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**Personality Traits and Subjective Well-being in  
Portuguese Centenarians**

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Dissertação de Mestrado Integrado em Psicologia Clínica e da Saúde,  
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Professor Doutor Óscar Ribeiro

- *“Keep an open mind and things seem less strange.”*  
Mildred, 101

- *“It is very important to have a widespread curiosity about life.”*  
Irving Kahn, 106

- *“Take it easy, enjoy life, what will be will be.”*  
Helen Mulligan, 101

- *“Take one day at a time and go along with the tide.”*  
Gilbert Herrick, 100

- *“Don’t fight the day, just let it be.”*  
Gussie Levine, 100

- *“I think happiness is a decision. It’s not a circumstance.”*  
Anonymous, centenarian

### **Personality Traits and Subjective Well-being in Portuguese Centenarians**

To better understand Portuguese centenarians' subjective well-being and personality traits, as well as the correlations between them, we examined a sample of 25 subjects residents in the Oporto metropolitan area (AMP), cognitively intact, aged 100-104 years old. The Big Five Inventory (BFI) was used to assess personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) and the Satisfaction with Life Scale (SWLS) was used to assess subjective well-being (SWB). The results showed relatively high levels of SWB, extraversion, agreeableness, conscientiousness and openness to experience, and relatively low levels of neuroticism. The results also reveal a significant positive correlation between SWB and agreeableness.

**Key Words:** centenarians, subjective well-being, personality traits, BFI, SWLS

### **Traços de Personalidade e Bem-estar Subjetivo nos Centenários Portugueses**

De forma a melhor compreender o bem-estar subjetivo, traços de personalidade, e as correlações entre si, nos centenários portugueses, examinámos uma amostra de 25 sujeitos residentes na área metropolitana do Porto (AMP), sem défice cognitivo, com idades entre os 100-104 anos. Para avaliar os traços de personalidade (extroversão, amabilidade, conscienciosidade, neuroticismo, e abertura à experiência) foi utilizado o Inventário Big Five (BFI), e para o bem-estar subjetivo a Escala de Satisfação com a Vida (SWLS). Os resultados revelam níveis relativamente elevados de bem-estar subjetivo, extroversão, amabilidade, conscienciosidade, e abertura à experiência, e níveis relativamente baixos de neuroticismo. Os resultados evidenciam também uma correlação positiva significativa entre bem-estar subjetivo e amabilidade.

**Palavras-chave:** centenários, bem-estar subjetivo, traços personalidade, BFI, SLWS

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## Index

Introduction .....	6
I - Conceptual Framework.....	8
Subjective Well-being .....	8
Personality Traits.....	9
Personality Traits and Subjective Well-being .....	10
Centenarians, Subjective Well-being, and Personality Traits .....	12
II - Goals.....	14
III – Method.....	14
Sample .....	14
Measures.....	15
<i>Satisfaction with Life Scale (SWLS)</i> .....	15
<i>Big Five Inventory (BFI)</i> .....	15
IV - Results.....	17
Participant Characteristics .....	17
Subjective Well-being .....	19
Personality Traits.....	20
Subjective Well-being and Personality Traits .....	21
V - Discussion .....	24
Limitations .....	26
References .....	28

## Introduction

In the past two decades, the demographic profile in industrialized countries has significantly changed – people are living longer, and the population as a whole is ageing (Cheung & Poon, 2012; Willcox, Willcox, & Poon, 2010). Asian countries are ageing the fastest – e.g., Japan had only 153 centenarians living in the country in 1963, increasing the number to 28 395 centenarians by 2006 (Okinawa Centenarian Study, 2014). In Europe, the number of centenarians rose from 29 201 to 57 360 between 1996 and 2006 (Robine & Saiko, 2009 cit. in Ribeiro & Araújo, 2013), creating an estimative of a fivefold increase in the number of centenarians between 2005 and 2030 (NIA, 2007 cit. in Ribeiro & Araújo, 2013). Specifically in Portugal, accordingly with census data between 2001 and 2011, (INE, 2001; INE, 2011) the number of people with 100 or more years increased from 589 to 1526, nearly tripling in a ten year period.

