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Loneliness in middle and old age: Demographics, perceived health, and social satisfaction as predictors

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ABSTRACT

Purpose of the research: (a) To identify the degree of much loneliness reported in the Portuguese population over 50 years of age and (b) test whether loneliness can be predicted by socio-demographic, health related or social characteristic of the sample other than age.
Materials and methods: 1174 late middle age and older adults were interviewed face to face by different interviewers across the country; after the informed consent was signed, we asked the participants several socio-demographic and health-related questions; finally we asked "How often do you feel lonely?" and participants responded according to a five point Likert scale.
Principal results: The results showed that 12% of participants reporting feeling lonely often or always, whereas 40% reporting never feeling lonely. The remaining 48% self-reported they felt lonely seldom or sometimes. Additionally, results show that, when taken together, variables such as marital status, type of housing, residence settings, health conditions, social satisfaction, social isolation, lack of interest, transportation, and age were predictors of loneliness.
Major conclusions: (1) The association of loneliness with advanced age has been greatly exaggerated by mass media and common sense; (2) But although our findings did not confirm the most alarmist views, the 12% of older adults reporting that they are feeling lonely always or often should be cause for attention and concern. It is necessary to understand the meaning, reasons and level of suffering implied on those feelings of loneliness. (3) Our findings suggest that it makes no sense to construe age as a singular feature or cause for feelings of loneliness. Instead, age and also a number of other features combine to predict feelings of loneliness. But even with our predictor variables there was a substantial of variance left unexplained. Therefore it is necessary to continue exploring how feelings of loneliness arise from the experience of living and how they can be changed.

1. Introduction

Social interactions and relationships are at the core of what human beings are and also at the core of what they can become. We have heard elsewhere someone using a rich metaphor of what social environment is for human beings; it was something like this: "the environment is to human beings what the shell is for snails". Therefore, the topic of study of this paper – loneliness – is something that has interest and importance on its own. Loneliness has something that is normative, in the sense that each individual is unique, and each individual will experience some degree of loneliness throughout its lifetime (Moustakas, 1961 – in Perlman & Peplau, 1984). Therefore, some degree of loneliness is also associated with some degree of independence necessary to function adequately within the social world.

However, loneliness is usually seen in a way that emphasizes its negative nature, and the adverse consequences it brings to the individual. This is possibly due to the fact that the biomedical model is the most assimilated model for the common citizen, and the most followed in health care – in the Portuguese National Health System, professionals that provide care in the health system and whose education is non-biomedical are scarce. At the same time, there is a concomitant myth, spread over common sense, and often in different care professionals,

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that older adults are alone and suffer from loneliness. When age enters as a variable related to loneliness, the age group of older adults are stigmatized as feeling lonely (see Dykstra, 2009; Instituto Nacional de Estatística (INE, 2012)). Researchers are not exempt of some social responsibility, having supported these misconceptions by being ageist (Schaie, 1988), or by having displayed beliefs and theories claiming that older adults are naturally in processes of disengagement from society (Cumming & Henry, 1961). One difficulty with the association between old age and loneliness is the uncertainty regarding the meaning ascribed to the word *loneliness*. When people read "loneliness" do they perceive the experience of living alone or the experience of feeling alone? A second difficulty, associated with the first one, is the image of old age attached to loneliness: is this an accurate picture of the older adults' experiences, so often spread over the media? These issues, we believe, result from a lack of focus toward researching for a more accurate picture of loneliness.

