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# **Aging and Technology: A living lab cohort characterization**

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## **Abstract**

Senior cohort studies have gained special relevance in an increasingly aging society. Challenges such as the growing prevalence of neurodegenerative disorders, as well as recent public health challenges such as the covid-19 pandemic show us not only the specific challenges faced regarding the promotion of health and well-being of senior individuals, but also the need to understand the role of seniors as active citizens and as agents in the development of solutions and services that aim to promote independence, autonomy, and well-being. This study aims at a comprehensive characterization of a cohort of senior individuals integrated in a Living Lab in Northern Portugal (Porto area), and to test a model of attitudes and use of technology. Forty-four Portuguese community-dwelling seniors (37 women and 7 men) were assessed on cognitive performance, health status personality, and psychological well-being, lifestyle, and attitudes and use of technology. Results revealed differences in cognitive functioning between independent living (non-users) and adult day care users, and showed associations between several dimensions and the model of attitudes and use of technology. Future studies should explore the validity of the developed instrument in other contexts and replicate the results in larger and more heterogenous populations.

*Keywords:* aging; living lab; cognition; premorbid intelligence; technology; UTAUT.

## **1.Introduction**

### **Aging in Modern Society**

Life expectancy is growing (World Economic and Social Survey, 2007), and with it the challenges of mobilizing resources towards health policies that seek to deal with health and mortality, disease, functional limitations and disability, and the consequences of these aspects to the quality of life of older people (Christensen, Doblhammer, Rau, & Vaupel, 2009). Active ageing, as “the process of developing and maintaining the functional ability that enables wellbeing in older age” (Walker, 2009) and “of optimizing opportunities for health, participation, and security in order to enhance quality of life as people age” (World Health Organization, 2002), has been established as the main objective of health and social policies for old people, promoting autonomy, independence, quality of life and healthy life expectancy. Portugal continues to see an increase of demographic aging (INE, 2019), with an addition of 1.9 % (to 21.8%) of seniors compared to young people in the last 10 years; the 2018 Carta Social (INE, 2019) - a report of national social initiatives and services provided to seniors, amongst other vulnerable groups, listed an average coverage of older adult social support responses of 12.6%, an important increase in the last 10 years, with emphasis on elder residential homes and domiciliary support, along with support in adult day centers, these with an occupation rate of 64% — 62% of which with ages below 80 years and in general, medium to high autonomy levels in terms of activities of daily living (GEP- MTSSS, Carta Social, 2018). Considering the benefits for individual well-being, for the strengthening of social relationships (Lecovich & Biderman, 2012), it is important to develop knowledge towards adherence (or lack thereof) to these community solutions. At the same time, adult day centers may present an opportunity to conduct longitudinal studies that more realistically integrate contextual factors towards an understanding of aging in society. Longitudinal design on aging research adds to the body of research by providing advantages such as a better comprehension of the natural history of conditions and risk factors, the impact of interventions on modifiable factors, and understanding disease onset and progression mechanisms (Guralnik & Kritchevsky, 2010). At the same time, inter and intraindividual variability, and the processes associated with it, are most effectively studied in association over time, thus building on the utility of longitudinal design, which also allow for more robust “factor and regression decomposition models of age-related variance” (Hofer & Sliwinski, 2006). According to Stanziano, Whitehurst, Graham and Roos (2010),

longitudinal studies in the past decades, while focusing largely on dimensions of “cognitive functioning, socioeconomic status, health and physical performance, morbidity and mortality predictors”, have undervalued the role of healthcare costs and epigenetics for the understanding of aging. At the same time, subjective health measures has been shown to be a reliable, valid, and relatively sensitive indicator of mortality risk (e.g., Idler & Benyamini, 1997; Pinquart, 2001), with constructs such as personality and psychological well-being as possible correlates (Moor, Zimprich, Schmitt & Kliegel, 2006).

In Portugal, where 21.3% of the total population is above 65 years old (Pordata, 2019), with high rates of illiteracy on this age range (Cavaco, 2019) and potentially high incidence and prevalence of frailty (Sousa-Santos, Afonso, Moreira, Padrão, Santos, Borges, & Amaral, 2018), longitudinal studies are crucial for the refinement of public policies. Published research on the study of Portuguese centenarians hints towards the relevance of geographical characteristics on the cognitive profile of such individuals and, thus, the need to consider health service providers in each district in the promotion of health aging (Brandão, Ribeiro, Afonso & Paúl, 2019), as well the importance of other measures that can directly contribute to mortality risk, such as risk of falling, which can be mediated not only by physical vulnerability but also by factors such as anxiety from the fear of falling (Teixeira, Araújo, Duarte & Ribeiro, 2019).

The challenge of pathological cognitive decline remains one of the main focus of aging research with good reason: the prevalence of neurodegenerative diseases has been increasing throughout the last decades, with reports of one case every 3 seconds (Alzheimer’s Disease International, 2018). Although advances have been made in the biological model of the disease, there are current no long-lasting effective treatments, much less a cure, and thus much research has been oriented towards prevention and delay of symptoms. Given the difficulty of early diagnosis and the multiplicity of factors that can influence cognitive decline, intraindividual measurements — specifically in the form of comparison between present and premorbid functioning — can be valuable to determine the progression of non-pathological and pathological cognitive deficits and/or decline. Irregular word pronunciation such as the National Adult Reading Test NART (Nelson, 1991) has shown promise in this front by providing a hybrid estimation of premorbid intelligence quotient that is stable throughout individuals with dementia (McGurn et al., 2004). Other specific challenges of senior psychological assessment pertain to the relevance of indirect factors to differentiate diagnosis (La Rue & Watson, 1998), the

importance of developing and validating short-forms versions (Simões, 2012), and also specific concerns during the assessment such as sensory deficits (Edelstein et al., 2007).

### **Technology**

Although technology plays an increasingly important role in the lives of older persons, reducing the impact of loneliness and lack of social interaction (Khosravi, Rezvani & Wiewiora, 2016), promoting physical and mental well-being (Hall, Chavarria, Maneeratana, Chaney & Bernhardt, 2012), and as a vehicle of cognitive training (Kueider et al., 2012), the use of Information and Communication Technologies (ICT) tends to diminish with age: in Portugal, 80% of people below 55 years, compared to 34% of seniors (age 65 and older) reported to have used the internet at least once in the previous year (INE, 2019). Peek et al (2014), in a systematic review of factors influencing technology that positively affects aging in both pre and post- implementation stages, identified a total of 27 factors divided in 6 themes regarding technology - concerns, expected benefits, needs, alternatives to technology, social influence, and characteristics of seniors. Other studies (Marquié, Jourdan-Boddaert & Huet, 2002; Wild, Mattek, Maxwell, Dodge, Jimison & Kaye, 2012) argue towards self-efficacy and technological anxiety as specific concerns of this specific group, and others appeal for strategies to promote technological and digital literacy (Martínez-Alcalá et al., 2018).

In the past decades, theories such as the Theory of Acceptance Model (TAM) (Venkatesh et al., 2003), have identified key factors that affect the user's perceptions of technology and its use in the workplace. Drawing from TAM studies and a wide range of contributions from psychology — such as Bandura's social cognitive theory to integrate construct such as self-efficacy and technology-anxiety, Venkatesh et al. proposed the Unified Theory of Attitudes and Use of Technology (UTAUT; @falta uma referêncnia que tem de ter data anterior a 2012 @@). UTAUT postulates four main constructs – performance expectancy, effort expectancy, social influence and facilitating conditions — , as predictors of the intention to use technology in the workplace. A consumer-oriented refined model, UTAUT2 (Venkatesh et al., 2012) integrates the constructs of habit, price value and hedonist motivation, with age, gender, and experience as mediators. The relation of those models with senior use of technology does not rely on the characteristics of technology itself, but in the perception that, as users, older people have of their own relation to technology, and how those perceptions can be influenced by factors such as experience,

technological literacy, cognitive barriers, and positively enhanced under a paradigm of digital inclusion that allows them to achieve greater autonomy, social participation, knowledge, personal development, together with concrete skills that make their relationship possible with others (Vallespir & Morey, 2007).

### **Living Labs: A new methodological venture towards cohort studies**

To promote innovation, technology-centric innovations have been the standard model, but with the modern paradigm shift that aims to put research and technology at the service of people, participatory and user-centered design have paved new collaborative links between creators, promoters, and users. Opposing traditional projects more focused on technology-driven innovation, Living Labs are an emerging paradigm for research design; they are viewed as an alternative with key differences in terms of objectives, roles of project managers, and also of users and user communities, control points, resources and capabilities oriented towards integration of users and facilitating integration of knowledge and tools (Leminen, 2015).

Living Labs are described as “user-centered, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real life communities and settings.” (European Network of Living Labs, 2016). This definition is not exhaustive in regard to the full range of dynamics, capabilities, and impact which can characterize a Living Lab, which, in their multidimensional approach, can offer numerous advantages both as methodology and as a “system”: regarding users, enhanced learning, empowerment of rural communities; regarding companies, localization of products, emergence of business opportunities (including) unexpected market opportunities; regarding research, catalyzed regional systems of innovation; exploration of unpredictable and unstructured contexts; proof of innovation, improvements in take-up ratio of patents, and access to real interaction data and real application contexts (Nyström, Leminen, Westerlund & Kortelainen, 2014). But what about seniors?

Nehmer, Becker, Karshmer and Lamm (2006) mention three types of services that arise from elder needs: emergency treatment, autonomy enhancement, and comfort. In this sense, Living Labs methodology promotes benefits such as a better quality of e-services, improvements in quality of life (both in implementation and policies), tangible contribution for communities, while also offering value to the living labs themselves – facilitating the approach to the private sector, and improving functioning and methods



(Moumtzi & Wills, 2009). At the same time, living labs tend to integrate a socialization aspect, in which a relationship between researchers and users is promoted often within the activities themselves (Barros, Rêgo, & Antunes, 2014). Lastly, integration of experiences is paramount to build a foundation of knowledge specific to each Living Lab that allows researchers to orient research in a more practical way, defining methods and structures with the goal of reducing obstacles in terms of participation and increasing the quality of the feedback. Barros and colleagues (2014) gathered feedback from previous literature while adding accounts of several researchers who worked with seniors in an elder Living Lab, and reported challenges in regard to recruitment, relationship maintenance, training researchers, and support, preparation and training, stressing the role of transmission of knowledge between researchers, and performance expectations among users. Studies on the functional organization of living labs (experiences, elements, and project management styles) have been made usually as qualitative research (Mulder, Velthausz, & Kriens, 2008; Wu, 2012; Almirall, Lee, & Wareham, 2012; Mulvenna et al., 2011), but a comprehensive characterization of the participants in an elder living lab has not been reported in the literature to this date. Each living lab is presented with unique goals, challenges, and organizational principles, and as promoter of users as active co-creators, a structured and continuous assessment of key factors in regards to their health and functionality would better prepare its researchers when it comes to better understand and work with such populations, refining the collaboration process, further increasing participation and empower individuals and communities in an ageing society. Also, due the collaborative nature of Living Labs, their relation with participants, and the fact that such measures would constitute just a part of the collaborative process, certain limitations concerning the evaluation and characterization of elder populations - such as the length of the studies, maintaining moral, reaching out to participants, and guaranteeing funding can represent a challenge to most research projects (Kuh, Pierce, Adams, Deanfield, Ekelund, Fridberg, & Mishra, 2011) - would be expected to be much less noticeable, adding yet another benefit to this research design.

The aim of this study is to characterize a cohort of seniors integrated in a living lab in the area of Porto, and to test a gerontology model of attitudes and use of technology. Considering previous findings, we expect that community-dwelling seniors exhibit better cognitive state and quality of life compared to seniors who attend adult day care centers (H1); in terms of the relationship between personality and self-reported health measures, we expect that higher scores of Neuroticism and lower scores of Conscientiousness,

Extraversion, Openness, Agreeableness will be associated with a lower index of health status (H2); also, we expect to find that higher scores on the Anxiety/Depression dimension of EQ-5D will be associated to higher scores on the GDS and GAI instruments (H3); lastly, we expect that all constructs present in the UTAUT2 model predict the behavioral intention to use technology.

## **2. Method**

### **Data Collection**

Participants were recruited through the living lab network "Colaborar", a partnership between Fraunhofer AICOS and several institutions of elder care/IPSS and independent living seniors with an orientation towards human centered design that promotes development of technology with principles of participatory design, testing products with a network of seniors in sectors such as health and well-being, agriculture, energy, amongst others, and with a special focus on seniors and aging in place technologies. Survey administration was conducted within a period of three months at Fraunhofer AICOS in the case of independent living seniors and at day centers in the remaining cases. Prior to the administration of the survey, participants received information regarding the study and signed the informed consent. Average time of testing was 60 minutes, and the protocol was completed in paper form.

### **Participants**

Participants were 44 senior individuals from the living lab network "Colaborar", (7 men and 37 women), with ages ranging between 58 and 94 years ( $M = 77.4$ ,  $SD = \pm 8.08$ ), and all but one were retired. Most participants (73%) were living with family members, while the rest lived with alone (27%). Almost half were widowed (48%), the others were either married (23%), single (16%), or divorced (14%). Education backgrounds ranged from no formal schooling to having a doctorate, with around half (57%) the participants having completed the 4th year/former basic instruction or lower; average schooling was 6 years ( $M = 5.96$ ,  $SD = \pm 4.12$ ). Slightly more than half (57%) had a monthly income of less than 600€, 30% an income between 600€ and 1200€, and 14% an income above 1200€. All participants signed an informed consent after being briefed on the objectives, risks, and rights related to their participation of the study, according to the Declaration of Helsinki. Whenever a participant was unable to sign the informed consent, a legal

representative signed it instead.