Until a few decades ago there were a small number of people aged over 100, and systematic studies with sufficient sampling power and representative samples were not possible until recent past. The increased aging of the population implies changes in terms of, among other things, family structures and relations, caregiving, institutionalization, leisure, and policies associated with health care, welfare, and retirement. Consequently there is a need to understand the biology, psychology, sociology, survival, successful adaptation, and quality of life and well-being of this age group. (Cheung & Poon, 2012).

All through years of research, centenarians have been described as exceptional individuals, with something special about them. The fact that they have gone through many losses and still many of them seem to adapt, maintaining a sense of autonomy and independence, suggests that living into such age might be related to unique characteristics. With this in mind, several studies aimed to understand the relation between personality traits and longevity (Martin, et al., 2006). Along with this, the successful adaptive process that many centenarians seem to go through is believed to be associated with the maintenance of subjective well-being (SWB) (Rott, Jopp, D'heureuse, & Becker, 2006).

The main goal of the research presented here is to better understand Portuguese centenarians in terms of their personality traits and subjective

well-being and to learn if and in which manner these two constructs are related.

## I - Conceptual Framework

### Subjective Well-being

Among the criteria chosen over time relating to subjects as happiness, quality of life, or well-being (e.g., loving others, pleasure, self-insight), we can find one particular idea – an important part of what constitutes a “good life” is what people themselves consider what it is living good lives. This point of view includes the premise that people have the ability to decide whether or not their own lives are worthwhile (Diener, 2000). This evaluation of one’s life is both cognitive (e.g., life satisfaction judgments) and affective (e.g., pleasant and unpleasant emotionality). This approach to conceptualize what it is to have a good life and be happy it’s called “subjective well-being” (Diener & Diener, 1996).

Subjective Well-being (SWB) embraces the analysis of how people evaluate their lives at the moment and also for longer periods of time – their emotional reactions to events, moods, and judgments about life satisfaction, fulfilment, and satisfaction with domains such as marriage and work (Diener, Oishi & Lucas, 2003). Bearing this in mind, there are usually several components of SWB to be considered: life satisfaction (global judgments of life), satisfaction with important domains, positive affect (experiencing pleasant emotions), and negative affect (Diener, 2000). In its essence, SWB concerns the study of what might be called “happiness” or “satisfaction” (Diener, Oishi & Lucas, 2003).

There are several theoretical lines that have contributed to the understanding of SWB, although there is no single conceptual scheme that unites the field, despite the attempts that have been made (e.g., Diener & Lucas, 2000). Consequently, SWB can be measured in various ways – e.g., for the emotional components broad surveys have been used and informant reports from family and friends, and for the cognitive component, assessment has been made with life satisfaction surveys and measures of satisfaction and fulfilment in various life domains, such as marriage, work, and leisure. In terms of research history on SWB, different ways were explored – major influences came from sociologists and quality of life researchers who worked to understand how demographic factors influence



SWB (e.g., Andrews & Withey 1976, Bradburn 1969, Campbell et al. 1976 cit in Diener, Oishi, & Lucas, 2003), from researchers in the field of mental health who wanted to include the concepts of happiness and life satisfaction (e.g., Jahoda, 1958 cit. in Diener, Oishi & Lucas, 2003; Wan et al., 1999) and from social and cognitive psychologists who studied how adaptation and varying standards of life influence people's feelings of well-being (e.g., Brickman & Campbell, 1971 cit. in Diener, Oishi & Lucas, 2003; Diener & Diener, 1996; Diener, Suh, Lucas, Smith, 1999). Another great influence on the understanding of SWB came from personality psychologists (e.g., Costa & McCrae, 1980; Diener & Lucas, 1999) who studied the personalities of "happy" and "unhappy" people. Within this perspective, research focused for years on identifying external factors (such as demographic factors) that would relate to satisfying lives, but after years of research, psychologists came to agree that the impact of those external factors was rather modest on SWB, the later appearing to be reasonably stable over time and strongly correlated to stable personality traits (Diener, Oishi & Lucas, 2003).