In the present paper, our focus will then be on loneliness as a human experience. So, what is loneliness? To define loneliness is a complex task, as there are many conceptions (see, Peplau & Perlman, 1982). Loneliness is mainly seen as a distressing, negative, and subjective experience (De Jong-Gierveld, 1998; De Jong Gierveld et al., 2006; McWhirter, 1990; Victor, Scambler, Bond, & Bowling, 2000). It represents a particular kind of human experience, and it must not be confounded with being alone (De Jong-Gierveld, 1987; McWhirter, 1990). According to De Jong-Gierveld and van Tilburg (1999), loneliness arises because the individuals' subjective experience lacks satisfying relationships (see also, McWhirter, 1990; Peplau & Perlman, 1982). Loneliness can also refer to situations in which the number of relationships is smaller than expected, or the quality of the existing ones is less than desired (De Jong-Gierveld & van Tilburg, 1999). Moreover, loneliness can arise when a person's relations network is felt as being weak, and this can be an unpleasant experience (Peplau & Perlman, 1982; Perlman & Peplau, 1984). Loneliness can also be experienced as a consequence of the way the individuals perceive their social network of contacts, or when one feels as having potential to social interaction but does not interact (Victor et al., 2000). Sullivan (1953) and Weiss (1973) define loneliness as the emotional distress that results when inherent needs for intimacy and companionship are not met. When people miss emotional support from their partners or other social relations, they experience loneliness (Peplau & Perlman, 1982; Perlman & Peplau, 1984). Loneliness can also be viewed as an adaptation that could prompt the individual to interact and establish social relationships (Peplau & Perlman, 1982).

It is now clear that loneliness is a human experience associated with different levels of pain, suffering, and disengagement because bonds with other human beings are lacking. Consequently, loneliness is often an important focus of concern not only in old age but also in other age groups, but not for the same reasons. In fact, loneliness is not only a health related issue but can also be seen as a matter of public health. It is known that there is a relationship between loneliness and morbidity, as well as loneliness and illnesses and disorders (Cacioppo et al., 2002; Cacioppo, Hawkley, & Berntson, 2003; Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; DiTommaso & Spinner, 1997; Luo, Hawkley, Waite, & Cacioppo, 2012; Perlman & Peplau, 1984; Steptoe, Owen, Kunz-Ebrecht, & Brydon, 2004). Specifically, loneliness is related with poor mental health, as depression, or sleeping disorders; it has also been associated with prevalence of psychosomatic symptoms; and it is also associated with vascular alterations, changes in the activity of different glands, or changes in the immunity of the individuals, among others. It is a risk factor for poor executive functioning, attention, and, overall, lower cognitive functioning (Cacioppo & Hawkley, 2009). In 1990, McWhirter reviewed the topic of loneliness, and described it as a unique clinical entity that deserves separate attention, and should be differentiated from variables that have been associated with it. For instance, correlations between depression and loneliness have ranged between .38 and .71; loneliness has been associated with suicide and suicidal attempts, and with anxiety (e.g., DiTommaso & Spinner, 1997; McWhirter, 1990). Loneliness has also been associated with poor self-esteem, alcohol abuse, and delinquency in adolescence (e.g., DiTommaso & Spinner, 1997; McWhirter, 1990). In a longitudinal study involving 1604 participants, Perissinotto, Cenzer, and Covinsky (2012) reported that loneliness is a predictor of functional decline and death in people with 60 years of age or more. Importantly, as shown by Berkman and Syme (1979), the lack of social ties predicts mortality (see also, Seeman, Kaplan, Knudsen, Cohen, & Guralnik, 1987). Specifically, marriage and contact with close friends and relatives seem to be strong protectors against mortality. Although it is undeniable that the social network of older adults drops with age [relatives and friends inevitably die, and with age people become increasingly selective in their relationships (Carstensen, 1992)], and that loneliness can have severe consequences within older people's well-being and health, its extension and pervasiveness has been exaggerated, and attributed solely to old age (Dykstra, 2009). Associated with this relationship of loneliness and morbidity are also conceptions of older adults as being poor, impaired, and uninterested in social contact (Phelan, 2010).

Distinguishing between loneliness and social isolation or aloneness is especially relevant as often they have been used interchangeably (De Jong Gierveld et al., 2006). While loneliness is a negative experience that can only be evaluated by the individual, social isolation or aloneness refers to the number of social contacts an individual has, or the condition of not having ties with others, which can be objectively measured (De Jong-Gierveld, 1998; De Jong Gierveld et al., 2006). In his relational theory of loneliness, Weiss (1973) argued that loneliness arises either from social isolation or emotional isolation. Therefore, one could be emotionally lonely but not socially lonely, or vice versa. This means that, social and emotional loneliness should be viewed as different processes. Weiss (1973) described loneliness as a natural response of the individual to certain situations. *Emotional loneliness* could then be the result of a significant loss, or the lack of an intimate partner (DiTommaso & Spinner, 1997; Perlman & Peplau, 1984). DiTommaso and Spinner (1997) re-evaluated Weiss's distinction between Emotional and Social loneliness and reported that Emotional loneliness could be further separated into romantic and familiar. *Social loneliness* is the result of a lack of insertion or relation within social groups or community that can provide a sense of belonging, and of companionship (DiTommaso & Spinner, 1997; Perlman & Peplau, 1984).