## **Measures**

### **Cognitive Measures (MoCA and TELPI)**

Montreal Cognitive Assessment (MoCA; Nasreddine et al., 2005; Simões et al., 2008) was used to screen for the presence of cognitive deficits. To avoid learning effects derived from potential previous cognitive screenings, an alternate version (MoCA 7.3; Freitas, Simões, Santanta, Martins & Nasreddine, 2013) was also included in the protocol, but no such cases occurred. In our subjects, MoCa showed an internal consistency of  $\alpha = .811$ , that is comparable to that of the original study. TELPI (Alves, Simões & Martins, 2010) was used as a measure of pre-morbid intelligence. This test was developed for the Portuguese population in the same way as NART to be appropriate to estimate pre-morbid intelligence for individuals older than 25 years. It consists in reading without time limit 46 irregular words which vary in familiarity. The internal consistency we obtained was high,  $\alpha = .947$ , and very close to that of the original study ( $\alpha = .939$ ).

### **General Health Status and Frailty (EQ-5D-5L, Prisma-7, TUG)**

General Health Status was evaluated with EQ-5D-5L (Herdman et al, 2011; Portuguese validation by Ferreira, Pereira & Ramos, 2019). Widely used in epidemiological studies, EQ-5D-5L is a short instrument comprised of five questions related to Mobility, Self-Care, Usual Activities, Pain/Discomfort and Anxiety/Depression. It includes a Visual Analogue Scale in which the participants evaluate their health in a number between 0 (the poorest health they can have) and 100 (the best health they can have). It showed an internal consistency of  $\alpha = .595$ , which is relatively low compared to the Portuguese validation study ( $\alpha = .716$ ). Frailty risk was assessed using the frailty phenotype model (Fried et al., 2001) which advocates the use of a general frailty instrument. We resorted to Prisma-7 (Raïche, Hébert & Dubois 2008; Portuguese validation by Tavares, Ferreira, Fonseca, Barbosa, Teixeira & Veríssimo, 2016), and one physical measure, Timed-Up and Go (Podsiadlo & Richardson, 1991). Participants were considered as being in frailty risk if their PRISMA-7 score was at or above 3 and the TUG test revealed mobility issues. Prisma-7 internal consistency was low  $\alpha = .242$ , and increased slightly to .328 if item one, age, was eliminated. Discriminant validity estimated with a ROC curve was high,  $AUC =$

0.800,  $p = .004$ .

### **Personality (TIPI)**

Personality was assessed using the Ten-Items-Personality Inventory (Gosling, Rentfrow & Swann, 2003; Portuguese adaptation by Nunes, Limpo, Lima & Castro, 2018). This instrument is based on the classic model of big-five personality theory (**reference**). Even if its psychometric properties are low compared to other personality inventories ( $\alpha = .174$  in this study), it has the advantage of being short (10 items) and quick to be completed, making it a worthy candidate for personality assessment in seniors, and in circumstances where the length of the protocol might have a significant impact on the participant's motivation.

### **Psychological Well-being (depression, anxiety)**

The presence of depressive symptoms was measured with the Geriatric Depression Scale-15 (D'Ath, Katona, Mullan, Evans & Katona, 1998; Portuguese adaptation by Apóstolo, Loureiro, Reis, Silva, Cardoso & Sfetcu, 2014). The internal consistency,  $\alpha = .76$ , was close to the one of the Portuguese adaptation study ( $\alpha = .83$ ). A ROC curve analysis indicated high discriminant validity ( $AUC = 0.974$ ,  $p = .002$ ). Anxiety was evaluated with the Geriatric Anxiety Inventory (Pachan, Byrne, Siddle, Koloski, Harley & Arnold, 2007; Portuguese validation by Daniel, Vincente, Guadalupe, Silva & Espírito Santo, 2015), composed by 20 items. The internal consistency was high,  $\alpha = .894$ , as the one obtained in the validation study (@ falta por qual se tiver tempo).

### **Socio-demographic Questionnaire**

A questionnaire was constructed to collect sociodemographic information such as age, place of birth, occupation, living status (user of an adult day center or not), marital status, education level, daily activities, hobbies, as well as health conditions (and use of medication), and falls. Health conditions options were retrieved from Quinaz Romana G, et al (2019). Two lifestyle questions regarding alcohol and tobacco consumption were included: a question from the questionnaire AUDIT (an OMS instrument designed to screen alcohol addiction; DGS, 2012) to measure frequency of alcohol intake, and pertaining to tobacco use, a question from the Fagerström Test for Nicotine Dependence (Heartherton, Kozlowski, Frecker & Fagerstrom, 1991; Portuguese validation by Ferreira, Quintal, Lopes & Taveira, 2009; number of cigarettes smoked per day).

## **Technology Use and Attitudes**

To evaluate the types of technology used and its frequency, including internet habits, technology communication, as well as the type of use the participants made from computers, tablets and/or smartphones, a questionnaire was developed and administered orally to each participant. Attitudes towards technology were evaluated by a customized version of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model. Considering the need to adapt this model to senior participants, a review of literature was made independently by two researchers, which was then discussed and led to the creation of a list with several factors that are supposed to determine/influence use and attitudes towards technology, organized in four categories: Concerns (with technology), Socioemotional benefits, Benefits in daily life, and (Influence of) Family and friends. Afterwards, this list was transformed into a series of paper flashcards that were presented individually to two groups, independently living or institutionalized seniors. The goal of the work was twofold: first, to determine item comprehension, and second, to identify the most and least important factors in each category. This step allowed us to refine the language used in the instrument, as well to integrate the input of individuals of this age range and combine it with previous versions of instruments based on this model. The UTAUT2 model was then reviewed and adapted to integrate specific gerontology factors as for example technological anxiety and technology self-efficacy. Because it was not appropriate for an older population, the construct Habit was removed. This process resulted in 32 sentences that were presented in randomized order; participants used a physical scale to answer to each of the statements. The internal consistency was high,  $\alpha = .880$ .

## **Data preprocessing and statistical analysis**

Collected data were inserted in a database and processed using IBM SPSS Statistics version 24.0. Because of the small number of cases (data collection was impaired due to the Covid-19 epidemic), to maintain the fidelity of the data as much as possible missing values were filtered out of the specific analyses. Missing values were present in TELPI (N = 3), GDS (N = 2), TUG (N = 10) and UTAUT (N = 10). Educational level was divided into two groups: basic education (up to 4 years of schooling), and above; education expressed in years spent in school was kept and used whenever deemed appropriate. In order to test differences between seniors living independently vs. attending adult day centers, independent sample t-tests were performed. Pearson correlations were used to determine association between measures such as personality and subjective health status,

as well as anxiety and depressive measures. A multiple linear regression was performed to detect the predictors of attitudes towards technology and its use.

## 1. Results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age (years)	44	58	94	77.43	8.08
Educational Level*	44	1	10	4.43	2.15
Health Conditions	44	0	8	2.20	1.72
MoCA Total Score	44	9	30	19.48	6.22
TELPI Count	41	1	46	36.34	9.60
GDS Score	42	0	10	2.12	2.35
GAI Score	44	0	15	4.48	4.63
EQ-5D-VAS	44	35	100	77.16	17.76

\*Educational Level was coded: 1- no formal schooling, 2- no formal schooling, but knows how to read and write, 3- attended/completed the 1st to 4th year (former basic instruction), 4- attended/completed the 5th or 6th year (old preparatory cycle), 5- attended/completed the 7th to 9th year (former 3rd to 5th high school year), 6- attended/completed the 10th-12th year (former 6<sup>o</sup> or 7<sup>o</sup> high school year), 7- attended/completed post-high school education (technological specialization courses, level IV), 8-attended/completed a short higher education degree (includes former medium courses), 9- attended/completed a license degree, 10- attended/completed a master's degree, 11-attended/completed a doctorate.

### Correlation Between Instruments

TELPI (correct answers) showed a moderate positive correlation with the MoCA Total score ( $r = .553, p < .001$ ) and a low negative correlation with the GAI score ( $r = -.342, p = 0.29$ ). TQIEC showed a moderate positive correlation @with what??? ( $r = .603, p < .001$ ). GDS showed a moderate positive correlation with GAI ( $r = .526, p < .001$ ) and EQ-5D- AD ( $r = .636, p < .001$ ) but not with EQ-5D-AD ( $p > .005$ ). The total scores of MoCA showed no significant correlations with any other instrument. EQ-5D-

5L global score showed a low positive correlation with Prisma-7 total scores ( $r = .312$ ,  $p = .039$ ).

## **Cognition**

### **Descriptive Results of each Instrument**

Regarding MoCA (N = 44), an average score of 19.48 ( $SD = 6.23$ ) was obtained, with the highest scores in Spatial/Temporal Orientation ( $M = 5.55$ ,  $SD = 1.11$ ), and Attention ( $M = 3.80$ ,  $SD = 1.72$ ), and the lowest scores in the Abstraction tasks ( $M = 1.18$ ,  $SD = .896$ ) and Memory ( $M = 1.43$ ,  $SD = 1.73$ ). Around 27% of participants (N= 12) scored below 2 standard deviations of the normative sample average, suggestive of cognitive deficit. Regarding TELPI (N = 41) the average was 35.34 correct answers ( $SD = 10.88$ ), and the average score of the combined formula of TELPI and educational level (Complete Scale quotient) revealed an average of 99.41 ( $SD = 16.15$ ).

### **Living Status (independent living vs. attending day care).**

An independent samples t-test was performed to verify differences between independently living seniors and seniors that frequented adult day centers. MoCA total score was higher in independently living seniors ( $M = 25.5$ ,  $SD = 3.77$ ) than in day center users ( $M = 16.18$ ,  $SD = 4.78$ ,  $p = .001$ ). Independent living seniors showed on average significantly higher scores on all MoCA subdomains: [VS/EF ( $M = 4.06$ ,  $SD = 1.12$ ;  $M = 1.86$ ,  $SD = 1.43$ ),  $t(42) = 5.29$ ,  $p < .001$ , Naming ( $M = 2.81$ ,  $SD = .54$ ;  $M = 1.75$ ,  $SD = .844$ )  $t(42) = 4.51$ ,  $p < .001$ , Attention ( $M = 5$ ,  $SD = 1.27$ ;  $M = 3.11$ ,  $SD = 1.57$ )  $t(37) = 4.36$ ,  $p < .001$ , Language ( $M = 2.50$ ,  $SD = .73$ ;  $M = 1.57$ ,  $SD = .74$ )  $t(31.76) = 4.03$ ,  $p < .001$ , Abstraction ( $M = 1.81$ ,  $SD = .40$ ;  $M = .82$ ,  $SD = .91$ )  $t(40) = 4.99$ ,  $p < .001$ , Memory ( $M = 2.63$ ,  $SD = 1.82$ ;  $M = .75$ ,  $SD = 1.27$ )  $t(23) = 3.65$ ,  $p = .001$ ] as well in the total score ( $M = 25.25$ ,  $SD = 3.77$ ;  $M = 16.18$ ,  $SD = 4.78$ )  $t(37) = 6.95$ ,  $p < .001$ , but not on the Spatial/Temporal Orientation subdomain ( $p > .005$ ).

There were also statistically significant differences on pre-morbid intelligence scores [ $t(38.97) = 3.26$ ,  $p = .002$ ], with the independent living seniors reporting higher average scores of the right answers ( $M = 41.44$ ,  $SD = 6.47$ ) than the day care seniors ( $M = 33.08$ ,  $SD = 9.96$ ). Regarding personality profiles, the only factor in which the two groups that differed significantly was openness to experience [ $t(41) = 2.94$ ,  $p = .005$ ], with the independent living adults reporting higher scores ( $M = 5.22$ ,  $SD = 1.06$ ) than the adult day center seniors ( $M = 4.02$ ,  $SD = 1.64$ ). No other statistically significant differences between the two groups were found (all  $ps > .05$ ).

### Correlations between Cognitive Measures

TELPI correlated significantly with MoCA subdomains: [VS/EF ( $r = .624, p < .001$ ), Naming Tasks ( $r = .542, p < .001$ ), Attention ( $r = .374, p = .016$ ), Language ( $r = .317, p = .043$ ), Abstraction ( $r = .452, p = .003$ ), Memory ( $r = .417, p = .007$ ), but not with Spatial/Temporal Orientation ( $p > .005$ ).

### Predictors of Cognitive Functioning

Pearson correlation was used to determine associations between other variables and MoCA scores. MoCA was negatively highly correlated with age ( $r = -.667, p < .001$ ) and educational level ( $r = .491, p < .001$ ). A bipoint serial correlation also indicated that MoCA scores correlated negatively high with Living Status, with higher scores associated with independent living status ( $r = -.709, p < .001$ ). A multiple linear regression was made to determine MoCA scores based on age and educational level. A significant regression equation was found ( $F(2, 41) = 21.35, p < .001$ ), with an  $R^2$  of .510, in which age ( $\beta = -.432, t(43) = 4.742, p < .001$ ) and educational level ( $\beta = .798, t(43) = 2.239, p = .025$ ) significantly predicted MoCA Scores. Regarding premorbid intelligence, TELPI scores showed very high correlations with the estimated QIEC ( $r = .801, p < .001$ ), QIV ( $r = .896, p < .001$ ) and QIR ( $r = .950, p < .001$ ) scores that were derived from the inclusion of TELPI and educational levels (in years).

### Health Status Descriptive Results

An average of two health conditions/diseases was reported per participant ( $M = 2.20, SD = 1.70$ ). The conditions with the highest incidence were hypertension (43.2%), cholesterol (36.4%), and arthritis/arthrosis and rheumatism, (both at 22.7%). Moreover, 79.5% of participants reported taking medication.

When asked about visual difficulties, 25% of participants reported to experience difficulties, and 50% struggled to see even with glasses. Paralysis was reported by less than 5% of participants although 54.5% stated to have difficulties moving parts of their body. Regarding falls, 63.6% reported to have fallen in the last year. In what regards smoking habits, 93.2% of individuals reported not to smoke, whilst 61.4% stated to consume alcoholic beverages once per month or less.