### **Personality Traits**

Personality has been studied over the years from several theoretical perspectives and conceptualized at various levels of analysis (John, Hampson & Goldberg, 1991; McAdams, 1995 cit. in John & Sanjay, 1991). One of the most frequently studied levels is the one of personality traits (John & Gosling cit. in John & Sanjay, 1991). According to the American Psychiatric Association (2006), personality traits are stable patterns of comprehension of, relationship with, and thinking about the surrounding world and oneself, which are expressed in various social and personal contexts. There are an extremely big number of words that can be used to denote personality traits (Goldberg, 1993) and the scales designed to measure them have escalated immensely over the years (Goldberg, 1971 cit. in John & Srivastava, 1999). To overcome the accumulation of findings and trying to integrate all concepts, personality scales and, essentially, systematize all of the information (John & Srivastava, 1999), personality researchers have developed taxonomies. One of them, the most consensual

one, is the taxonomy that proposes 5 general factorial axes that represent the primary dimensions of human personality variation (Goldberg, 1993), the “Big Five” personality dimensions. These dimensions do not come from a specific theoretical perspective, nor do they replace the previous systems – they serve as an integrative function (John & Srivastava, 1999), seeking to provide a framework in which to organize the numerous individual differences among human beings. These dimensions are clusters of several specific traits (Goldberg, 1993) and, so, they capture a numerous specific facets of personality. They represent personality at a wide level of abstraction, each dimension summarizing a larger number of specific personality characteristics (John & Srivastava, 1999). The five factors are frequently labelled as neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (McCrae & Costa, 2008). and incorporate hundreds of traits – e.g. extraversion contrasts talkativeness, assertiveness, and activity level with silence, passivity, and reserve; agreeableness contrasts kindness, trust, and warmth with hostility, selfishness, and distrust; conscientiousness contrasts organization, thoroughness, and reliability with carelessness, negligence, and unreliability; neuroticism includes nervousness, moodiness, and temperamentality; and openness to experience contrasts imagination, curiosity, and creativity with shallowness and imperceptiveness (Goldberg, 1993). Research has also focused on a two-level hierarchy, where each of the five traits subsumes narrower traits called “facets” (e.g., Costa & McCrae, 1992; Soto & John, 2008).

This broad range of traits is the great advantage of using the Big 5 measures when analysing the relationship between personality and other areas – it increases the likelihood of capturing different relevant personality aspects of what is being studied (Chapman, Roberts, & Duberstein, 2011).

### **Personality Traits and Subjective Well-being**

Throughout research several studies have consistently shown that personality plays an important part in SWB (e.g., Costa & McCrae, 1980; Diener, 1984; Diener & Larsen, 1993; Diener & Lucas, 1999; Myers & Diener, 1995). Costa and McCrae (1980 cit. in Gomez, Krings, Bangerter, &

Grob, 2009), for instance, have found variance in SWB to be explained by the personality traits of neuroticism and extraversion, and that personality considerably predicts SWB into 20 years later in life (Costa & McCrae, 1984 cit. in Gomez, Krings, Bangerter, & Grob, 2009). Many researchers have focused on studying the correlations between neuroticism, extraversion, and SWB, to find that there is a strong negative relationship between neuroticism and SWB and a strong positive relationship between extraversion and SWB, adding that the association is been shown stronger for neuroticism than for extraversion. For example, Vitterso (2001) found that even though extraversion predicts positive affect, emotional stability is a much stronger predictor of SWB. For Gutiérrez, Jiménez, Hernández, & Puente (2005), neuroticism was the best predictor of affect balance, and most closely linked to negative affect, followed by extraversion, which was the most strongly associated with positive affect. Additionally they found that Openness was associated with both positive and negative affect. Despite the notorious relationship between neuroticism and SWB it is important not to focus exclusively on that personality factor (Gomez, Krings, Bangerter, & Grob, 2009). McCrae & Costa (1991) found that not only neuroticism and extraversion were associated with SWB, but also conscientiousness and agreeableness. Results from the work of Steel, Schmid, and Shultz (2008) show us that there is a strong relationship between neuroticism, extraversion, agreeableness, and conscientiousness, and all components of SWB, while openness to experience has close associations with facets of happiness, positive affect, and quality of life. Lucas (2008) also reports conscientiousness as having a moderately strong relationship with SWB.

Even though in their meta-analysis DeNeve and Cooper (1998) found that personality only explained 4% of the variance for all indices of SWB, according to Steel, Schmidt, & Schultz (2008) the results from a multivariate meta-analytic regression indicate that up to 39% of the variance in SWB is related to personality factors.