Loneliness in older adults can have distinctive features that increase the concern regarding the negative effects of loneliness in older adulthood. For instance, it is known that having a significant other in ones' life is protective against loneliness (De Jong-Gierveld, 1987), or protective against mortality (Berkman & Syme, 1979; Seeman et al., 1987). Part of the concern regarding loneliness in advanced age is empirically grounded, as loneliness is associated with higher levels of depression, poor mental health, health problems, and even mortality (Cacioppo et al., 2003, 2006; Luo et al., 2012; Perlman & Peplau, 1984). However, it is our understanding that there are some exaggerated claims about how much loneliness prevails among older people. For instance, the Portuguese INE recently published results of the 2011 census in which they contrasted the number and percent of general population that lived alone with the number and percent of older adults that lived alone or in the company of other older people. INE

found that the percent was of 12% against 60%, respectively. For understanding aloneness it would have been more appropriate to contrast how many people live alone in the general population versus how many among the older people live alone. However, combining older people living with other older person together with older people living by themselves, when the focus is aloneness, seems to carry the message that older people that live with other older adults are in a similar condition of those who live completely alone. Based on this publication by INE, Portuguese mass media helped spread the idea of an empirically grounded association between old age and loneliness, not distinguishing the basic issue of being alone or feeling alone, and exaggerating the number by placing together older people that live with other older person(s).

Therefore, a main aim of the present study is to know how much loneliness is self-reported in the middle and old-age Portuguese population. This is of relevance not only because of previous alarming numbers of the prevalence of loneliness, but also because, as Dykstra (2009) has described, southern European countries, including Portugal, have the highest prevalence of self-reported loneliness, compared with northern countries. Over 19% of the Portuguese interviewed reported feeling lonely often. This is relevant, because the evidence goes in opposite direction to the myth that individuals from individualistic societies feel and are lonelier than those from less individualistic societies (north–south Europe dichotomy) (Dykstra, 2009).

Other aim of the present study was to understand whether loneliness can be predicted by any socio-demographic, health related, or social characteristic of the population. Research shows that loneliness is related not only to age but also to other social and demographic characteristics such as gender, socio-economic status, marital status, quality of social networks and contact with friends (Pinquart & Sorensen, 2001; Routasalo, Savikko, Tilvis, Strandberg, & Pitkala, 2006; Savikko, Routasalo, Tilvis, Strandberg, & Pitkala, 2005). The goal is to understand whether the same variables that are associated and predict loneliness in northern European countries or USA (thought of as more individualistic societies), are also associated and predict self-reported loneliness in Portugal (thought of as more collectivistic society).

2. Materials and methods

2.1. Participants

For the sample selection, a subset of 10 industrial and academic project partners defined and segmented the target group. They covered all Portuguese regions, and both rural and urban settings. The estimation of the sampling size was conducted before conducting the survey. The estimation based on proportion indicated that a sample with approximately 1100 subjects would provide a margin error of 3% at 95% confidence. Therefore, 1174 respondents with an age range of 50–98, with a mean age of 74.5 (SD = 10.3), 788 female and 370 male, participated in the study. The majority of participants were married or widowed. The sample included people living in residential facilities (16%), and in the community (84%); some were using day care center services (19%), and 4% were using domiciliary services.

2.2. Instruments and measures

A survey was constructed with 8 main sections as an iterative process addressed by a subgroup of partners of the Ambient Assisted living for all project (AAL4 ALL).[1] The sections of the survey were the following: (a) *socio-demographic variables*; (b) *residence characteristics*; (c) *measures of health*; (d) *functionality* (ADL and IADL[2]); (e) *security issues*; (f) *social activities*; (g) *services*; (h) *attitudes toward the use of technological equipment*. Points (e), (g) and (h) will not be addressed in the current paper, however, they will be addressed in other publications currently in preparation. The functionality section (d) was partially based on the Scale of Independence for the Activities of Lawton and Brody (1969), and on Index of Katz et al. (1970). In our final functionality measure in ADL, the score range was between 0 and 10, and in the IADL the score range was between 0 and 9.