EQ-5D-5L showed averages scores between 1.02 (Self-care) and 1.66 (Pain/Discomfort). The VAS index indicated medium to high results ( $M = 77.16, SD$



= 17.77), with all participants ( $N = 44$ ), quantifying their general health status at or above 50. The PRISMA-7 total score's average ( $M = 1.66$ ,  $SD = .939$ ), coupled with the TUG's results ( $M = 12.14$ ,  $SD = 5.42$ ) indicated that 11.76% of participants possess increased risk of frailty.

### **Correlations between Health-Instruments**

EQ-5D-5L global score showed a low positive correlation with TUG ( $r = .419$ ,  $p = .014$ ), and in terms of individuals dimensions, only Mobility showed a statistically significant correlation with TUG ( $r = .422$ ,  $p = .013$ ).

Regarding relationships between EQ-5D-5L dimensions and Prisma-7 global score, we found low positive correlations between the latter and the dimensions of Mobility ( $r = .303$ ,  $p = .046$ ), Self-Care ( $r = .385$ ,  $p < .001$ ), a low positive correlation with the dimension Usual Activities ( $r = .409$ ,  $p < .001$ ), and no correlation with the Dimensions Pain/Discomfort or Anxiety/Depression ( $p > .005$ ). On to association between EQ-5D-5L dimensions and Prisma 7 individual items, the dimension of Mobility showed a low positive correlation with the item 3 ("In general, do you have any health problems that require you to limit your activities?") ( $r = .433$ ,  $p = .003$ ) and item 7 ("Do you regularly use a stick, walker or wheelchair to move about?") ( $r = .411$ ,  $p = .006$ ) but not with item 5 ("In general, do you have any health problems that require you to stay at home?"); dimension Self-care showed a moderate positive correlation with item 4 ("Do you need someone to help you on a regular basis?") ( $r = .564$ ,  $p < .001$ ); the dimension Usual Activities showed moderate positive correlations with item 3 ( $r = .549$ ,  $p < .001$ ) and low correlations with item 5 ( $r = .414$ ,  $p = .005$ ) and 7 ( $r = .463$ ,  $p = .002$ ); Pain/Discomfort showed a low positive correlation with item 3 ( $r = .317$ ,  $p = .036$ ) and a moderate positive correlation with item 4 ( $r = .516$ ,  $p < .001$ ); lastly, the dimension Anxiety/Depression only correlated with item 5 ( $r = .503$ ,  $p = .001$ ).

TUG scores showed no correlation with Prisma-7 total scores ( $p > .005$ ), but were moderately positively correlated with age ( $r = .657$ ,  $p < .001$ ), with item 1 ("Are you older than 85 years?") ( $r = .505$ ,  $p < .001$ ), and with item 7 ("Do you regularly use a stick, walker or wheelchair to move about?") ( $r = .516$ ,  $p = .002$ ).

### **Personality and Subjective Health Measures**

Neither the summary index score of EQ-5D-5L or the VAS Scale showed any significant correlations with any dimension of personality ( $p > .005$ ). On the other hand, the anxiety/depression dimension showed low negative correlations with Extraversion ( $r$

= -.114,  $p = .033$ ), Agreeableness ( $r = -.307$ ,  $p = .043$ ) and Openness to Experience ( $r = -.391$ ,  $p < .001$ ).

## **Psychological Well-Being and Personality**

### **Descriptive Results of each Instrument**

Regarding EQAD (N = 44), 75% of participants indicated they are not depressed or anxious, while only 20.5% assume to be slightly anxious or depressed.

Regarding GAI (N = 44), an average score of 4.48 ( $SD = 4.64$ ) was obtained, with the highest average scores being 'I think of myself as a worrier' ( $M = .52$ ,  $SD = .51$ ), 'I often feel nervous' ( $M = .41$ ,  $SD = .50$ ), and 'I think of myself as a nervous person' ( $M = .41$ ,  $SD = .50$ ), whereas the items with the lowest average scores were 'Little things bother me a lot.' ( $M = .02$ ,  $SD = .15$ ), 'I get an upset stomach due to my worrying' ( $M = .01$ ,  $SD = .26$ ), and 'I sometimes feel a great knot in my stomach.' ( $M = .09$ ,  $SD = .29$ ).

GDS (N = 42), showed an average score of 2.12 ( $SD = 2.35$ ), with the highest average scores being 'Are you afraid something bad is going to happen to you?' ( $M = .29$ ,  $SD = .46$ ), 'Do you prefer to stay at home, rather than going out and doing new things?' ( $M = .26$ ,  $SD = .45$ ), 'Do you feel full of energy?' ( $M = .41$ ,  $SD = .50$ ), and 'Do you often get bored?' ( $M = .21$ ,  $SD = .42$ ), whereas the items with the lowest average scores were 'Do you think it is wonderful to be alive' ( $M = .00$ ,  $SD = .00$ ), 'Do you feel pretty worthless the way you are now?' ( $M = .10$ ,  $SD = .30$ ), 'Do you feel that your situation is hopeless?' ( $M = .10$ ,  $SD = .30$ ), and 'Do you think that most people are better off than you are?' ( $M = .10$ ,  $SD = .30$ ).

### **Correlations between Instruments**

GAI showed a moderate positive correlation with EQ-5D-AD ( $r = .456$ ,  $p = .002$ ) GDS showed a low negative correlation with the Extraversion dimension ( $r = -.329$ ,  $p = .033$ ) and with Agreeableness ( $r = -.397$ ,  $p = .009$ ). GAI showed a low negative correlation with Emotional Stability ( $r = -.335$ ,  $p = .260$ ) EQ\_5D\_AD showed a low negative correlation with Extraversion ( $r = -.321$ ,  $p = .330$ ) and Agreeableness ( $r = -.307$ ,  $p = .043$ ), while displaying a low positive correlation with Openness to Experience ( $r = .391$ ,  $p = .009$ ). Extraversion showed a low positive correlation with Openness to Experience ( $r = .347$ ,  $p = .021$ ). Openness to experience had a low negative correlation with Prisma-7 total score ( $r = -.488$ ,  $p = .001$ ).

## **Daily Activities and Lifestyle**

The most participated activities were watching TV (70.5%), taking walks (63.6%) and manual activities (63.6%), while the least reported were visiting cinemas/theatres. Reading activities were split into newspapers/magazines (45.5%), and books (38.6%). In terms of social activities, some participants visit friends (30.2%) and family members (27.3%), and some of them (27.3%), also go to church. The main methods of transportation for daily usual activities are walking and family member vehicles (percentages lacking due the variable presenting a multi-response format).

### **Technology (N= 34) Daily Activities and Lifestyle**

On average, less than 2 devices were owned by each participant ( $M = 1.75$ ,  $SD = 1.10$ ); 54% owned a cellphone, 19% of participants a smartphone, 27.3% a tablet, 34.1% a computer, and 9.1% a smartwatch/bracelet. Regarding internet services, 45.5% of participants had access to it at home, but only 22.7% outside on their mobile phones; almost half of the participants who used internet (47.3%), reported using it several times a day, with the remaining reporting lower frequency of usage. Regarding internet service management, 92% of participants who managed it were independently living seniors.

The most reported activities on smartphones users were using chats (Skype, WhatsApp, Messenger, etc., 27.3%), taking photos (25%) and surfing the web (25%); the most common activities on tablets were surfing the web (15.9%), playing games (13.6%) and using chats (Skype, WhatsApp, Messenger, etc., 9.1%); lastly, the most frequently performed activities done by computer were surfing the web (22.7%), consulting email (18.2%) and using government online services (Finances, Social Security, etc., 15.9%).

The majority of participants used ICT devices to communicate with friends and family (79.5%), and the most common frequency of communication was every day with several people (34.3%) and frequently or rarely with several people, both at 25.71%.

### **Descriptive Results of UTAUT**

The dimensions in which participants were most neutral about were Price Value ( $M = 4.21$ ,  $SD = 1.20$ ), Behavioral Intention ( $M = 4.35$ ,  $SD = 1.66$ ) and Perceived Ease of Use ( $M = 4.37$ ,  $SD = 1.64$ ), while the dimension with most positive average scores was Social Relationships ( $M = 4.35$ ,  $SD = .510$ ). Although no particular dimensions showed distinctively lower scores, the most disagreed items were “I intend to acquire technology in the future” (show percentage?) ( $M = 2.74$ ,  $SD = 2.33$ ), and “The price of

technology is reasonable” ( $M = 3.65, SD = 1.54$ ).

### **Relation between Technology Dimensions**

Pearson correlation was performed to detect relations between technology factors and Behavioral Intention. BI significantly correlated with Perceived Usefulness ( $r = .523, p = .001$ ), Perceived Ease of Use ( $r = .350, p = .042$ ), Social Influence ( $r = .589, p < .001$ ), Facilitating Conditions ( $r = .382, p = .026$ ), Hedonic Motivation ( $r = .360, p = .036$ ), and Technological Self-Efficacy ( $r = .436, p = .010$ ), but not Price Value, Technology Anxiety or Social Relationships ( $p > .05$ ). Given the presence of multicollinearity, multiple linear regression analysis was not possible.

### **Relation between Other Dimensions/Instruments**

Cognition: MoCA total scores showed positive low correlations with Perceived Ease of Use ( $r = .421, p = .013$ ), Social Influence ( $r = .445, p = .008$ ) and positive moderate correlations with Technological Self-Efficacy ( $r = .522, p = .005$ ), and Behavioral Intention ( $r = .504, p = .002$ ).

Pre-morbid intelligence ( $N = 31$ ), via the amount of right answers in the TELPI, displayed a low positive correlation with Social Influence ( $r = .381, p = .034$ ) and moderate positive correlation Technological Self-Efficacy ( $r = .620, p < .001$ ), while TQIEC only correlated positively with Technological Self-Efficacy ( $r = .614, p < .001$ ).

Personality: Openness to Experience showed a low positive correlation with Perceived Ease of Use ( $r = .447, p = .008$ ), Facilitating Conditions ( $r = .455, p = .007$ ), and Social Relationships ( $r = .365, p = .034$ ), but not with other dimensions of UTAUT, including Behavioral Intention ( $p > .005$ ). Extraversion showed a low positive correlation with perceived usefulness ( $r = .407, p = .017$ ) and with Technology Anxiety ( $r = .376, p = .029$ ) and moderately positive correlation with Perceived Ease of Use ( $r = .634, p < .001$ ) and Facilitating Conditions ( $r = .584, p < .001$ ). Agreeableness showed a low positive correlation with Social Relationships dimension ( $r = .357, p = .038$ ). Neither Conscientiousness nor Emotional Stability showed significant correlations with any of UTAUT dimensions ( $p > .005$ ).

General Health: EQ-5D-5L global scores showed a low negative correlation with Technology Anxiety ( $r = -.467, p = .005$ ) and with Facilitating Conditions ( $r = -.352, p = .041$ ). VAS index of health showed a low positive correlation with Perceived Ease of Use ( $r = .362, p = .035$ ). Prisma-7 total scores showed significant negative low correlations

with both Facilitating Conditions ( $r = -.380, p = .027$ ) and Technology Anxiety ( $r = -.365, p = .034$ ), just like EQ-5D-5L global scores.

Psychological well-being: GDS scores showed negative low correlations with Perceived Usefulness ( $r = -.441, p = .011$ ), Perceived Ease of Use ( $r = -.434, p = .013$ ) and Technology Anxiety ( $r = -.472, p = .006$ ). GAI scores showed no statistically valid correlations with any of the UTAUT dimensions ( $p > .005$ ), while the Anxiety/Depression Dimension of EQ-5D-5L scores were negatively correlated with Technology Anxiety ( $r = -.433, p = .011$ )

## **2. Discussion**

### **Cognition**

Regarding cognitive performance on the Montreal Cognitive Assessment test, overall results were considered medium to high when compared to the normative sample (Freitas, Simões, Alves, L., & Santana, 2011). As expected, memory and abstraction presented the lowest scores, while Spatial/Temporal orientation as highest score and the only dimension consistent measure in both independent living seniors and adult day care users. Just like the normative Portuguese sample, age and educational levels were shown to predict MoCA total scores. Studies also hint towards the impact of physical activity on both general and specific MoCA scores, but from the two items related to physical activity (present in the sociodemographic/life-style questionnaire), only attendance to the gym correlated significantly with MoCA scores, and the regression model was not improved by it's inclusion. It is possible that different types of physical activity might result in a varying degree of impact on general cognitive functioning on older adults, and even then, the exact mechanisms are still unclear (Busse, Gil, Santarém & Filho, 2009). Other aspects that are known to impact cognitive performance are well-being measures such as depression and anxiety (Del Brutto, Mera, Del Brutto, Maestre, Gardener, Zambrano, & Wright, 2015), but no such relation was found in this sample, suggesting the influence of some protective factor such as social support.

Regarding specific MoCA domains, there was no significant associations between subjective (expressed in the GDS item regarding complaints about memory) and objective measures of memory, contradicting findings by Freitas, Simões, Alves & Santana (2012), but on the other hand, there was a positive moderate correlation between complaints of memory and depressive symptomatology scores, as observed by O'Shea, Dotson, Fieo,

Tsapanou, Zahodne & Stern (2016). Although some degrees of memory, particularly episodic memory tend to be stable throughout older age, but recently-learned information may be prone to a lesser degree of retention (Murman, 2015), which could help explain the scores on the delayed memory recall task. Nonetheless, it is important to concede the role of attentional deficits on memory-related impairment or difficulties (Riddle, 2007).