### **Centenarians, Subjective Well-being, and Personality Traits**

Individuals in old and very old age are likely to face physical, cognitive and social strains. It is agreed among researchers that the successful adaptation to those strains is reflected in well-being – a central element of successful aging (e.g., Faber et al., 2001; George, 2010; Poon et al., 2010). Although most research within the gerontology field has given attention to the factors that contribute to exceptional longevity, the question about how centenarians experience their lives and how they feel about their age has received much less attention. This is odd, given that facets of SWB such as satisfaction with one's aging have been found to be strongly connected to survival in old and very old age (Levy, Slade, Kunkel, & Kasl, 2002; Maier & Smith, 1999 cit. in Rott & Jopp, 2006) – pointing out that “feeling good” might be a determinant of longevity (Rott & Jopp, 2006). Several studies have shown considerable evidence that very old age is characterized by a series of negative changes in a number of functioning domains such as cognition, health, and social network (e.g., Engberg, Okuzyan, Jeune, Vaupel & Christensen, 2009; Poon & Cohen, 2011 cit. in Poon & Cheung, 2012), and that this negative path seems to continue through extremely old age. Centenarians commonly have to deal with several acute and chronic diseases, frailty, and loss of autonomy. Plus, many centenarians are cognitively impaired, and their social relationships also usually suffer a decline, since most of them have lost their partner and at least one child (Araújo & Ribeiro, 2012). This age-related decline and the fact that most life domains are associated with loss suggest that very old age is related to an increasing risk for adaptation problems (Jopp & Rott, 2006; Ribeiro Ó. , Araújo, Teixeira, Afonso, & Pachana, in press). On the other hand, the indicators of SWB used to investigate the success of adaptation efforts continue stable across old and very old age. This phenomenon suggests that a positive adaptation to these limitations is possible and that older people may have a high adaptation competence (Jopp & Rott, 2006; Poon, et al., 2010) or that they simply had more time to adapt to losses and limitations (Rott & Jopp, 2006). Due to their resilience and greater ability to adapt to continuous losses and adverse situations it has been suggested that centenarians could be an example of successful aging because of their

escape or delay of major illnesses (the onset of cognitive impairment in many centenarians has been reported to be delayed until their 90's, for example). Despite the prevalence rates of dementia in centenarians being about 50%, there appears to be a subgroup of individuals that seems to maintain intact cognition though the factors associated with this preserved cognition remain still unclear (Kato, et al., 2013).

Personality traits are thought to be among the most influential factors to achieve a longer life (Lehr, 1982 cit. in Masui, Gondo, Inagaki & Hirose, 2006), as well as to reach and maintain high levels of well-being in the oldest old (Faber, et al., 2001). With this in mind, personality traits are usually included in centenarian studies because of their possible contribution to longevity and adaptation to the challenges of the very old age (Poon, et al., 2010). A Swedish centenarian study (Samuelsson et al. 1997 cit. in Martin et al., 2006) that used ratings from the MMPI showed results that suggested that the centenarians were seen as sensitive, rational, secure, emotionally stable, relaxed, dependable, mature and conscientious. From the first Georgia Centenarian Study, a personality study was made using the Cattell 16PF (Cattell & Mead, 2008). This study indicated that when compared to two younger groups, centenarians had higher scores in dominance, suspiciousness, and shrewdness, but scored lower in imagination and tension; when retesting the centenarians 18 months after, the researchers found that they had decreased scores in sensitivity, but presented higher scores in radicalism (Martin et al., 2002 cit. in Martin et al., 2006). This "strong" personality may be not only an indicator of survivorship, but also a resource that can help centenarians to adapt well to getting older, as is argued by Martin (2002 cit. in Martin et al., 2006). Perls and colleagues (1999, cit. in Martin et al., 2006) found that centenarians were fairly "immune" to negative emotions, such as fear, guilt, sadness, anger, self-consciousness, and impulsiveness. Data from the Personality and Longevity Study from the Georgia Centenarian Study (Martin, et al., 2006) suggests that centenarians appear to be fairly low on neuroticism, hostility and vulnerability and high on competence and trust; moreover, the results point to a common combination of personality characteristics in this group: relatively low neuroticism, high competence, and high extraversion. The Tokyo Centenarian Study (Masui, Gondo, Inagaki, & Hirose, 2006), where

The Five-Factor Inventory (NEO-FFI) was applied, compared actual test scores from centenarians to the predicted mean scores for a 100-year-old, calculated from younger controls. This was an original method, which was employed to try to detect specific personality features of centenarians independent of age-related differences. Their results suggested that, in men, there were higher scores for openness, and in women, there were higher scores for extraversion, openness and conscientiousness.

