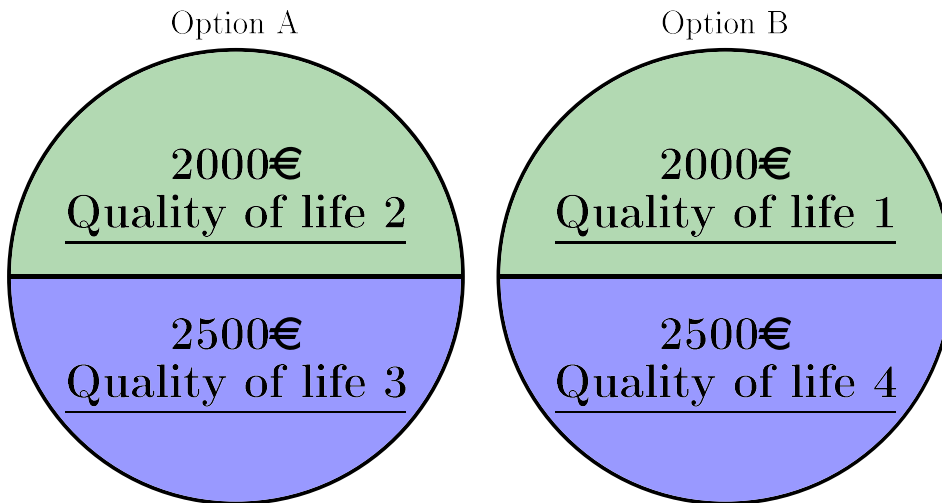
[Next](#)

D.1.4 Lottery example

Example of choice

This situation is not a choice you will actually encounter during the experiment, but simply illustrates how it works.

The description of a circle cut in half indicates that each combination of budget amount and quality of life has a one in two chance (50% chance) of occurring.



Check the box that corresponds to what you prefer.

- Option A
- Option B

In each option A or B, you have a one in two chance of living for a month with the combination of budget and quality of life colored blue, and a one in two chance of having the green combination.

For option A: the green combination gives a budget of 2000€ and a quality of life 2 while the blue combination gives a budget of 2500€ and a quality of life 3.

For option B: the green combination gives a budget of 2000€ and a quality of life 1, while the blue combination gives a budget of 2500€ and a quality of life 4. Click "Next" to continue.

[Next](#)

D.1.5 Insurance description

Fictitious situations: insurance and care

This example is not a choice you will actually encounter during the experiment, but simply illustrates how it works.

Read the description of this fictitious situation carefully. You will take a comprehension test and then you will be able to familiarize yourself with the choices to be made.

Fictitious situation:

Your budget for the month is 1000€. You have a one-in-two chance of having a quality of life 1 and a one-in-two chance of having a quality of life 4.

However, if you are sick and have a quality of life 4, you can improve it by purchasing care. Each level of care is defined by its:

- Effectiveness: the ability of care to improve your quality of life;
- Price: the amount you have to pay to benefit from it, excluding insurance.

You can choose between several levels of care. The more effective the treatments, the higher their prices.

Before you know if you will be sick, you can choose to subscribe to an insurance contract. The insurance contract is defined by:

- An indemnity: this is the amount of money received in the event of illness. Here, this amount does not vary according to the cost of care.
- A premium: the price you have to pay, whether you are sick or not, to receive indemnity

You can choose between several insurance contracts or to not insure yourself. The higher the indemnity, the higher the premium you have to pay.

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D.1.6 Comprehension questions

Please answer the following questions. At any time, you can return to the fictitious situation described above by clicking on **Back to explanations**.

1. If you choose to subscribe to an insurance contract, you will have to pay the insurance premium

- Whether you're sick or not
- Only if you are sick
- Only if you are not sick

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2. If you choose to subscribe to an insurance contract, you will receive the indemnity provided for in your contract

- Whether you're sick or not
- Regardless if the cost of care chosen in the event of illness
- Only if the cost of the chosen care is more than a certain amount

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3. Your budget for the month is 1000€ and the premium for your insurance contract is 100€. If you're not sick, your final budget for the month is
- 1000€
 - 900€
 - 1100€

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4. Your budget for the month is 1000€ and the premium for your insurance contract is 250€. If you're sick, your final budget for the month
- depends on the price of care
 - depends on the indemnity amount
 - depends on the price of care and on the indemnity amount of the chosen contract

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5. Your budget for the month is 1000€ and the price of your care is 150€. Your insurance contract provides for an indemnity of 200€ in the event of illness for a premium of 100€. Your final budget for the month in case of illness is
- $1000 - 150 - 200 + 100 = 750€$
 - $1000 - 150 + 200 + 100 = 1150€$
 - $1000 - 150 - 200 - 100 = 550€$
 - $1000 - 150 + 200 - 100 = 950€$

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D.1.7 Insurance and care example

Example of choices of care and insurance

In this example, you can familiarize yourself with the choices to be made.