A curious pattern emerged during the completion of abstract tasks: a significant number of participants, even though the instructions were given in a clear manner, and the use of the exemplificative item determined that participants understood what the task required, frequent answers in the task that involved determining the similarities shared by two objects were in the contrary, regarding differences of said objects. Is it possible that comprehension was affected, or that simply evoking differences was easier for the participants? We have not found reports or an explanation for such phenomenon on the literature, and the question is worth exploring.

Spatial/Temporal Orientation was the dimension with the highest results amongst the participants: be it because both independent living seniors and adult day care users have an active life that engages them in routines and schedules, some studies (Monacelli, Crushman, Kvcic & Duffy, 2003) argue towards spatial disorientation, as opposed to memory impairments when explaining situations in which seniors with Alzheimer's disease lose themselves, instead of memory. In regards to temporal orientation, it was frequent to see participants reporting past dates as older as 20 years (e.g. 1980), but in the overwhelming majority of cases, they corrected themselves after a few seconds, and without any interference from the researcher. More than anything, this is relevant for practitioners and researchers that engage in any kind of formal testing, by taking into account the possible bias or misinterpretation of senior's competences in a certain task/domain if the answer given by impulse is taken as the definitive one.

Premorbid functioning is of particular importance to older adults: by allowing to establish a baseline that helps differentiate normal and pathological cognitive decline, to draw more realistic neuropsychological rehabilitation targets and goals, and to analyze its evolution of decline over time. Advantages of reading tests for the measurement of premorbid functioning relate to their ease of administration, short amount of time, and their resistance to injuries, although ineffective on participants with reading disabilities or with no literacy skills (Holdnack, Drozdick, Weiss, & Iverson, 2013). TELPI results show potential in regard to the conjunction of the premorbid score with educational level to better control for variability and thus minimize errors type I and 2 in the determination of

cognitive deficit using cognitive screening measurements (Simões, 2013). In this particular sample, when controlling for educational level, less than 5 participants obtained scores below 2 standard deviations of the normative sample (Alves, Martins, & Simões, 2010), and thus, it is safe to assume that the cognitive screening scores obtained by MoCA were not under or overestimated in the significant portion of the sample.

### **Health Status**

In terms of incidence of health conditions, the participants of the study indicated low scores compared to averages reported by the national census (Quinaz Romana G, et al., 2019), both for hypertension and cholesterol. One explanation might be related to a better control from a significant part of the participants of their health status considering the support they receive both from family members and formal caregivers in adult day care centers. Although multimorbidity was present throughout the sample, is it likely overreported in the present study, considering the simple formula when compared to more precise analysis such as Salive (2013).

The EQ-5D-5L general scores and the medium to high VAS scores can be interpreted by the lack of reports of significant life problems other than mobility/pain by participants, and by the fact that the majority of the participants had someone close to them which suggests good support (which was further supported by UTAUT Social Relationships dimension); overall the results meet the Portuguese validation study. At the same time, the lack of association between EQ-5D-5L and age might be explained by the optimism showed by the participants when evaluating their health status. It is possible that when categorizing their own health, seniors tend to compare themselves their health with that of other acquaintances of the same age range; in this set of participants, especially those in adult day centers, such comparison was frequently observed by the researchers.

The frailty incidence amongst participants was influenced by several factors: average age of the sample, the gender homogeneity, and the high levels of social support, which might have explained the general low scores of Prisma-7. Overall scores, when compared to studies in similar demographic areas. Moreira, Torre, Rollo, Silva, Duarte & Cruz, (2018), observed somewhat lower scores, although it is worth noting that the complementary instrument used was Gait speed test (4 meters compared to 3 meters from TUG), and their average age was lower than the present study.

Results regarding the frailty syndrome are incomplete in that TUG was not performed in a significant number of participants. Between the highest predictors of frailty risk,

physical problems (regarding mobility or other motor aspects) are one of the most prevalent (Apóstolo et al., 2017), so these results should be interpreted with caution. A possible reliable alternative if the test cannot be administered should be the hand-grip test (Bohannon, 2008). TUG associations with age and the use of mobility aids also helps explain the utility of the test by following results found in previous studies (Gell, Wallace, Lacroix, Mroz & Patel, 2015).

The significant association between EQ-5D-5L Mobility dimensions and TUG scores indicates congruence between subjective and objective measures. However, due to the low amount of tests, further analysis was not possible in regards to Timed Up and Go, a widely used measure of functional mobility. Interestingly, Self-Care dimension was inversely associated with a specific Prisma-7 item “you need someone to help you”, which suggests that seniors are aware of their limitations and the need for help.

### **Psychological Well-Being**

The levels of depressive and anxiety symptomatology by most participants can be partially understood by the high levels of social support they mention. Nonetheless, data showed some portion of participants with a possible risk of depression, suggestive of an incidence a bit lower than expected for the Portuguese population in this age range (Caldas de Almeida, Xavier, Cardoso, Gonçalves-Pereira, Gusmão, Corrêa, & Silva, 2013). It is possible that the oral administration of these instruments can have impacted the results – O'Neill, Rice, Blake, Walsh & Coakley (1992) noted differences in scores depending on whether the instrument was staff-administered or self-administered. Such considerations may also apply to the short form of GDS and are pertinent when assessing protocol administrations that include sensitive measures. Although seniors can show positive attitudes regarding mental health (Mackenzie, Scott, Mather & Sareen, 2008), social desirability can be present when under evaluation, as well as rater bias. The associations found between depression and educational level, and depression and socioeconomic status is concordant with what is found in the literature (Fiske, Wetherell, & Gatz, 2009), but given sample characteristics, it was not possible to determine gender differences. No significant differences were found between living status groups, but according to Leal, Apóstolo, Mendes & Marques (2015), after geriatric homes, adult day centers show the highest incidence of depression cases.

Unlike reported in the literature (Wolitzky-Taylor et al., 2010) higher anxiety scores



were not significantly associated with lower scores on subjective health status, but they were significantly associated with the Anxiety dimension of EQ-5D-5L), which partially support hypothesis 3 (since GDS was not associated).

The results obtained in associations between scores of EQ-5D-5L Anxiety/Depression and the GDS and GAI scales suggest that construct validity is present for the anxiety measure, but the fact that this dimension evaluates two distinct (yet often related), constructs, it might be possible that participants opted to respond more to depression dimension, especially considering that these instruments were applied one right after the one, thus introducing bias on EQ-5D-5L scores. Such effects were not observed in the literature, although some there are reports of lower than expected psychometric values from the instrument in this dimension (Crick, Al Sayah, Ohinmaa, & Johnson, 2018).

Association between anxiety symptomatology and personality traits was only evident for emotional stability/neuroticism, which follows the literature trend of such aspect of personality being linked to deficits in coping skills (Costa & McCrae, 1980) and satisfaction with life (McCrae & Costa, 1986).

### **Technology**

The results regarding the activities performed on the three most used types of ICT considered in the study (smartphone, tablet and computer) meet the criticism made by Gelderblom, Dyk and Biljon (2015) to current technology acceptance models in which they tend to make assumptions regarding a "all-or-nothing" use of a certain technology. Seniors tend to see ICT as tools to communicate with friends and family (especially regarding social networks), but due lack of interested/need/ability, engage in a low number of activities per device/frequency of internet usage. The explanation may rest, as data suggest, in age-related factors, such as sensory difficulties or cognitive difficulties, but also due to a simple matter of lack of interest on using technology, a possibility supported by the neutral responses obtain in dimensions of the UTAUT model like such as Behavioral Intention. Another interpretation of the average low amount of devices owned might be related to the fact acquisition of technology is a step many times skipped by seniors, since the devices are usually offered by family members with the goal of maintaining the seniors as contactable as possible, either for emergencies, or simply for communication purposes.

Out of the eight "direct" (or technology related) factors thought to relate to Behavioral Intention, three of them showed no association to the construct, even when

controlling for financial reasons: Price Value and Technology Anxiety. The former might be explained by the averages of the individual items that composed this construct, which featured among the least opinionated items from the questionnaire. Consequently, it could be argued that lack of Behavioral Intention could act as protective factor for Technology Anxiety. It would be possible that given a specific intervention, the pre and post-intervention measurement could explain this (lack of) dynamic.

Regarding indirect/non-technology specific factors, neither educational level, premorbid functioning, or any measures of psychology well-being (including perceived satisfaction with Social Relationships) and subjective health status were associated with Behavioral Intention. Considering the communication aspect is one of the most common advantages noted by seniors on the use of technology,

It is worth noting at the same time the importance revealed by the general use of technology questionnaire: it provided useful information to the researchers regarding opinions and use of technology, and thus improved the collection of information throughout the administration of the UTAUT instrument by hinting towards possible specific concerns and biases from the participant, and at the same time, allow the researcher to have insight regarding specific technology usage and experiences that helped providing relevant examples for specific items if such request was made by the participant. The inclusion of qualitative interviews to complement the Attitudes and Use of Technology instrument might result in a better understanding of individual relation with technology, giving more explicative power of the model, and denoting specific phenomenon related to this population. Nonetheless, its use as a proxy measure of digital literacy still requires further testing, especially since the competences mobilized cannot be fully grasped by the questions in the questionnaire. Digital literacy suffers from a wide discrepancy of measurements both in instrumentally and conceptual terms (Covello, & Lei, 2010), and while a recent initiative towards a instrument tailored to the Portuguese population was made (INCoDe.2030, 2019), it is by no means adapted to seniors due to the complexity of its language and concepts.

The UTAUT2 model proposed by this study is incomplete due logistic constraints impeding to use metrics for specific technologies introduced by the Living Lab that, if included, could potentially help explain attitudes and use of technology beyond the pre-implementation stages. Although the network “Colaborar” has an extensive record of technology introducing to their users, data regarding researchers’ own experiences in demonstrating and training users whenever a new technological product is presented, as

well as their opinions related to the perceived impact of each project on the overall reaction and openness to technology from users, could further help explain factors that influence acceptance (or otherwise) outcomes, especially in post-implementation stages. Living lab users report collaboration with others, solving challenges, and personal interest as the top reasons for collaborating in Living Labs (Logghe, Baccarne & Schuurman, 2014), but such factors should not be generalized to all population ranges and contexts, especially given the differences in seniors compared to other age ranges in terms of relation to technology, the fact that changes over time occur, derived from the types of technology themselves, the overall subjective quality of the experience, duration, or other factors.

### **Conclusion**

This study sets the basis for future senior cohort longitudinal studies by proposing and testing a comprehensive evaluation of seniors, and by testing the validity of innovative measures such as premorbid intelligence as methods of better detection of cognitive changes over time. It also sought to contribute towards the development of a prospective senior model of attitudes and use of technology, either by exploring factors of pre-implementation usage, and by including specific psychogerontology factors that have been known to impact seniors relation with technology.

This study is not without its limitations: firstly, the data collection process was interrupted due public health concerns, resulting in a far smaller number of participants, and preventing the generalization of the results; the lack of data from institutionalized seniors prevents a more complete picture regarding characteristics, and benefits of institutionalized care on aspects such as social support and well-being. Regarding the aspect of social relationships, although two questions about feelings of social support are included, the dimension could have been more thoroughly explored, given its relevance on the well-being of individuals, especially at this age. Lastly, the viability of the Frailty syndrome evaluation was compromised due to the lack of motor performance metrics.

Future studies should continue to seek to test and refine short-form instruments, to guarantee measurements of cognitive performance that are psychometrically reliable and the same time ecological valid, and as important, that are mindful of the attentional resources required of seniors to complete them. In a moment in which the relation with technology is seemingly vital to reducing impact of social isolation, further exploring and developing measurements of digital literacy that are adapted to this population are of paramount importance. Consequently, validation of the proposed model of attitudes and

use of technology on other populations that vary in context, age, and experience with technology could help refine and understand which factors can impact the initial impression of seniors towards technology initiatives and have positive results regarding their participation as co-creators of technology for aging in place.

Innovative solutions that tackle, either in social responses or specific services and products, difficulties, and challenges experience by seniors on their daily living can only be achieved by an understanding of the heterogeneity present on this age range. As such, knowledge of senior populations should be expanded in a collaborative way that promotes sharing with these individuals in an inter-generational reciprocity that values their experiences, insights, and life narratives.

### References

- Almirall, E., Lee, M., & Wareham, J. (2012). Mapping living labs in the landscape of innovation methodologies. *Technology innovation management review*, 2(9).
- Alves, L., Martins, C., & Simões, M. R. (2010). Avaliação da Inteligência Pré-Mórbida: Desenvolvimento da versão experimental do teste de Leitura de Palavras Irregulares (TeLPI) para a população portuguesa. *Psychologica*, (53), 299-312.
- Apóstolo, J. L. A., Loureiro, L. M. D. J., Reis, I. A. C. D., Silva, I. A. L. L. D., Cardoso, D. F. B., & Sfetcu, R. (2014). Contribuição para a adaptação da Geriatric Depression Scale-15 para a língua portuguesa. *Revista de Enfermagem Referência*, (3), 65-73.
- Apóstolo, J., Cooke, R., Bobrowicz-Campos, E., Santana, S., Marcucci, M., Cano, A., ... & Holland, C. (2017). Predicting risk and outcomes for frail older adults: an umbrella review of frailty screening tools. *JBHI database of systematic reviews and implementation reports*, 15(4), 1154.
- AUDIT (2002) = não estou a encontrar a referência.
- Ban, K. M. (2007). World economic and social survey 2007: Development in an aging world. *DESA, United Nations, New York*.
- Barros, A. C., Rêgo, S., & Antunes, J. (2014, September). Aspects of Human-Centred Design in HCI with Older Adults: Experiences from the Field. In *International Conference on Human-Centred Software Engineering* (pp. 235-242). Springer,
- Bohannon, R. W. (2008). Hand-grip dynamometry predicts future outcomes in aging adults. *Journal of geriatric physical therapy*, 31(1), 3-10.