2.3. Outcome variable

Loneliness was used as the outcome variable in the data analysis, and was assessed by one question: How often do you feel lonely? The participants could reply 1 = never, 2 = seldom, 3 = sometimes, 4 = often, or 5 = always.

2.4. Independent factors

The questionnaire consisted of demographic variables (age, gender, marital status, living arrangements, region, residence setting, type of housing, level of education, professional status, and income), measures of health (perceived health, health conditions, sensorial and motor handicaps, and functional limitations), and measures of participation and satisfaction with social and recreational activities. Of the measures of health: (a) *Subjective perceived health* was assessed by a single question with a 5-point likert scale: 1 = weak, 2 = reasonable/fair, 3 = good, 4 = very good, or 5 = excellent; (b) *Health conditions* were assessed by asking participants to mark one of the options, coded in the following way: 1 = healthy, 2 = recovering, 3 = acute illness, 4 = chronic disease; (c) *Sensorial and motor handicaps* were assessed by asking the participants if they suffer from any of sensorial and motor limitations that were listed (see Table 2); (d) participants' *functional status* (independence) was measured by asking how independently and capable they were of performing 10 basic activities of daily living (ADL), e.g. dressing, bathing, or using the stairs; and 9 instrumental activities of daily living (IADL), e.g. doing the housework, laundry, preparing the meals, or shopping. Higher scores reflected more independence. Of the measures of recreational and social activities, both were assessed by asking the participants how often they engage in those activities (1 = never, 2 = seldom, 3 = sometimes, 4 = often, or 5 = always), and how satisfied they were with their social life and their recreational activities (1 = none, 2 = low, 3 = intermediate, 4 = high, 5 = complete). Additionally, obstacles to participation in social and recreational activities were assessed by the participants by choosing any of the following: social isolation, lack of interest, transportation, mobility, health, economic, medication and medical treatments, and family responsibilities.

Regarding the socio-demographic factors some categorizations were made, namely: age was divided into 4 groups (50–64, 65–74, 75–84, 85–98); living arrangements were categorized as living alone, living with someone, and residential facilities; region was sectioned into inland and coastal region; type of housing was categorized as living at home and permanent care; level of education was divided into 4 groups [no schooling; low (1–4 years); intermediate (4–12 years); and high (post-secondary schooling, B.Sc, Master, PhD)]; and income was sectioned into those earning 734€ or less and those earning 735€ or more.

[1] The AAL4ALL project brings together all relevant stakeholders, as Public Institutions, Industry, User Organizations, R&D Institutions in the discussion and definition of the basic AAL services of general interest.

[2] Activities of Daily Living and Instrumental Activities of Daily Living.

2.5. Procedure

All data were collected simultaneously in different regions of Portugal, between February and September 2011. The interviewers became familiar with each section of the questionnaire through its presentation, and discussion with the main researchers. Additionally, there were discussions about the characteristics of the participants, and different settings where the data was going to be collected. These meetings and discussions were important as the interviewers could face some distrust by the interviewees, or be confronted with different health conditions, and functionality that could require attentive and caring attitudes by the interviewer. The respondents were randomly selected and were mainly from residential facilities and day care centers, but also from senior universities, associations, and citizen public services. The interviewer debriefed the participants, emphasizing the importance of their participation; and their answers were recorded by the interviewer. It was made clear to the respondents that responding to the survey was completely voluntary, and responders could chose not to respond to any of the questions. For this reason, there are occasionally some missing values in some of the questions.

2.6. Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS version 19.0 software). Internal consistency of responses to the questionnaires was assessed using Cronbach's alpha. Chi-square tests and Spearman correlation coefficients were performed to associate demographic measures, health measures, and social measures with self-reported feelings of loneliness. A logistic regression analysis, using the enter method and the statistical significance level set at 5%, was conducted to find predictors of feelings of loneliness. Appendix A shows the correlations between independent variables that were included in the model.