## **II - Goals**

This research aims to better understand personality characteristics and subjective well-being of Portuguese centenarians. Our goal is also to learn if personality traits are related to the subjective well-being in this age group and, if so, in which manner. According to research on centenarians, and on personality traits related to subjective well-being, we expect to find, in our sample, that: (a) centenarians present low levels of Neuroticism, high levels of Conscientiousness, and high levels of Extraversion; (b) centenarians present relatively high levels of subjective well-being; and that (c) low levels of Neuroticism; high levels of Conscientiousness; high levels of Extraversion; and high levels of Agreeableness are related to high levels of subjective well-being.

## **III – Method**

### **Sample**

This study includes a selection of participants from the PT100 – Oporto Centenarian Study. The present sample comprises 25 participants, residents in the Oporto Metropolitan Area, who were 100 or more years old between December 2012 and December 2013. All of the participants present intact cognitive capacities, which were assessed with the Mini Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975; Morgado, Rocha, Maruta, Guerreiro, & Pavão, 2009) and presented complete assessment protocols on the measures considered in this particular study (see next section). For any of these two reasons (or both combined), 161 centenarians were excluded from the original study.

## Measures

In assessing this particular age-group, the PT100 took into consideration several recommendations referred by the literature (Sachdev, Levitan, & Crawford, 2012). Assessments were carried in the participant's home, as it offers more security and it's easier to involve family members, and materials were presented slowly because of frequent slowed movement and hearing and visual impairments. Regarding the use of psychometric tests, adaptations and adjustments were required, such as shortening questionnaires and providing assistance with self-report measures. Several adaptations made to the psychometric tests used in this study are addressed below.

### *Satisfaction with Life Scale (SWLS)*

Subjective Well-being was measured with the Satisfaction with Life Scale (SWLS) (Diener E. , Emmons, Larsen, & Griffin, 1985; Sancho, Galiana, Gutierrez, Francisco, & Tomás, 2012), an instrument composed of 5 items assessing individual's general sense of satisfaction with their life as a whole, using a Likert type response format, with items scoring from 1 to 7 (1 = totally disagree; 7 = totally agree), representing a single factorial structure.

Considering the specificities of this age-group and the complexity of this scale, and adaptation of the scale was performed in order to facilitate the centenarians' answers, and to better capture accurate answers. The response format was therefore altered to a simpler Likert type response, with items scoring from 0 to 2 (0 = No; 1 = More or Less; 2 = Yes).

### *Big Five Inventory (BFI)*

Personality traits were measured using the Big Five Inventory (BFI) (John & Srivastava, 1999; Schmidt et al., 2007), a brief instrument comprised of a list of sentences about certain personality characteristics. This inventory is considered to be good in avoiding fatigue, due to its use of short phrases based on the trait adjectives that are prototypical markers of the big 5 (e.g., Original. – “original, comes up with new ideas”; Perseverant

– “perseveres until the task is finished”). The BFI usually only takes about 5 minutes to complete compared to the 15 minutes of the NEO-FFI, and its items are shorter and easier to understand (John, Naumann, & Soto, 2010) which makes the BFI a better instrument for our sample. The inventory retains the advantage of adjectival items, while avoiding their possible ambiguous or multiple meanings, using a Likert type response format varying from 1 to 5 (1 = Disagree strongly; 5 = Agree strongly) (John & Srivastava, 1999).

Due to the reasons previously mentioned, there were conducted some adaptations to the inventory. The response format was altered to a Likert type response, with items scoring from 1 to 3 (1 = Disagree; 2 = Neither; 3 = Agree). Despite of the alterations, almost all of the answers were given by a proxy, generally of older age also, close to the centenarian (generally a family member) due to the extension of the inventory, which could be relatively tiring to the centenarians.



## IV - Results

### Participant Characteristics

This sample comprises 25 subjects aged between 100 and 104 years old, with a mean of 100.88 (SD = 1.301) (Table 1).