- Brandão, D., Ribeiro, O., Afonso, R. M., & Paúl, C. (2019). Regional differences in morbidity profiles and health care use in the oldest old: Findings from two Centenarian Studies in Portugal. *Archives of gerontology and geriatrics*, 82, 139-146.
- Busse, A. L., Gil, G., Santarém, J. M., & Jacob Filho, W. (2009). Physical activity and cognition in the elderly: a review. *Dementia & neuropsychologia*, 3(3), 204.
- Caldas de Almeida, J. M., Xavier, M., Cardoso, G., Gonçalves-Pereira, M., Gusmão, R., Corrêa, B., & Silva, J. (2013). Estudo epidemiológico nacional de saúde mental: 1º relatório. *Lisboa: Faculdade de Ciências Médicas, Universidade Nova de Lisboa*, 26-29.
- Cavaco, C. (2019). Analfabetismo em Portugal—os dados estatísticos, as políticas públicas e os analfabetos. *Revista Internacional de Educação de Jovens e Adultos*, 1(2), 17-31.
- Christensen, K., Doblhammer, G., Rau, R., & Vaupel, J. W. (2009). Ageing populations: the challenges ahead. *The lancet*, 374(9696), 1196-1208.
- Costa, P. T. Jr., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: happy and unhappy people. *Journal of Personality and Social Psychology*, 38, 668–678.
- Costa, P. T. Jr., & McCrae, R. R. (1986). Cross-sectional studies of personality in a national sample: I. Development and validation of survey measures. *Psychology and Aging*, 1, 140–143.
- Covello, S., & Lei, J. (2010). A review of digital literacy assessment instruments. *Syracuse University*, 1-31.
- Crick, K., Al Sayah, F., Ohinmaa, A., & Johnson, J. A. (2018). Responsiveness of the anxiety/depression dimension of the 3-and 5-level versions of the EQ-5D in assessing mental health. *Quality of Life Research*, 27(6), 1625-1633.
- D'ATH, P. E. N. N. Y., Katona, P., Mullan, E., Evans, S., & Katona, C. (1994). Screening, detection and management of depression in elderly primary care attenders. I: The acceptability and performance of the 15 item Geriatric Depression Scale (GDS15) and the development of short versions. *Family practice*, 11(3), 260-266.
- Daniel, F., Vicente, H., Guadalupe, S., Silva, A., & Santo, H. M. A. E. (2015). Propriedades psicométricas da versão portuguesa do Inventário Geriátrico de Ansiedade numa amostra de idosos utentes de estruturas residenciais. *Revista Portuguesa de Investigação*
- Deary, I. J. (2004). Pronunciation of irregular words is preserved in dementia, validating premorbid IQ estimation. *Neurology*, 62(7), 1184-1186.

- Edelstein, B. A., Woodhead, E. L., Segal, D. L., Heisel, M. J., Bower, E. H., Lowery, A. J., & Stoner, S. A. (2007). Older adult psychological assessment: Current instrument status and related considerations. *Clinical Gerontologist*, *31*(3), 1-35.
- Freitas, S., Simões, M. R., Alves, L., & Santana, I. (2011). Montreal Cognitive Assessment (MoCA): normative study for the Portuguese population. *Journal of clinical and experimental neuropsychology*, *33*(9), 989-996.
- FFMS. (2019). Retrato de Portugal: Edição 2019. Lisboa: PORDATA. Retrieved from <https://www.pordata.pt/ebooks/PT2019v20190711/mobile/index.html>
- Fried, L. P., Tangen, C. M., Walston, J., Newman, A. B., Hirsch, C., Gottdiener, J., ... & McBurnie, M. A. (2001). Frailty in older adults: evidence for a phenotype. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *56*(3), M146-M157.
- Garcia Robles, A., Hirvikoski, T., Schuurman, D., & Stokes, L. (2016). Introducing enoll and its living lab community. *European Network of Living Labs (ENoLL)*.
- Gelderblom, H., van Dyk, T., & van Biljon, J. (2010, October). Mobile phone adoption: Do existing models adequately capture the actual usage of older adults?. In *Proceedings of the 2010 annual research conference of the south african institute of computer scientists and information technologists* (pp. 67-74).
- Gell, N. M., Wallace, R. B., Lacroix, A. Z., Mroz, T. M., & Patel, K. V. (2015). Mobility device use in older adults and incidence of falls and worry about falling: Findings from the 2011–2012 national health and aging trends study. *Journal of the American Geriatrics Society*, *63*(5), 853-859.
- Gosling, S. D., Rentfrow, P. J., & Swann Jr, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in personality*, *37*(6), 504-528.
- Guralnik, J. M., & Kritchevsky, S. B. (2010). Translating research to promote healthy aging: the complementary role of longitudinal studies and clinical trials. *Journal of the American Geriatrics Society*, *58*, S337-S342.
- Hall, A. K., Chavarria, E., Maneeratana, V., Chaney, B. H., & Bernhardt, J. M. (2012). Health benefits of digital videogames for older adults: a systematic review of the literature. *Games for Health: Research, Development, and Clinical Applications*, *1*(6), 402-410.
- Heatherton, T. F., Kozlowski, L. T., Frecker, R. C., & FAGERSTROM, K. O. (1991). The Fagerström test for nicotine dependence: a revision of the Fagerstrom Tolerance Questionnaire. *British journal of addiction*, *86*(9), 1119-1127.

Herdman, M., Gudex, C., Lloyd, A., Janssen, M. F., Kind, P., Parkin, D., ... & Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Quality of life research*, 20(10), 1727-1736.

Hofer, S. M., & Sliwinski, M. J. (2006). Design and analysis of longitudinal studies on aging. In *Handbook of the psychology of aging* (pp. 15-37). Academic Press.

Holdnack, J. A., Drozdick, L., Weiss, L. G., & Iverson, G. L. (Eds.). (2013). *WAIS-IV, WMS-IV, and ACS: Advanced Clinical Interpretation*. Academic Press.

Holland, C. (2017). Predicting risk and outcomes for frail older adults: an umbrella review of frailty screening tools. *JBIC database of systematic reviews and implementation reports*, 15(4), 1154.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: a review of twenty-seven community studies. *Journal of health and social behavior*, 21-37.

INE (2019) Estatísticas Demográficas – 2018, Instituto Nacional de Estatística, IP, ISSN de Estratégia, G. Planeamento.(2018). Carta Social–Rede de serviços e equipamentos–Relatório 2018. *Relatório da Carta Social*.

Khosravi, P., Rezvani, A., & Wiewiora, A. (2016). The impact of technology on older adults' social isolation. *Computers in Human Behavior*, 63, 594-603.

Kueider, A. M., Parisi, J. M., Gross, A. L., & Rebok, G. W. (2012). Computerized cognitive training with older adults: a systematic review. *PloS one*, 7(7), e40588.

La Rue, A., & Watson, J. (1998). Psychological assessment of older adults. *Professional Psychology: Research and Practice*, 29(1), 5.

Leminen, S. (2015) Q&A. What Are Living Labs? (September 2015). *Technology Innovation Management Review*, 5(9), 29-35.

Iecovich, E., & Biderman, A. (2012). Attendance in adult day care centers and its relation to loneliness among frail older adults. *International psychogeriatrics*, 24(3), 439.

Logghe, S., Baccarne, B., & Schuurman, D. (2014). An exploration of user motivations for participation in Living Labs. In *ISPIM Conference Proceedings* (p. 1). The International Society for Professional Innovation Management (ISPIM).

Marquié, J. C., Jourdan-Boddaert, L., & Huet, N. (2002). Do older adults underestimate their actual computer knowledge?. *Behaviour & Information Technology*, 21(4), 273-280.

Martínez-Alcalá, C. I., Rosales-Lagarde, A., Alonso-Lavernia, M. D. L. Á., Ramírez-Salvador, J. Á., Jiménez-Rodríguez, B., Cepeda-Rebollar, R. M., ... & Agis-Juárez, R. A. (2018). Digital inclusion in older adults: A comparison between face-to-face and blended digital literacy workshops. *Frontiers in ICT*, 5, 21.

- McGurn, B., Starr, J. M., Topfer, J. A., Pattie, A., Whiteman, M. C., Lemmon, H. A., ... & Deary, I. J. (2004). Pronunciation of irregular words is preserved in dementia, validating premorbid IQ estimation. *Neurology*, *62*(7), 1184-1186.
- Monacelli, A. M., Cushman, L. A., Kavcic, V., & Duffy, C. J. (2003). Spatial disorientation in Alzheimer's disease: the remembrance of things passed. *Neurology*, *61*(11), 1491-1497.
- Moor, C., Zimprich, D., Schmitt, M., & Kliegel, M. (2006). Personality, aging self-perceptions, and subjective health: A mediation model. *The International Journal of Aging and Human Development*, *63*(3), 241-257.
- Mountzi, V., & Wills, C. (2009, June). Utilizing living labs approach for the validation of services for the assisting living of elderly people. In *2009 3rd IEEE International Conference on Digital Ecosystems and Technologies* (pp. 552-557). IEEE.
- Mulvenna, M., Martin, S., McDade, D., Beamish, E., De Oliveira, A., & Kivilehto, A. (2011). TRAIL Living Labs Survey 2011: A survey of the ENOLL living labs. Retrieved from: <https://pure.ulster.ac.uk/ws/portalfiles/portal/11317086/TRAILLiving-Lab-Survey-2011.pdf>
- Murman, D. L. (2015, August). The impact of age on cognition. In *Seminars in hearing* (Vol. 36, No. 03, pp. 111-121). Thieme Medical Publishers.
- Nasieddine, Z. (2004). *Montreal cognitive assessment (MoCA)*. École des sciences de la réadaptation, Sciences de la santé, Université d'Ottawa.
- Nehmer, J., Becker, M., Karshmer, A., & Lamm, R. (2006). Living assistance systems: an ambient intelligence approach. In *Proceedings of the 28th international conference on Software engineering (ICSE 2006)*. doi:<https://doi.org/10.1145/1134285.1134293>
- Nelson, H. E., & Willison, J. (1991). *National adult reading test (NART)*. Windsor: Nfer-Nelson.
- Nyström, A. G., Leminen, S., Westerlund, M., & Kortelainen, M. (2014). Actor roles and role patterns influencing innovation in living labs. *Industrial Marketing Management*, *43*(3), 483-495.
- O'Neill, D., Rice, I., Blake, P., Walsh, J. B., & Coakley, D. (1992). The geriatric depression scale: Rater-administered or self-administered?. *International Journal of Geriatric Psychiatry*, *7*(7), 511-515.
- O'Shea, D. M., Dotson, V. M., Fieo, R. A., Tsapanou, A., Zahodne, L., & Stern, Y. (2016). Older adults with poor self-rated memory have less depressive symptoms and better



memory performance when perceived self-efficacy is high. *International journal of geriatric psychiatry*, 31(7), 783-790.

Pachana, N. A., Byrne, G. J., Siddle, H., Koloski, N., Harley, E., & Arnold, E. (2006). Development and validation of the Geriatric Anxiety Inventory. *International Psychogeriatrics*, 19(1), 103-114.

Patterson, C. (2018). World Alzheimer report 2018: the state of the art of dementia research: new frontiers. *Alzheimer's Disease International (ADI): London, UK*, 32-36.

Peek, S. T., Wouters, E. J., Van Hoof, J., Luijkx, K. G., Boeije, H. R., & Vrijhoef, H. J. (2014). Factors influencing acceptance of technology for aging in place: a systematic review. *International journal of medical informatics*, 83(4), 235-248.

Pinquart, M., & Sörensen, S. (2001). Gender differences in self-concept and psychological well-being in old age: A meta-analysis. *The Journals of Gerontology Series B: Psychological sciences and social sciences*, 56(4), P195-P213.

Portugal INCoDe.2030 (2019), Quadro Dinâmico de Referência de Competência Digital para Portugal, retrieved from [https://www.incode2030.gov.pt/sites/default/files/qdrcd\\_set2019.pdf](https://www.incode2030.gov.pt/sites/default/files/qdrcd_set2019.pdf)

Raîche, M., Hébert, R., & Dubois, M. F. (2008). PRISMA-7: a case-finding tool to identify older adults with moderate to severe disabilities. *Archives of gerontology and geriatrics*, 47(1), 9-18.

Riddle, D. R. (Ed.). (2007). *Brain aging: models, methods, and mechanisms*. CRC Press, 6-7.

Salive, M. E. (2013). Multimorbidity in older adults. *Epidemiologic reviews*, 35(1), 75-83.

Sousa-Santos, A. R., Afonso, C., Moreira, P., Padrão, P., Santos, A., Borges, N., & Amaral, T. F. (2018). Weakness: The most frequent criterion among pre-frail and frail older Portuguese. *Archives of gerontology and geriatrics*, 74, 162-168.

Simões, M. R. (2012). Instrumentos de avaliação psicológica de pessoas idosas: investigação e estudos de validação em Portugal. *Revista Iberoamericana de Diagnóstico y Evaluación-e Avaliação Psicológica*, 2(34), 9-33.

SIMÕES, M. R. (2013). O TeLPI e o seu Papel na Identificação do Declínio Cognitivo. *Temas em Psicologia do Envelhecimento (Vol. I)*, 25.

Stanziano, D. C., Whitehurst, M., Graham, P., & Roos, B. A. (2010). A review of selected longitudinal studies on aging: past findings and future directions. *Journal of the American Geriatrics Society*, 58, S292-S297.