Table 1
Demographic factors and loneliness.

	Loneliness						
	All: 1174, *n* (%)	Never: 461 (40%), %	Seldom: 260 (22%), %	Sometimes: 308 (26%), %	Often: 87 (8%), %	Always: 42 (4%), %	Statistics
Age (range: 50–98)							(χ^2) n.s (r_{sp}) $p = .019$
Age 50–64	214 (18)	41	24	24	8	3	
Age 65–74	350 (30)	43	24	25	7	1	
Age 75–84	400 (34)	38	20	30	7	5	
Age 85–98	210 (18)	35	24	25	10	6	
Gender[a]							(χ^2) $p = .009$
Female	788 (67)	38	21	29	8	4	
Male	370 (32)	44	26	22	6	2	
Marital status[a]							(χ^2) $p = .000$
Single	118 (10)	38	17	26	11	8	
Married	502 (43)	49	26	21	3	1	
Widowed	457 (39)	31	22	31	11	5	
Divorced	72 (6)	34	13	32	11	10	
Living arrangements[a]							(χ^2) $p = .000$
Living alone	271 (23)	24	21	32	12	11	
Living with someone	672 (57)	43	26	25	5	1	
Permanent institutional care	205 (18)	49	15	24	10	2	
Region[a]							(χ^2) $p = .011$
Inland	103 (9)	25	31	26	12	6	
Coastal Region	1038 (88)	41	22	26	7	4	
Residence settings[a]							(χ^2) $p = .000$
Rural	197 (17)	39	26	28	7	0	
Small town	346 (31)	50	21	22	5	2	
Urban	585 (52)	34	22	29	9	6	
Type of housing[a]							(χ^2) $p = .001$
Living at home	924 (79)	37	25	28	7	3	
Permanent institutional care	215 (18)	49	15	23	10	3	
Level of education[a]							(χ^2) $p > .05$; (r_{sp}) $p > .05$
No schooling	202 (17)	36	24	27	11	2	
Low	609 (52)	41	19	28	7	5	
Intermediate	255 (22)	42	26	23	6	3	
High	106 (9)	33	29	26	6	6	
Professional status[a]							(χ^2) $p = .000$
Working	146 (13)	52	29	17	1	1	
At home	68 (6)	25	28	37	6	4	
Retired	948 (81)	39	21	27	9	4	
Income[a]							(Z) $p = .003$; (r_{sp}) $p = .003$
€734 or less	573 (49)	38	20	27	10	5	
€735 or more	485 (41)	43	24	27	5	1	

[a] Components with missing values.

3. Results

The mode for self-report of loneliness was "never," with 40% of the respondents choosing this category (Table 1). The categories "seldom" and "sometimes" were reported by 22% and 26% of the respondents, respectively; whereas "often" and "always" were reported in only 8% and 4% of the cases, respectively. Importantly, the distribution of responses among categories of loneliness was virtually identical across age groups: the mean age of the respondents choosing each category of self-reported loneliness was never = 73.76, seldom = 74.2, sometimes = 75, often = 75.3, and always = 77.5 years of age.

Table 1 presents the socio-demographic characteristics of our sample against the reported loneliness. With respect to the socio-demographic characteristics, Table 1 shows that 48% of the sample is less than 75 years old, and that the number of women is more than twice the number of men. The prevalent marital statuses of the participants are married (43%), and widowed (39%). Participants' educational level is overall low, being the sample composed mostly by people with no more than four years of schooling (69%). The majority of the participants is retired (81%), and lives with someone (57%). Still, 23% of the respondents live alone. The vast majority of the sample lives in the coastal region (88%), and as many as 52% live in an urban setting. Moreover, the majority of the participants (79%) inhabit a house or apartment, and only 18% lives in a residential facility. Finally, regarding participants' income, 49% earns 734€ or less.