*Table 1. Participant characteristics - age*

	N	%
100	15	60
101	3	12
102	4	16
103	1	4
104	2	8
Total	25	100

There were 19 female and 6 male participants. The fact that the majority of the participants in this investigation are female (76%) is consistent with the evidence from census data (INE, 2011) that states that in Portugal there are only 273 male to 1253 female centenarians (Table 2).

*Table 2. Sample Characteristics - sex*

	N	%
Male	6	24
Female	19	76
Total	25	100

Most of the participants are widowers (64%), two are married, one is divorced, and six of them were never married. The fact that more than one half of the sample has lost a partner is consistent with the expectance that the majority of centenarians experience conjugal loss (Araújo & Ribeiro, 2012; Jopp & Rott, 2006). Only 68% of the subjects have had children, and one of them has already lost a child (Table 3).

*Table 3. Participant characteristics – marital status*

	N	%
Never married	6	24
Married	2	8
Divorced	1	4
Widowed	16	64
Total	25	100

Nine of the participants didn't have any formal education, whereas 54.1% attended elementary school, i.e., four years of school (Table 4). One participant experienced five years, and two participants seven years, of formal education. Only five of the participants currently live in an institution.

*Table 4. Participant characteristics - education*

	N	%
0	8	32
1 - 2	3	12
3 - 4	10	40
5 or more	3	12
Missing	1	4
Total	25	100

### Subjective Well-being

Due to the necessary changes to the instrument, according to the modified *SWLS* the lowest possible score is 0, whereas the highest is 10. Thus, the assessment of the SWB in this sample was analysed in terms of “relatively low” or “relatively high”, due to the lack of psychometric data for this population and for this specific version of the instrument. In overall, subjective well-being was found to be relatively medium/high. The highest scores were obtained in the questions “are you satisfied with your life?” and “so far, did you get the most important things you wanted in life?” (Table 5).

*Table 5. Centenarians' SWB, general index and by item (mean levels)*

	Mean	SD
Index of SWB	6.28	2.574
In most ways is your life close to your ideal?	1.24	0.779
Do you think that the conditions of your life are excellent?	1.20	0.866
Are you satisfied with your life?	1.40	0.816
So far, did you get the most important things you wanted in life?	1.48	0.653
If you could live your life over, would you change anything?	1.04	0.978

There was found no significant correlation between the general index of SWB, and any of the social demographics considered (sex; current marital status; years of education; if they had or not any children; number of living children; and living or not in an institution), although it was found a significant correlation between the individual question “Do you think that the conditions of your life are excellent?” and the number of living children (Table 6).

Table 6. Correlations between SWB and Social Demographics

	Sex	Marital status	Had children	Nr of living children	Living location	Years Education
In most ways, is your life close to your ideal?	-0.314	- 0.137	0.103	0.210	0.105	0.155
Do you think that the conditions of your life are excellent?	0.132	0.302	0.263	0.400*	0.236	- 0.337
Are you satisfied with your life?	- 0.070	- 0.303	- 0.086	0.273	0.000	- 0.299
So far, did you get the most important things you wanted in life?	- 0.164	- 0.040	- 0.289	0.045	0.094	0.134
If you could live your life over, would you change anything?	- 0.121	- 0.101	0.061	0.213	0.125	0.000
Index of SWB	- 0.160	- 0.084	0.042	0.377	0.182	- 0.126

\* $p < 0.05$ 

### Personality Traits

The assessment of the personality traits in this sample was analysed in terms of “relatively low” or “relatively high”, as it was done regarding SBW.

Due to the necessary changes to the instrument, according to the modified *BFI*, the lowest possible score for extraversion and for neuroticism is 8, whereas the highest is 24. The lowest possible score for conscientiousness and agreeableness is 9, and the highest, 27. Finally, the lowest possible score for openness is 10, and the highest is 30.

Extraversion, agreeableness, conscientiousness and openness to experience were all found to be relatively high, in opposition to neuroticism,

which was found to be relatively low. Conscientiousness and agreeableness were the two highest scoring factors in this sample (Table 7).

*Table 7. Means and reliability for big-five personality traits*

	Means (SD)	Reliability*
Extraversion (8 items)	18.84 (3.4)	0.669
Agreeableness (9 items)	22.60 (4.113)	0.801
Conscientiousness (9 items)	24.28 (2.198)	0.544
Neuroticism (8 items)	12.92 (4.092)	0.768
Openness to Experience (10 items)	22.24 (4.763)	0.773

\*Cronbach's alpha

### **Subjective Well-being and Personality Traits**

Agreeableness was the only factor that was found to have a significant correlation with SWB, showing the presence of a positive correlation (Pearson's correlation of 0.448, significant at a 0.05 level). (Table 8).