- Tang, T., Wu, Z., Hämäläinen, M., & Ji, Y. (2012). From web 2.0 to living lab: an exploration of the evolved innovation principles. *Journal of Emerging Technologies in Web Intelligence*, 4(4), 379-385.
- Teixeira, L., Araújo, L., Duarte, N., & Ribeiro, O. (2019). Falls and fear of falling in a sample of centenarians: the role of multimorbidity, pain and anxiety. *Psychogeriatrics*, 19(5), 457-464.
- Vallespir, J. e M. Morey (2007), “A Participação dos Idosos na Sociedade : Integração VS. Segregação”, A.R. Osório e F. C. Pinto (coords), *Pessoas Idosas : Contexto Social e Intervenção Educativa*, Lisboa, Instituto Piaget, pp. 225-252.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.
- Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.
- Walker, A. (2008). Commentary: The emergence and application of active aging in Europe. *Journal of aging & social policy*, 21(1), 75-93.
- Wild, K. V., Mattek, N. C., Maxwell, S. A., Dodge, H. H., Jimison, H. B., & Kaye, J. A. (2012). Computer-related self-efficacy and anxiety in older adults with and without mild cognitive impairment. *Alzheimer's & Dementia*, 8(6), 544-552.
- World Health Organization. (2002). *Active ageing: A policy framework* (No. 0377-2284 WHO/NMH/NPH/02.8). World Health Organization.

## CONSENTIMENTO PARA PARTICIPAÇÃO EM INVESTIGAÇÃO

A *Associação Fraunhofer Portugal Research* pretende realizar um estudo de investigação longitudinal com o intuito de desenvolver conhecimentos acerca do envelhecimento e atitudes e uso de tecnologia por parte da população sénior.

No âmbito deste estudo, a *Associação Fraunhofer Portugal Research* pretende fazer um levantamento de métricas em domínios do funcionamento (mental e físico) ao longo do tempo num conjunto de indivíduos que compõem a rede “Colaborar”.

### Objetivo do estudo

O estudo pretende caracterizar uma rede de indivíduos séniores que compõem o Living Lab da rede “Colaborar”. Esta caracterização estende-se em vários domínios, entre os quais a cognição, a personalidade, o humor, o estado de saúde, estilo de vida, e usos e atitudes perante a tecnologia.

### Procedimentos

Este estudo engloba uma avaliação compreensiva em vários domínios: 1) funcionamento cognitivo, 2) personalidade, 3) medição do estado de humor, 4) estado de saúde, 5) síndrome de fragilidade, 6) dados sociodemográficos.

A avaliação do funcionamento cognitivo será realizada por um psicólogo com formação prévia nos instrumentos e procedimentos de avaliação psicológica. Serão utilizados os seguintes instrumentos:

- Questionário de atitudes e uso de tecnologia, incluindo questões relativas à frequência e utilização de equipamentos tecnológicos (tablet, computador, smartphone);
- Avaliação do Síndrome de Fragilidade Prisma 7
- Teste físico-motor: Timed up and Go
- Avaliação do Estado de Saúde: EQ-5D-5L
- Testes psicológicos:
  - Montreal Cognitive Assessment
  - Teste de Leitura de Palavras Irregulares
  - Ten Item Personality Inventory
  - Geriatric Depression Scale
  - Geriatric Anxiety Inventory

Durante a realização deste protocolo, com uma duração prevista de 65 minutos, iremos pedir-lhe para realizar várias tarefas de memória, raciocínio, linguagem, bem responder a como perguntas acerca de si mesmo, do seu bem-estar físico e mental, e acerca da sua opinião e uso de tecnologia. Da execução dos testes vamos obter índices de performance em vários domínios do seu funcionamento cognitivo e alguns indicadores do seu estado de saúde.

A fim de assegurar a administração segura e responsável do teste físico-motor Timed Up and Go (destinado a avaliar a força, agilidade e equilíbrio), as condições seguintes constituem fatores de exclusão na administração desse instrumento específico: história de tromboembolismo, Acidente Vascular Cerebral (AVC), enfarte do miocárdio recente, angina ou insuficiência cardíaca instável, insuficiência respiratória ou estar acamado(a).

## CONSENTIMENTO PARA PARTICIPAÇÃO EM INVESTIGAÇÃO

O presente estudo tem uma duração prevista de 20 anos, durante os quais irá ser convidado a uma nova administração destes ou outros instrumentos com uma periodicidade anual.

Os seus dados pessoais serão analisados pelos investigadores da *Associação Fraunhofer Portugal Research* e destruídos no final do estudo. Os dados recolhidos são confidenciais, e poderão informar outros estudos realizados pela *Associação Fraunhofer Portugal Research*. A *Associação Fraunhofer Portugal Research* tomará todas as medidas necessárias à salvaguarda e proteção dos dados recolhidos por forma a evitar que venham a ser acedidos por terceiros não autorizados.

Gostaríamos de contar com a sua participação. A participação não envolve qualquer prejuízo ou dano material e não haverá lugar a qualquer pagamento. A sua participação não envolve qualquer tipo de pagamento nem terá custos para o participante nem para a instituição em que se encontra.

A sua participação é voluntária, podendo em qualquer altura cessá-la sem qualquer tipo de consequência. Também poderá pedir a retificação ou destruição da informação recolhida a qualquer momento. Agradecemos muito o seu contributo, fundamental para a nossa investigação!

## CONSENTIMENTO PARA PARTICIPAÇÃO EM INVESTIGAÇÃO

O/A participante:

*Declaro ter lido e compreendido este documento, bem como as informações verbais fornecidas e aceito participar nesta investigação. Permito a utilização dos dados que forneço de forma voluntária, confiando que apenas serão utilizados para investigação e com as garantias de confidencialidade e anonimato que me são dadas pelo investigador. Autorizo a comunicação de dados de forma **anónima** a outras entidades que estabeleçam parceria com a Associação Fraunhofer Portugal Research para fins académicos e de investigação científica.*

Nome do participante: \_\_\_\_\_

Assinatura: \_\_\_\_\_ Data \_\_\_ / \_\_\_ / \_\_\_\_\_

ou

Nome do representante do participante: \_\_\_\_\_

Assinatura: \_\_\_\_\_ Data \_\_\_ / \_\_\_ / \_\_\_\_\_

Investigador responsável pelo estudo:

Nome: Ricardo Franco Araújo

Assinatura: \_\_\_\_\_

\_E-mail:

Orientador Científico:

Nome:

Assinatura: \_\_\_\_\_

E-mail:

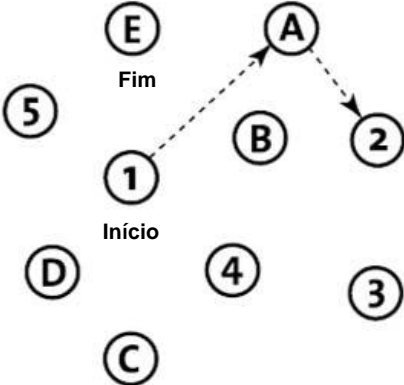
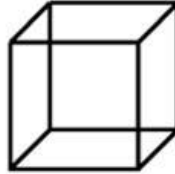
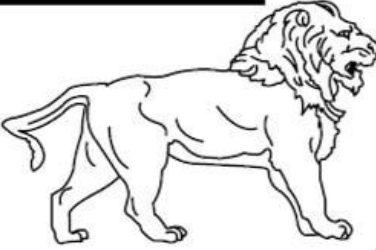
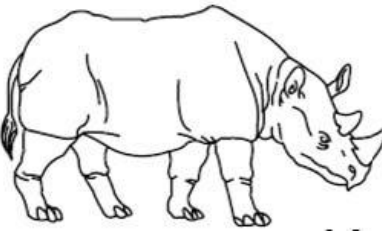
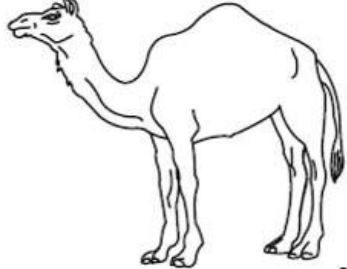
# MONTREAL COGNITIVE ASSESSMENT (MOCA)

VERSÃO PORTUGUESA – 7.1 VERSÃO ORIGINAL

Nome: \_\_\_\_\_ Idade: \_\_\_\_\_

Gênero: \_\_\_\_\_ Data de Nascimento: \_\_\_\_\_

Escolaridade: \_\_\_\_\_ Data de Avaliação: \_\_\_\_\_

VISUO-ESPACIAL / EXECUTIVA							Pontos
 <p style="text-align: center;">[ ] [ ]</p>	 <p style="text-align: center;">Copiar o cubo</p> <p style="text-align: center;">[ ] [ ]</p>	Desenhar um Relógio (onze e dez) (3 pontos)					___/5
<b>NOMEAÇÃO</b>							
 <p style="text-align: center;">[ ]</p>	 <p style="text-align: center;">[ ]</p>	 <p style="text-align: center;">[ ]</p>				___/3	
<b>MEMÓRIA</b>	Leia a lista de palavras. O sujeito deve repeti-la. Realize dois ensaios. Solicite a evocação da lista <b>5 minutos mais tarde.</b>	Boca	Linho	Igreja	Cravo	Azul	Sem Pontuação
	1º ensaio						
	2º ensaio						
<b>ATENÇÃO</b>	Leia a sequência de números. (1 número/segundo)	O sujeito deve repetir a sequência. [ ] 2 1 8 5 4			O sujeito deve repetir a sequência em ordem inversa. [ ] 7 4 2		___/2
Leia a série de letras (1 letra/segundo). O sujeito deve bater com a mão cada vez que for dita a letra A. Não se atribuem pontos se ≥ 2 erros.							___/1
[ ] FBACMNAAJKLBAFAKDEAAAJAMOFAB							
Subtrair de 7 em 7 começando em 100.		[ ] 93	[ ] 86	[ ] 79	[ ] 72	[ ] 65	___/3
4 ou 5 subtrações correctas: 3 pontos; 2 ou 3 correctas: 2 pontos; 1 correcta: 1 ponto; 0 correctas: 0 pontos							
<b>LINGUAGEM</b>	Repetir: Eu só sei que hoje devemos ajudar o João.	[ ]	O gato esconde-se sempre que os cães entram na sala.			[ ]	___/2
Fluência verbal: Dizer o maior número possível de palavras que comecem pela letra "P" (1 minuto).							___/1
[ ] _____ (N ≥ 11 Palavras)							
<b>ABSTRACÇÃO</b>	Semelhança p.ex. entre banana e laranja = fruta [ ] comboio - bicicleta [ ] relógio - régua					___/2	
<b>EVOCAÇÃO DIFERIDA</b>	Deve recordar as palavras SEM PISTAS	Boca	Linho	Igreja	Cravo	Azul	___/5
		[ ]	[ ]	[ ]	[ ]	[ ]	
<b>Opcional</b>	Pista de categoria						Pontuação apenas para evocação SEM PISTAS
	Pista de escolha múltipla						
<b>ORIENTAÇÃO</b>	[ ] Dia do mês	[ ] Mês	[ ] Ano	[ ] Dia da semana	[ ] Lugar	[ ] Localidade	___/6
© Z.Nasreddine MD Examinador: _____							TOTAL ___/30



# TeLPI® Lista de Palavras/ Guia de Pronuncia para o Português Europeu

Instruções: **Vou mostrar-lhe algumas palavras que pedirei para ler.** Colocar o Cartão de Palavras TeLPI em frente ao examinado. À medida que aponta no cartão dizer: **Começando com a primeira da lista, leia cada palavra em voz alta. Comece com esta** (aponte para o item 1), **e continue por esta coluna abaixo, uma palavra a seguir á outra, sem saltar nenhuma. Quando terminar esta coluna, vá para a próxima** (apontar para segunda coluna) **e faça o mesmo que fez na anterior. Leia cada palavra mesmo que não tenha a certeza da sua leitura ou que não a conheça. Percebeu?** Se necessário, repetir as instruções parafraseando. Quando houver certeza que o examinado percebeu as instruções, iniciar gravação áudio e dizer: **Pronto? Comece.**

Item	Pronúncias Possíveis	Cotação (0, 1)	Item	Pronúncias Possíveis	Cotação (0, 1)																								
1	enxurro		30	filoxera																									
2	manguito		31	pirexia																									
3	quinino		32	guelra																									
4	esguelha		33	apoplexia																									
5	guindar		34	equestre																									
6	guedelha		35	equilátero																									
7	brônquio		36	exequente																									
8	quilate		37	exantemático																									
9	mexerico		38	ubiquidade																									
10	braguilha		39	exaurir																									
11	equivoco		40	axioma																									
12	berbequim		41	paralaxe																									
13	exorcismo		42	paroxismo																									
14	quezília		43	lexia																									
15	oligárquico		44	exarar																									
16	esguicho		45	exumar																									
17	masoquista		46	sagui																									
18	básquete		Resultados (nº de acertos)																										
19	asqueroso		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     (nº de acertos) (nº de erros)                      Resultado Bruto = 46 - _____ = _____                 </div>																										
20	maquete		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th></th> <th>nº de erros</th> <th></th> <th>nº anos na escola</th> <th>QI Estimado</th> </tr> </thead> <tbody> <tr> <td>QIEC</td> <td>= 102.046</td> <td>+ (-1.153 X</td> <td>)</td> <td>+ (1.534 X</td> <td>) =</td> </tr> <tr> <td>QIV</td> <td>= 99.872</td> <td>+ (-1.017 X</td> <td>)</td> <td>+ (1.755 X</td> <td>) =</td> </tr> <tr> <td>QIR</td> <td>= 103.644</td> <td>+ (-1.031 X</td> <td>)</td> <td>+ (1.019 X</td> <td>) =</td> </tr> </tbody> </table>					nº de erros		nº anos na escola	QI Estimado	QIEC	= 102.046	+ (-1.153 X	)	+ (1.534 X	) =	QIV	= 99.872	+ (-1.017 X	)	+ (1.755 X	) =	QIR	= 103.644	+ (-1.031 X	)	+ (1.019 X	) =
		nº de erros		nº anos na escola	QI Estimado																								
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24	agulhão																												
25	pieguice																												
26	sequente																												
27	hexagonal																												
28	exorbitância																												
29	exortação																												



# Questionário EQ-5D-5L

## Questionário sobre qualidade de vida relacionada com a saúde

Por baixo de cada título, assinale o quadrado que descreve melhor como a sua saúde está HOJE.