When contrasting the socio-demographic variables against feelings of loneliness there are no significant differences in self-reported loneliness across the four age groups (χ^2 (3) = 7.36, $p > .05$), or across the four levels of education (χ^2 (3) = 3.71, $p > .05$). There was, however, a positive association between loneliness and the age groups, r_s p = .069, p = .019, with the self-reported loneliness tending to increase with older respondents. There was no association between loneliness and level of education, r_s p = −.031, $p > .05$. There was an association between loneliness and gender, χ^2 (4) = 13.17, p = .009, with females reporting more loneliness than males. Marital status of the respondents was also significantly associated with feelings of loneliness, χ^2 (12) = 89.01, p = .000, with married reporting the least loneliness – only 4% of the respondents reported feeling lonely often or always –, and the divorced reporting feeling lonely more often – with 21% reporting feeling lonely often or always. Living arrangements were also associated with loneliness, χ^2 (8) = 96.46, p = .000, with those living alone reporting loneliness more often – with 23% of the respondents reporting feeling lonely often or always. People living in the coastal area reported feelings of loneliness less often (11% – often or always), compared with those living inland (18% – often or always), with a significant association between region and loneliness, χ^2 (4) = 13.16, p = .011. Other associations with loneliness were those of the residence setting - with those living in an urban setting reporting more loneliness (15% – often or always), χ^2 (8) = 36.11, p = .000 –, and of the type of housing – with those living in permanent institutional care reporting more loneliness (13% – often or always), χ^2 (4) = 17.59, p = .001. There was also an association between feelings of loneliness and professional status, χ^2 (8) = 32.63, p = .000, with those working reporting less loneliness (2% – often or always). Finally, loneliness was also negatively associated with the income of the respondents, r_s p = −.092, p = .003, with those earning €734 or less reporting more feelings of loneliness, being this difference statistically significant Z = −2.98, p = .003.

Table 2 shows the self-reported health status of our sample against the self-reported loneliness. When asked to self-evaluate their health status, almost half of the participants (46%) said their health was fair and 21% reported a weak health. Of the remaining, 24% reported good health, and only 7% of the respondents classifies their health as very good or excellent. Feelings of loneliness were associated with the subjective health, with those perceiving their health as week displaying more self-report of loneliness (19% of the respondents reported feeling lonely often or always), r_s p = −.185, p = .000. Regarding their present health condition, 40% of the participants said they were healthy, and 37% self-reported suffering from a chronic disease. There was also a significant association between the current health condition and feelings of loneliness, χ^2 (12) = 52.08, p = .000, with healthy people and those suffering from an acute illness reporting the least feelings of loneliness – 70% of the respondents in both categories report never or seldom feeling lonely.

Table 2
Health and loneliness.

	All: 1174, *n* (%)	Loneliness					
		Never%	Seldom%	Sometimes%	Often%	Always%	Statistics
Health status							
Subjective health							(r_{sp}) p = .000
Weak	246 (21)	28	19	34	12	7	
Fair	536 (46)	39	24	27	6	4	
Good	285 (24)	50	23	19	7	1	
Very good	58 (5)	43	25	23	5	4	
Excellent	25 (2)	48	12	28	12	0	
Health conditions							(χ^2) p = .000
Healthy	460 (40)	44	26	23	5	2	
Recovering	67 (6)	24	20	44	9	1	
Acute illness	182 (16)	51	19	18	8	4	
Chronic disease	435 (37)	34	20	31	9	6	
Sensorial and motor handicaps	**311 (26)**						
Blindness	27 (2)	30	19	30	15	7	
Inhibitive visual impairment	99 (8)	30	19	25	16	10	
Deafness	66 (6)	35	20	32	6	8	
Deaf–mute	3 (0.3)	0	33	33	33	0	
Inhibitive hearing limitation	72 (6)	27	29	31	7	6	
Monoplegy	16 (1)	13	44	38	6	0	
Hemiplegy	13 (1)	7	39	39	7	7	
Paraplegy	3 (0.3)	33	33	33	0	0	
Tetraplegy	1 (0.1)	0	0	0	0	100	
Upper body amputation	0 (0)	–	–	–	–	–	
Lower body amputation	11 (1)	46	0	27	18	9	

Table 3
ADL and IADL and loneliness.