*Table 8. Correlations between SWB and personality traits*

	Index of SWB
Extraversion	0.210
Agreeableness	0.448*
Conscientiousness	-0.091
Neuroticism	-0.247
Openness	0.103

\* $p < 0.05$

Given the fact that only agreeableness showed signs of a significant correlation with SWB, we considered it important to analyse its facets individually to understand which one in particular could be related to SWB. The BFI only allows the scoring of two facets for each trait (Soto & John, 2008) and, for agreeableness, altruism and compliance are accounted for. We found that only compliance, which includes the phrases “Tends to find fault in others” (reversed item); “Starts quarrels with others” (reversed item); and “Has a forgiving nature”, presents a significant relationship with SWB, at a 0.05 significance level (Table 9).

*Table 9. Correlations between Agreeableness' facets*

	Index of SWB
Altruism	0.369
Compliance	0.444*

*\*p<0.05*

Regarding the correlations between all agreeableness' items individually and SWB, we found out that the phrase “Tends to find fault in others” has a significant negative correlation with SWB, at a 0.05 level, that the phrase “Is considerate and kind to almost everyone” has a significant positive correlation with SWB at a 0.01 level, and that the phrases “Starts quarrels with others” and “Is sometimes rude to others” have a significant negative correlation with SWB, at a 0.01 level (Table 10).

*Table 10. Correlations between individual phrases of Agreeableness*

	Index of SWB
Is considerate and kind to almost everyone	0.658**
Tends to find fault in others	- 0.432*
Starts quarrels with others	- 0.506**
Has a forgiving nature	0.109
Is generally trusting	0.020
Can be cold and aloof	- 0.099
Is helpful and unselfish with others	0.346
Is sometimes rude to others	- 0.622**
Likes to cooperate with others	- 0.027

\* $p < 0.05$   
\*\* $p < 0.01$

## V - Discussion

The centenarians in our sample do present low levels of neuroticism, high levels of conscientiousness, high levels of extraversion, and high levels of agreeableness, as predicted. Openness to experience also presented high scores, which was not considered in our hypotheses; nevertheless it was observed, and also not predicted, in the Tokyo Centenarian Study, in women (Masui, Gondo, Inagaki, & Hirose, 2006). Our results suggest that these centenarians are in overall talkative, assertive, active, and trustful people, with characteristics such as kindness and warmth. They are most likely organized, thorough and reliable people, emotionally stable, and imaginative, curious and creative.

The centenarians also present relatively medium/high levels of subjective well-being, suggesting that they are relatively happy, experience more pleasant than unpleasant emotions, and are overall satisfied with their lives. These results were not associated to any of the demographic characteristics accounted for, leading us to presume that these feelings of well-being and “happiness” may occur independently of the centenarians’ living circumstances, which is consistent with research views regarding the rather modest impact of external factors on SWB (Diener, Oishi, & Lucas, 2003).

We found no significant correlation between levels of SWB and neuroticism, conscientiousness, openness to experience, or extraversion, but a significant positive correlation was found between agreeableness and SWB. In our sample, it appears that the more kind, warm, and trustful, the more satisfied with their lives centenarians are. In a deeper analysis regarding agreeableness’ facets, we found that only compliance had a significant positive relationship with high levels of SWB. Compliance, or cooperation, applies to an individual’s willingness to submit to authority, and it embraces the responses to personal conflict (Costa & McCrae, 1992). It appears that the more willing and complaisant centenarian’s feel towards people, and the more willing they are to accept difficult situations, the “happier” they feel.