### MOBILIDADE

- Não tenho problemas em andar
- Tenho problemas ligeiros em andar
- Tenho problemas moderados em andar
- Tenho problemas graves em andar
- Sou incapaz de andar

### CUIDADOS PESSOAIS

- Não tenho problemas em me lavar ou vestir
- Tenho problemas ligeiros em me lavar ou vestir
- Tenho problemas moderados em me lavar ou vestir
- Tenho problemas graves em me lavar ou vestir
- Sou incapaz de me lavar ou vestir sozinho/a

### ATIVIDADES HABITUAIS (ex. trabalho, estudos, atividades domésticas, atividades em família ou de lazer)

- Não tenho problemas em desempenhar as minhas atividades habituais
- Tenho problemas ligeiros em desempenhar as minhas atividades habituais
- Tenho problemas moderados em desempenhar as minhas atividades habituais
- Tenho problemas graves em desempenhar as minhas atividades habituais
- Sou incapaz de desempenhar as minhas atividades habituais

### DOR/MAL-ESTAR

- Não tenho dores ou mal-estar
- Tenho dores ou mal-estar ligeiros
- Tenho dores ou mal-estar moderados
- Tenho dores ou mal-estar graves
- Tenho dores ou mal-estar extremos

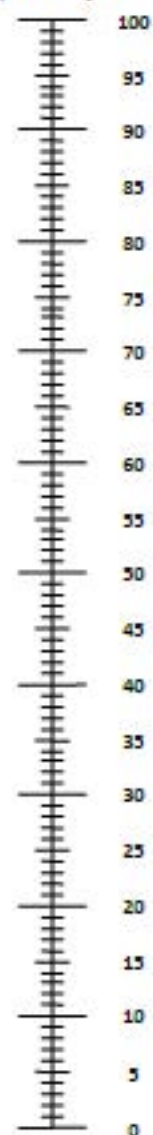
### ANSIEDADE/DEPRESSÃO

- Não estou ansioso/a ou deprimido/a
- Estou ligeiramente ansioso/a ou deprimido/a
- Estou moderadamente ansioso/a ou deprimido/a
- Estou gravemente ansioso/a ou deprimido/a
- Estou extremamente ansioso/a ou deprimido/a

- Gostaríamos de saber o quanto a sua saúde está boa ou má HOJE.
- A escala está numerada de 0 a 100.
- 100 significa a melhor saúde que possa imaginar.
- 0 significa a pior saúde que possa imaginar.
- Coloque um X na escala de forma a demonstrar como a sua saúde se encontra HOJE.
- Agora, por favor escreva o número que assinalou na escala no quadrado abaixo.

A SUA SAÚDE HOJE =

A melhor saúde que  
possa imaginar



A pior saúde que  
possa imaginar

## Prisma 7

Instruções: 1 - Sim; 0 – Não Para as perguntas de 3 a 7, não interprete a resposta, basta observar a resposta da pessoa sem se considerar ou não que deveria ser sim ou não. Se o inquirido hesitar entre sim e não, peça para escolher uma das duas respostas. Se, apesar de várias tentativas, ele / ela persiste em responder "um pouco "ou" às vezes ", digite Sim. Se o entrevistado tiver 3 ou mais respostas sim, isso indica um aumento do risco de fragilidade e necessidade de mais avaliação clínica.

	Sim	Não
1. Tem mais de 85 anos?		
2. Sexo masculino?		
3. Em geral, tem alguns problemas de saúde que limitem as suas atividades?		
4. Precisa de alguém que o ajude regularmente?		
5. Em geral, tem algum problema de saúde que o obrigue a ficar em casa?		
6. Em caso de necessidade, pode contar com alguém próximo de si que o possa ajudar?		
7. Usa regularmente bengala, andarilho ou cadeira de rodas para se deslocar?		

## Timed Up and Go

<b>Objetivo</b>	Avaliar a capacidade funcional, nomeadamente a força, a agilidade e o equilíbrio [1]; Avaliar o equilíbrio dinâmico durante a marcha e as tarefas de transferência [2] - Cronómetro;
<b>Material necessário</b>	- Cadeira (com um assento firme a uma altura entre 44 e 47 cm; com braços) [3]; - Fita para assinalar no chão os 3 metros.
<b>Informações genéricas [2]</b>	- O indivíduo deve sentar-se na cadeira, com as costas encostadas às costas da cadeira e pousar os braços nos braços da cadeira; Caso o indivíduo utilize auxiliares de marchas eles devem permanecer perto da cadeira; - O calçado utilizado deve ser o calçado habitual do indivíduo; - O indivíduo deve levantar-se da cadeira (sem usar os braços como auxiliar para se levantar), percorrer 3 metros em linha reta, a passo acelerado, sem correr até à marca assinalada no chão; Nessa marca deverá dar a volta para trás, caminhar em direção à cadeira e sentar-se. - O tempo é cronometrado desde o momento em que o indivíduo se levanta até voltar a sentar-se. - O teste é realizado uma vez. - O avaliador deve estar posicionado lateralmente ao indivíduo.
<b>Instruções [2, 7-8]</b>	- Sr(a) _____ quando ouvir a palavra “Comece”, vai-se levantar da cadeira, e vai andar até chegar à marca que está no chão, em passo acelerado sem correr, de uma forma confortável e segura. Quando lá chegar dá a volta para trás, caminha novamente até à cadeira e depois senta-se. - Agora vou exemplificar como deve fazer. - Alguma dúvida? - Preparado (a)? Vou contar até 3 e depois vou dizer “Comece”. Assim que eu disser “Comece” vai-se levantar e começar o exercício. - Pronto (a)? 1, 2, 3 - Comece!
<b>Valores normativos</b>	<b>Passo acelerado</b> > 14s apresenta risco de queda. [4,5] > 10s apresenta risco de queda [6-8] <b>Passo lento [2]</b> < 20s independente for basic transfers > 30s dependente on transfers, needed help to enter/exit shower tub, did not go out alone.
<b>Referências</b>	[1] Schoene, D., Wu, S.M.-S., Mikolaizak, S., Menant, J.C., Smith, S.T., Delbaere, K. & Lord, S.R. (2013). Discriminative ability and predictive validity of the Timed Up and Go Test in identifying older people who fall: systematic review and meta-analysis. <i>Journal of the American Geriatrics Society</i> , 61, 202-208. Doi: 10.1111/jgs.12106  [2] Podsiadlo, D. & Richardson, S. (1991). “The timed "Up & Go": a test of basic functional mobility for frail elderly persons. <i>Journal of the American Geriatrics Society</i> 39(2), 142-148.  [3] Siggeirsdóttir, K., Jónsson, B. Y., Jónsson, H., & Iwarsson, S. (2002). The timed “Up & Go” is dependent on chair type. <i>Clinical rehabilitation</i> , 16(6), 609-616. Doi: 10.1191/0269215502cr529oa  [4] Shumway-Cook, A., Brauer, S., & Woollacott, M. (2000). Predicting the probability for falls in community-dwelling older adults using the Timed Up & Go Test. <i>Physical therapy</i> , 80, 896-903.  [5] Rehabilitation Measures Database.(2010). <i>Rehab measures: Timed Up and Go</i> . Accessed March 14, 2016. Retrieved from: <a href="http://tinyurl.com/hlmpxk4">http://tinyurl.com/hlmpxk4</a> [6] Beauchet, O., Fantino, B., Allali, G., Muir, S.W., Montero-Odasso, M. & Annweiler, C. (2011). Timed Up and Go test and risk of falls in older adults: a systematic review. <i>The Journal of Nutrition Health and Aging</i> . 15 (10), 933-938. [7] Arnold, C. M., & Faulkner, R. A. (2007). The history of falls and the association of the timed up and go test to falls and near-falls in older adults with hip osteoarthritis. <i>BMC geriatrics</i> , 7(1), 1. [8] Rose, D. J., Jones, C. J., & Lucchese, N. (2002). Predicting the probability of falls in community-residing older adults using the 8-foot up-and-go: a new measure of functional mobility. <i>Journal of Aging and Physical Activity</i> , 10(4), 466-475.

## TIPI-P - Inventário de Personalidade de 10 Itens – Versão Portuguesa

### Ten-Item Personality Inventory

Samuel D. Gosling, Peter J. Rentfrow, and William B. Swann Jr., 2003<sup>1</sup>

Versão portuguesa de Andreia Nunes, Teresa Limpo, César F. Lima e São Luís Castro, 2018<sup>2</sup>

Encontra a seguir um **conjunto de traços de personalidade** que podem ou não aplicar-se a si. Por favor escreva um número a seguir a cada afirmação indicando em que medida está de acordo, ou em desacordo, com ela. Deve avaliar em que medida cada par de traços se aplica a si, mesmo que uma das características se aplique melhor do que a outra. Indique a sua resposta de acordo com a seguinte escala:

---

Discordo totalmente	Discordo moderadamente	Discordo um pouco	Nem concordo nem discordo	Concordo um pouco	Concordo moderadamente	Concordo totalmente
1	2	3	4	5	6	7

---

*Vejo-me como uma pessoa*

1. Extrovertida, entusiasta. \_\_\_\_\_
  2. Conflituosa, que critica os outros. \_\_\_\_\_
  3. De confiança, com auto-disciplina. \_\_\_\_\_
  4. Ansiosa, que se preocupa facilmente. \_\_\_\_\_
  5. Com muitos interesses, aberta a experiências novas. \_\_\_\_\_
  6. Reservada, calada. \_\_\_\_\_
  7. Compreensiva, afetuosa. \_\_\_\_\_
  8. Desorganizada, descuidada. \_\_\_\_\_
  9. Calma, emocionalmente estável. \_\_\_\_\_
  10. Convencional, pouco criativa. \_\_\_\_\_
- 

Cotação (“R” indica que os itens devem ser cotados inversamente): Extroversão 1, 6R; Afabilidade 2R, 7; Conscienciosidade 3, 8R; Estabilidade Emocional 4R, 9; Abertura a Novas Experiências 5, 10 R.

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<sup>1</sup> Gosling, S. D., Rentfrow, P. J., & Swann Jr., W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37, 504-528.

<sup>2</sup> Nunes, A., Limpo, T., Lima, C. F., & Castro, S. L. (2018). Short scales for the assessment of personality traits: Development and validation of the Portuguese Ten-Item Personality Inventory (TIPI). *Frontiers in Psychology*, 9(461). doi:10.3389/fpsyg.2018.00461

GDS-15 Portuguese

*1 De uma forma geral, está satisfeito (a) com a sua vida	Sim ( )	Não ( )
2 Abandonou muitas das suas actividades e interesses?	Sim ( )	Não ( )
3 Sente que sua vida está vazia?	Sim ( )	Não ( )
4 Anda muitas vezes aborrecido(a)?	Sim ( )	Não ( )
*5 Está bem-disposto a maior parte do tempo?	Sim ( )	Não ( )
6 Anda com medo que lhe vá acontecer alguma coisa má?	Sim ( )	Não ( )
*7 Sente-se feliz a maior parte do tempo?	Sim ( )	Não ( )
8 Sente-se desamparado(a)?	Sim ( )	Não ( )
9 Prefere ficar em casa, em vez de sair e fazer outras coisas?	Sim ( )	Não ( )
10 Sente que tem mais problemas de memória do que as outras pessoas?	Sim ( )	Não ( )
*11 Sente que é maravilhoso estar vivo(a)?	Sim ( )	Não ( )
12 Sente-se inútil nas condições actuais?	Sim ( )	Não ( )
*13 Sente-se cheio de energia?	Sim ( )	Não ( )
14 Sente que a sua situação é desesperada?	Sim ( )	Não ( )
15 Acha que a maioria das pessoas está melhor que o (a) Senhor (a)?	Sim ( )	Não ( )

**Cotação:**

1 ponto para as respostas **SIM** nas questões: 2, 3, 6, 8, 9, 10, 12, 14, 15

1 ponto para as respostas **NÃO** nas questões: 1, 5, 7, 11, 13

0 -5 = sem depressão

> 5 = depressão

Pontos de Corte derivados do estudo original de validação portuguesa:

Apóstolo, J. L. A., Loureiro, L. M. D. J., Reis, I. A. C. D., Silva, I. A. L. L. D., Cardoso, D. F. B., & Sfetcu, R. (2014). Contribuição para a adaptação da Geriatric Depression Scale-15 para a língua portuguesa. *Revista de Enfermagem Referência*, (3), 65-73.

# Inventário de Ansiedade Geriátrica (GAI)

Por favor, responda às seguintes questões de acordo com o modo como se tem sentido durante a última semana.

	Concordo	Discordo
1. Ando preocupado(a) a maior parte do tempo		
2. Tenho dificuldades em tomar decisões		
3. Sinto-me inquieto(a) muitas vezes		
4. Tenho dificuldade em relaxar		
5. Muitas vezes não consigo apreciar as coisas por causa das minhas preocupações		
6. Coisas sem importância preocupam-me bastante		
7. Sinto muitas vezes um aperto no estômago		
8. Vejo-me como uma pessoa preocupada		
9. Não consigo evitar preocupar-me, mesmo com coisas menores		
10. Sinto-me muitas vezes nervoso (a)		
11. Muitas vezes os meus próprios pensamentos põem-me ansioso(a)		
12. Fico com o estômago às voltas devido à minha preocupação constante		
13. Vejo-me como uma pessoa nervosa		
14. Estou sempre à espera que aconteça o pior		
15. Muitas vezes sinto-me agitado(a) interiormente		
16. Acho que as minhas preocupações interferem com a minha vida		
17. Muitas vezes sou dominado(a) pelas minhas preocupações		
18. Por vezes sinto um nó grande no estômago		
19. Deixo de me envolver nas coisas por me preocupar demasiado		
20. Muitas vezes sinto-me aflito(a)		

Pontuação da GAI:

1 ponto para as respostas *Concordo* em todas as questões

Código: \_\_\_\_\_

Data de Avaliação: \_\_\_\_/\_\_\_\_/\_\_\_\_

Local: \_\_\_\_\_

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## Living Lab Data Study

### Caracterização da rede do Living Lab “Colaborar”

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[Esta página foi deixada propositadamente em branco]

## Questionário dirigido a séniores

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Nos termos do artigo 10.º da Lei n.º 67/98, é reservado ao titular dos dados pessoais o direito de acesso e de rectificação dos mesmos.