Your budget is 200€, and you have a 50% chance to have a quality of life 1 and 50% chance to have a quality of life 3. Which level of care and insurance contract are you choosing?

Move the cursor to chose your level of care and your insurance contract. The consequences of your choice if you are sick or not are displayed in the circle.

Choice care level

click on the grey bar below to display a cursor and answer the question

Quality of life



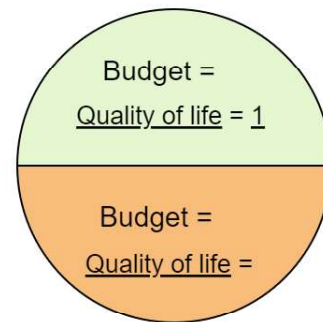
Choice insurance contract

click on the grey bar below to display a cursor and answer the question

Premium (€)



Consequences of your choices:
50% chance of not getting sick in green,
50% chance of being sick in orange



Next

D.1.8 End of introduction/training

Training is over.

You are now going to start choices which indicate what you prefer.

Next

D.2 Main part

D.2.1 Introduction care and insurance task

The following situations may be similar but be careful because budgets, costs of care and the amount of the premium can change.

Next

D.2.2 Care and insurance task

Your initial budget is 2000€ and your quality of life is level 1. You have a 50% chance to have a quality of life 1 and 50% chance to have a quality of life 3.

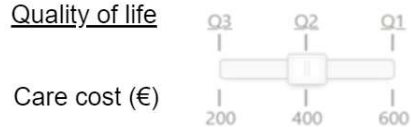
However, if you are ill, you can improve your quality of life by buying care.

Before you know whether you'll be sick, you can choose to purchase an insurance contract. You can choose between several insurance contracts or not to purchase insurance at all.

Choice care level

the cursor indicates your choice, move it if you want to choose another value

Quality of life



Care cost (€)

Choice insurance contract

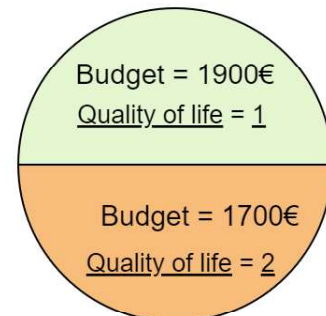
the cursor indicates your choice, move it if you want to choose another value

Premium (€)



Indemnity (€)

Consequences of your choices:
50% chance of not getting sick in green,
50% chance of being sick in orange



Next

D.2.3 Introduction relative preference for quality of life over wealth task

The following choices concern how much you are prepared to pay to improve your quality of life. Situations may look the same, but be aware that budgets can change.

Next

D.2.4 Relative preference for quality of life over wealth task

Your budget is 1500€ and you have a quality of life 3.

How much would you be willing to pay to reach a quality of life 1?

Move the cursor between 0€ and 1500€.

click on the grey bar below to display a cursor and answer the question



Next

D.2.5 Introduction lotteries

The following choices concern situations where your quality of life may deteriorate and/or your budget may change. The situations may look the same, but be aware that budgets and quality of life can change.