Even though there is evidence throughout research (e.g., Costa & McCrae, 1980; Diener, 1984; Diener & Lucas, 1999; Myers & Diener, 1995), and in the present investigation, that suggests that personality is an



extremely important part of SWB, inclusively in centenarians, it is important to be cautious in what regards the interpretation of personality effects, as is suggested by Lucas and Diener (2010). These authors trace the importance of not interpreting strong heritabilities as evidence that one's happiness cannot change. As the processes of individual differences in SWB are not yet completely understood, it is not possible to know if and how it could be changed. Nevertheless, we do know that personality traits naturally change in the course of people's life span, including old age (e.g., Helson & Soto, 2005; Mroczek & Spiro, 2003; Small et al., 2003). Both cross-sectional studies (Srivastava, John, Gosling & Potter, 2003 cit. in Roberts & Mroczek, 2008) and longitudinal ones (Roberts, Walton, & Viechtbauer, 2006) have found that middle-aged adults tend to score higher than young adults on agreeableness and conscientiousness; and lower on extraversion, neuroticism and openness to experience, and that these changes are shaped by experience. We also know that, alongside with personality traits' natural change over the life span, they can also be purposely changed, or modelled. Dweek (2008), for example, argues that because personality embraces the way people perceive themselves, others, and events (Rothbart & Ahadi, 1994 cit. in Dweek, 2008), and a central part of personality development is the encoding of internal models, schemas, and premise systems from socialization experiences (Block, 1993, cit. in Dweek, 2008), people's internal beliefs have de power to mold experience and action. Thus, belief interventions do have the power to change personality, in the way that people perceive themselves, others, and events (Dweek, 2008). According to this researcher, the assessment of broad personality traits contain no implications for how they can be changed, whereas beliefs can normally be very simply defined, measured, and altered trough interventions. Because personality has such a strong influence on SBW, as mentioned above, when changed, it will arguably influence one's happiness and well-being. And even though research tells us, as mentioned previously and also seen in our investigation, that the majority of centenarians experience already relatively high levels of SWB, that is not necessarily the case for each particular individual, and it is important to understand how to improve SWB in centenarians that could benefit from it.

### **Limitations**

Despite the fact that the adaptations to the instruments were made with no orientation from any official standardization study – because there are none to date – the Cronbach's alpha, regarding the BFI's reliability, was quite acceptable. With the exception of the consciousness factor, all of the other personality traits present a 0.7 or higher Cronbach's alpha. This contributes to the trustworthiness of the present investigation, but it doesn't excuse the pressing need to officially adapt and standardize instruments for the oldest old population, as it is increasingly notorious throughout research the specificities of this age group (e.g. Baltes & Myer, 1999; Hagberg, 2007 cit in Ribeiro & Araújo, 2013; Poon & Cheung, 2012). As to the SWLS adaptation, the instrument's reliability was relatively low, with a Cronbach's alpha of 0.607. This illustrates even more the actual need to create and adapt instruments that can be reliable for this specific age group, so researchers could more accurately understand centenarians and how to attend their social, psychological, and emotional needs.

This sample only comprised people with intact cognition and even though a reasonable part of the centenarians according to research do maintain cognitive capacity intact (Kato, et al., 2013) there is still a group of people with compromised cognitive capacity which is not considered in our investigation and it's also important to know them and understand how they experience well-being, in future research. Moreover, we decided not to substitute the missing values in our instruments, because we considered it important to first explore the data of those with complete answers, and not estimated ones. This decision justifies the small size of our sample.

## VI – Conclusion

We started this investigation stirred by the will to better know and understand the truly special group of people that centenarians are, a group that continues to grow, yet still so unknown to us. We wanted to know more about Portuguese centenarians, their happiness, their personalities, and to find similarities and differences between them and the ones of centenarians all over the world.

Despite our investigation's limitations, we believed we reached our goal – we know a little bit more than when we started, and we took one more step into this vast subject. We found results that suggest that Portuguese centenarians are relatively happy and satisfied with their lives, and that their happiness has a positive correlation with agreeableness, and more specifically, with compliance. We can in overall say that Portuguese centenarians appear to be, personality and happiness wise, quite similar to others from occidental studies, with the particularity that they share similarities with Japanese centenarians as well.

Even though it is, in a way, a relatively small and exploratory one, this investigation is an open door to future research in terms of personality and SWB in this age group in Portugal. We suggest, for future research on this topic, instrument adaptations for this specific age-group and investigations that include cognitively compromised subjects.

We feel that is also important to invest in longitudinal studies in order to understand, particularly within our topic of research, the connection between SWB and personality traits and longevity itself in Portuguese centenarians.

Finally, we stress the pressing need to see more, to understand more, to really know more about centenarians and their special particularities.

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