Nome do(a) entrevistador(a) \_\_\_\_\_

Data da entrevista: \_\_\_\_ / \_\_\_\_ / \_\_\_\_\_ Local da entrevista \_\_\_\_\_

### Questionário aplicado:

Ao próprio

A um familiar

Parentesco: \_\_\_\_\_ Nome: \_\_\_\_\_

A um representante legal

Nome: \_\_\_\_\_

Assinale com um X a (s) sua (s) resposta (s), ou preencha nos espaços indicados:

### I – DADOS DEMOGRÁFICOS

#### Identificação

**1 – Nome**

\_\_\_\_\_

**2 – Nome pelo qual prefere ser chamado**

\_\_\_\_\_

**4 – Data de Nascimento**

\_\_\_\_ / \_\_\_\_ / \_\_\_\_\_

#### **3 – Sexo**

Feminino

Masculino

Outro

**5 - Morada**

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**6 – Telefone**

---

**7 – E-mail**

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**8 – Naturalidade**

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**9 – Nível de escolaridade**

- Não cheguei a estudar
- Não cheguei a estudar, mas sei ler e escrever
- Frequentei/completei o 1.º, 2.º, 3.º ou 4.º ano (antiga instrução primária)
- Frequentei/completei o 5.º ou 6.º ano (antigo ciclo preparatório)
- Frequentei/completei o 7.º, 8.º ou 9.º ano (antigo 3.º, 4.º ou 5.º ano liceal)
- Frequentei/completei o 10.º, 11.º ou 12.º ano (antigo 6.º e 7.º ano liceal/ ano propedêutico)
- Frequentei/completei o ensino pós-secundário (Cursos de especialização tecnológica, nível IV)
- Frequentei/completei o Bacharelato (inclui antigos cursos médios)
- Frequentei/completei uma Licenciatura
- Frequentei/completei um Mestrado
- Frequentei/completei um Doutoramento

Situação profissional

**10 – Atualmente encontra-se:**

- A trabalhar  
Profissão: \_\_\_\_\_
- Reformado(a)  
Profissão anterior: \_\_\_\_\_
- Nunca trabalhei
- Outro: \_\_\_\_\_

**11 – Rendimentos:**

- 0€ - 600€
- 600€ - 1200€
- Mais de 1200€

**12 – Considera que os seus rendimentos são:**

- Insuficientes face às minhas despesas
- Suficientes para as minhas despesas, mas não sobra
- Suficientes para as minhas despesas e consigo poupar

Estado Civil e Agregado familiar

**13 – Estado Civil**

- Solteiro(a)
- Casado(a)/União de facto
- Viúvo(a)
- Divorciado(a)

**14 – Com quem vive?**

- Sozinho(a)
- Com familiares
- Com família de acolhimento
- Com ajudante remunerado/pago
- Num lar de 3.ª idade
- Outra: \_\_\_\_\_

### III – ACTIVIDADES DE TEMPOS LIVRES

#### Ocupação dos tempos livres

##### 15 – Frequenta alguma instituição?

- Não
- Sim
- Lar
- Centro de Dia
- Centro de Convívio
- Universidade Sénior
- Outro: \_\_\_\_\_

##### 16 – Em que dias da semana costuma estar nessa instituição?

- 2.ª feira       manhã       tarde
- 3.ª feira       manhã       tarde
- 4.ª feira       manhã       tarde
- 5.ª feira       manhã       tarde
- 6.ª feira       manhã       tarde
- Sábado       Domingo
- Outro: \_\_\_\_\_
- \_\_\_\_\_

##### 17 – Como ocupa o seu tempo livre? (pode assinalar mais do que uma opção)

- Ver TV
- Ouvir rádio
- Ouvir música
- Ler livros
- Ler jornais/revistas
- Ir à Internet
- Jogar jogos (cartas, xadrez, etc.)

Fazer trabalhos manuais (costura, tricot, bordados, jardinagem, etc.)

- Pintar
- Tocar instrumentos musicais
- Cantar
- Dançar
- Fazer tarefas domésticas
- Cuidar dos netos
- Visitar familiares
- Visitar amigos
- Viajar
- Ir a concertos
- Ir ao teatro
- Ir ao cinema
- Participar em actividades religiosas
- Dar passeios
- Fazer ginástica
- Outro: \_\_\_\_\_

#### Utilização de serviços

##### 18 – Quanto tempo necessita para se deslocar da sua residência ao hospital/centro de saúde mais próximo?

\_\_\_\_\_

##### 19 – Qual o meio de transporte que geralmente usa para o fazer?

\_\_\_\_\_

##### 20 – Como se desloca geralmente quando faz actividades habituais (trabalho, estudos, actividades domésticas, etc.)?

- Vou sozinho em carro próprio
- Vou sozinho em transportes públicos

Preciso de ser acompanhado por amigo ou familiar em carro próprio

Preciso de ser acompanhado por amigo ou familiar em transportes públicos

Outro: \_\_\_\_\_

Eu não saio de casa

## V – SAÚDE

### Saúde física e mental

**21 - Sofre de alguma destas condições/doenças?**

Diabetes

Tipo I

Tipo II

Hipertensão Arterial

Angina de peito

Insuficiência cardíaca

Doença valvular cardíaca

Asma

Bronquite

Enfisema pulmonar

Doença Pulmonar Obstrutiva Crônica

Varizes/ problemas de circulação

Osteoporose

Reumatismo

Artrite/Artrose

Doença de Alzheimer

Doença de Parkinson

Outro tipo de Demência (vascular, etc.)

Depressão

Dor Crônica

Alergias

Outra: \_\_\_\_\_

**22 – Está atualmente a tomar algum medicamento?**

Não (Avance para a questão 24)

Sim. Para: \_\_\_\_\_

**23 – Precisa de ajuda para tomar os medicamentos?**

Não, tomo sozinho(a)

Sim, preciso que me lembrem de tomar o medicamento

Sim, preciso que me preparem os medicamentos com antecedência

Sim, preciso que me dêem sempre o medicamento

Outro: \_\_\_\_\_

**24 – Tem dificuldades de audição?**

Não

Não, pois uso um dispositivo auditivo

Sim, mesmo usando um dispositivo auditivo

Sim

**25 – Tem dificuldades de visão?**

Não

Não, pois uso óculos/lentes

Sim, mesmo com óculos/lentes

Sim

**26 – Tem algum tipo de paralisia?**

Não

Sim

Qual? \_\_\_\_\_

**27 – Tem dificuldade em movimentar alguma parte do corpo?**

Não

Sim

Quais? \_\_\_\_\_

**28 – Tem alguma prótese?**

Não

Sim

Quais? \_\_\_\_\_

**29 – Sofreu alguma queda no último ano?**

Não

Sim, em casa

Qual o n.º de quedas? \_\_\_\_\_

Sim, na instituição (Lar de Terceira Idade, Centro de Dia, Centro de Convívio)

Qual o n.º de quedas? \_\_\_\_\_

Sim, na rua

Qual o n.º de quedas? \_\_\_\_\_

Sim, noutra local

Qual? \_\_\_\_\_

Qual o n.º de quedas? \_\_\_\_\_

Hábitos de Consumo de Substâncias

**29 – Quantos cigarros fuma por dia?**

10 ou menos

11 – 20

21 – 30

31 ou mais

**29 – Com que frequência consome bebidas que contêm álcool?**

Nunca

Uma vez por mês ou menos

2 a 4 vezes por mês

2 a 3 vezes por semana

4 ou mais vezes por semana

*Muito obrigada pela sua colaboração!*

**A PREENCHER PELO ENTREVISTADOR**

**Expressão e comunicação**

Confusão/agitação psicomotora

Desorientação

Especificar: \_\_\_\_\_

Capacidade de expressão

Comprometida

Outra: \_\_\_\_\_

**Mobilidade**

Cadeira de rodas

Acamado

**Notas**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

“Remarkable Technology, Easy To Use”

**Tecnologia - experiência**

<b>Equipamento disponível</b>	Smartphone	
	Tablet	
	Computador	
	Relógio/pulseira inteligente	
	Balanças/medidos de pressão arterial conectados	
	Outro:	

<b>Equipamento mais utilizado</b>	Smartphone	
	Tablet	
	Computador	

<b>Acesso à Internet</b>	Em casa	
	No telemóvel, fora de casa	
	No trabalho	
	Outro:	

“Remarkable Technology, Easy To Use”

<b>Frequência utilização da internet</b>	Várias vezes ao dia	
	Diariamente (1x/dia)	
	Várias vezes por semana	
	Semanalmente (1x/semana)	
	Várias vezes por mês	
	Muito raramente	

<b>Gestão da internet</b>	Próprio	
	Família	
	Amigos	
	Cuidador (ex.: centro de dia)	
	Outro	



“Remarkable Technology, Easy To Use”

Actividades por equipamento	Smartphone	Tablet	Computador
Navegar na internet			
Fazer compras online			
Ler notícias			
Consultar conta bancária			
Efectuar transferências/pagamentos			
Consultar email			
Redes sociais (Facebook, Instagram, Twitter,...)			
Consultar e comparar preços			
Jogar			
Obter direcções para um local ou informação de trânsito			
Ver vídeos/programas/séries			
Obter informação de saúde e bem-estar			
Fazer aulas, workshops ou ler/ver tutoriais			
Gerir ou receber cuidados médicos			
Publicar as suas opiniões ou comentários			
Fazer download de aplicações			
Monitorizar a sua saúde através de aplicações ou sites			

“Remarkable Technology, Easy To Use”

Utilizar assistentes por voz (Siri, Google, ...)			
Ouvir música			
Planear viagens			
Tirar fotografias			
Ver/guardar fotografias			
Utilizar chats (Skype, WhatsApp)			
Utilizar serviços do governo (Finanças, Segurança Social)			
Utilizar outros serviços online (electricidade, saúde)			

<b>Tecnologia para comunicar com amigos e família</b>	Sim	
	Não	

<b>Com que frequência?</b>	Todos os dias, várias pessoas	
	Todos os dias, 1 a 2 pessoas	
	Frequentemente, várias pessoas	
	Frequentemente, 1 a 2 pessoas	
	Poucas comunicações	

## Questionário de Atitudes e Uso de Tecnologia

Abaixo encontram-se uma série de afirmações acerca de tecnologias de informação e comunicação (TIC), sendo as mesmas, para os efeitos deste questionário, compreendidas em termos de aparelhos eletrónicos tais como tablets, smartphones, e computadores. Deverá responder de acordo com o seu grau de concordância utilizando as escalas fornecidas para o efeito (CONCORDO e DISCORDO), cuja pontuação vai de 1 (significando “NADA” a 3 (significando “Totalmente”). Se não tiver opinião, desejar responder, ou não souber onde se colocava, pode escolher a opção "Não concordo nem discordo".

1. Usar tecnologia deixa-me nervoso(a).
2. Consigo utilizar uma tecnologia sempre que quero ou preciso.
3. Eu acho que a tecnologia é útil no meu dia-a-dia.
4. Usar tecnologia é agradável.
5. A tecnologia deixa-me desconfortável.
6. Os custos monetários associados à tecnologia são adequados.
7. Pretendo usar/continuar a usar tecnologia no futuro.
8. Acho que as tecnologias são fáceis de usar.
9. A tecnologia permite-me poupar tempo.
10. A tecnologia é um meio conveniente de comunicar com os meus amigos e família.
11. Estou satisfeito(a) com as minhas relações familiares e amigos
12. Usar tecnologia não me assusta.
13. Eu usaria uma tecnologia se me fosse sugerida por uma pessoa importante para mim.
14. Se me oferecerem tecnologia, pretendo usá-la.
15. O preço da tecnologia é razoável.
16. Pretendo adquirir tecnologia no futuro.
17. É fácil para mim aprender a utilizar tecnologia.
18. Eu conseguiria usar uma tecnologia mesmo sentindo alguma ansiedade ao utilizá-la.
19. Tenho o conhecimento necessário para usar tecnologia.
20. Eu usaria uma tecnologia se me fosse sugerida por um profissional.
21. Eu conseguiria usar uma tecnologia se já tivesse experiência com uma tecnologia semelhante
22. Eu conseguiria usar uma tecnologia mesmo que ninguém me explicasse como a usar primeiro.
23. Usar tecnologia é divertido.
24. Eu conseguiria usar uma tecnologia mesmo que me sentisse ansioso.
25. Eu conseguiria usar uma tecnologia se alguém me mostrasse como a usar primeiro.
26. A minha condição financeira não me permite usufruir da tecnologia.
27. Tenho a quem recorrer se precisar de ajuda com tecnologia.
28. Estou satisfeito(a) com o apoio que recebo da minha família e amigos.
29. Interagir com tecnologia é claro e compreensível para mim.
30. Os benefícios da tecnologia compensam o seu custo.
31. Usar tecnologia deixa-me inseguro(a).
32. Mantenho-me entretido enquanto uso tecnologia.

Muito Obrigado pela sua colaboração!