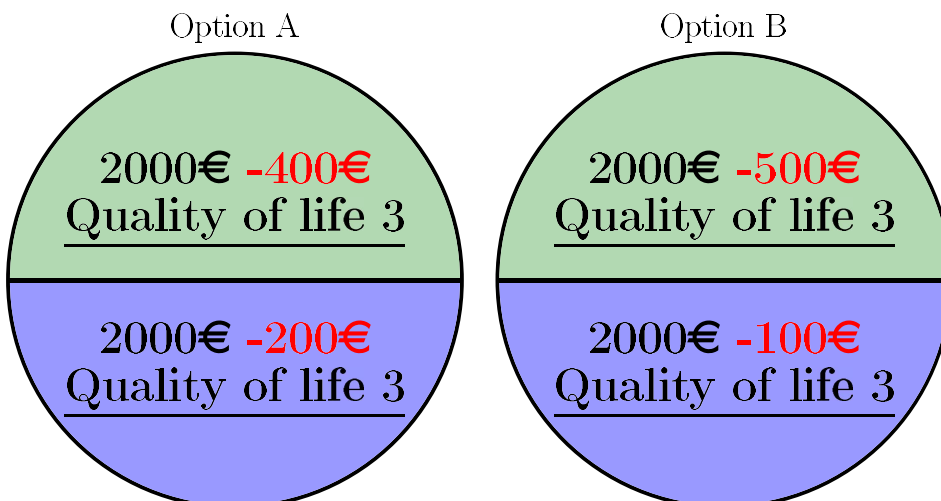
Next

D.2.6 Risk aversion task

Your monthly budget is 2000€.

Tick the box that corresponds to what you prefer.

- Option A
- Option B



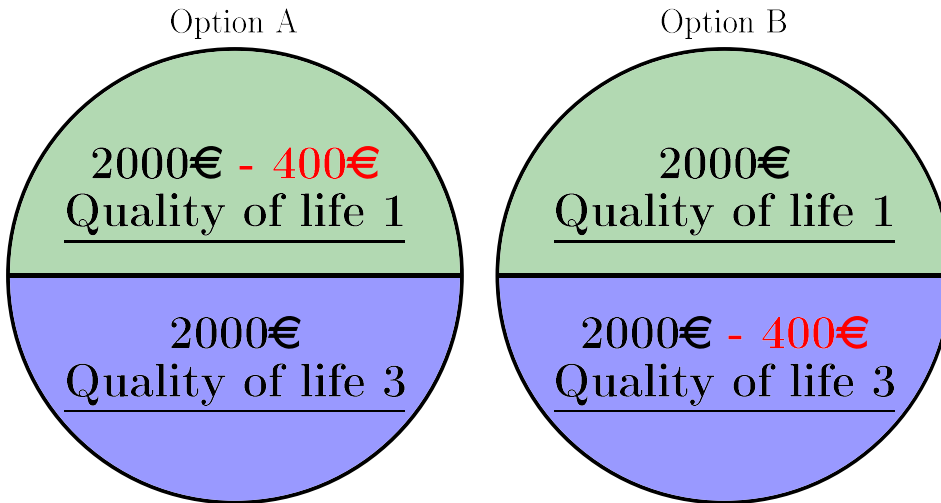
Next

D.2.7 Correlation aversion task

Your monthly budget is 2000€.

Tick the box that corresponds to what you prefer.

- Option A
- Option B



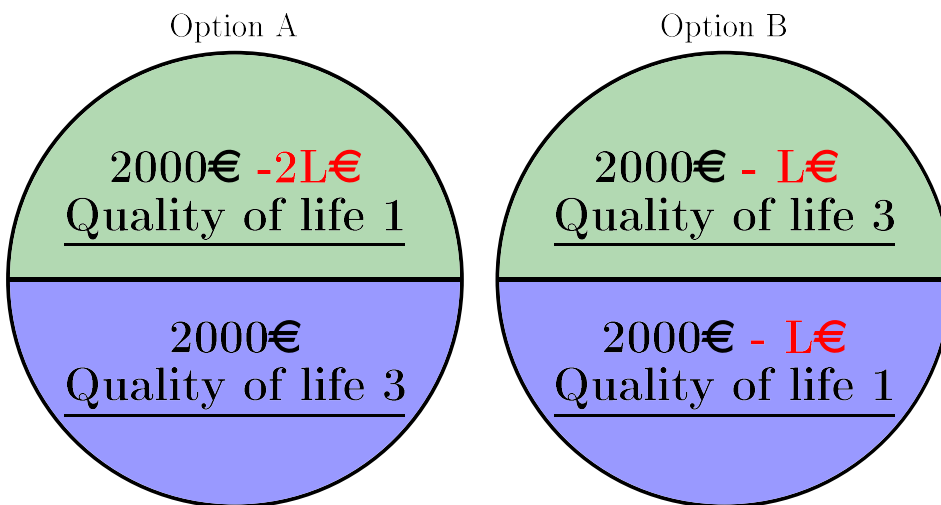
Next

D.2.8 Relative preference for correlation over risk aversion task

Your monthly budget is 2000€.

Tick the box that corresponds to what you prefer.

- Option A
- Option B



Next