Loneliness							
	All: 1174, *n* (%)	Never %	Seldom %	Sometimes %	Often %	Always %	(*M*; SD) Statistics
ADL	**Independent**						(8.84; 2.2), (r_{sp}) $p = .000$
Feeding	1096 (93)	41	23	25	7	4	
Grooming	1017 (87)	42	23	25	7	3	
Bathing	915 (78)	43	24	24	6	3	
Personal Hygiene	1002 (85)	42	23	25	6	3	
Toilet use	1075 (92)	41	23	26	7	4	(χ^2) all $p < .05$
Continence Bowel	1078 (92)	40	23	26	7	4	
Continence Bladder	1051 (89)	41	23	26	7	4	
Climbing stairs	888 (76)	43	22	25	7	4	
Transfer	1042 (89)	42	22	26	7	3	
Walking	996 (85)	43	22	25	7	4	
IADL	**Autonomous**						(7.06; 2.43), (r_{sp}) $p = .000$
Housekeeping	510 (43)	50	21	21	5	3	
Laundry	659 (56)	50	22	24	6	3	
Food preparation	686 (58)	43	23	26	5	3	
Shopping	623 (53)	48	22	23	5	3	
Ability to use the telephone	902 (77)	43	22	26	6	4	(χ^2) all $p < .05$
Transportation	745 (63)	44	22	26	6	3	
Handling finances	776 (66)	42	22	27	6	3	
Responsible for medication	943 (80)	42	23	26	7	3	
Take regularly medication	956 (81)	43	22	26	7	3	

Concerning sensorial and motor handicaps, only 311 (26%) respondents reported any of the limitations listed in the survey (Table 2). Overall, vision and hearing are the most affected senses, with 141 of the respondents reporting some hearing limitation (45% of those reporting any sensorial or motor handicap), and 126 respondents reporting some visual limitation (40% of those reporting any sensorial or motor handicap). At the motor level, monoplegy is the most prevalent handicap (5% of those reporting any sensorial or motor handicap).When asked to evaluate their independency when performing the basic Activities of Daily Living (ADL), the majority of the respondents self-reported themselves as being independent, being the index mean of 8.84 in a 0–10 points scale. Of the activities, the most self-reported problems in performing independently were climbing stairs and bathing (with 76% and 78% of the respondents reporting being independent, respectively) (Table 3). There was a negative association between feelings of loneliness and the scores in the ADL, with those scoring higher, i.e. showing more independency, reporting less feelings of loneliness, r_s $p = -.199$, $p = .000$. Additionally, there were significant associations between feelings of loneliness and each of the basic activities of daily living, all $p < .05$.Regarding the Instrumental Activities of Daily Living, respondents tended to characterize themselves as autonomous, being the index mean of 7.06 in a 0–9 points scale. Of all the instrumental activities, housekeeping (43%), shopping (53%), and food preparation (58%) were the ones that respondents reported having their autonomy most affected (Table 3). As with ADL, there was also an association between feelings of loneliness and the scores in the IADL, with those scoring the highest, i.e. showing more autonomy, reporting less feelings of loneliness, r_s $p = -.191$, $p = .000$. Additionally, there were significant associations between feelings of loneliness and each of the instrumental activities of daily living, all $p < .05$.

Table 4 shows the self-reported participation, satisfaction, and obstacles to participation in recreational and social activities, and their relation with feelings of loneliness. There was no association between the involvement in both recreational and social activities, and feelings of loneliness, r_s $p = -.039$, $p > .05$ and r_s $p = -.026$, $p > .05$, respectively. However, there was an association between the satisfaction with the recreational and social activities, and feelings of loneliness, r_s $p = -.091$, $p = .002$ and r_s $p = -.172$, $p = .000$, respectively. That is, it is not the frequency of the involvement but the satisfaction the person has in taking part of those activities that is associated with self-reported feelings of loneliness. Additionally, Table 4 shows that there is an association between feelings of loneliness and some of the listed obstacles to participants' involvement in the recreational and social activities. Specifically, only medication/medical treatments, and family responsibilities were not associated with feelings of loneliness, χ^2 (4) = 10.52, $p > .05$ and χ^2 (4) = 6.44, $p > .05$, respectively. All the remaining obstacles that were listed had an association with feelings of loneliness: social isolation, χ^2 (4) = 43.22, $p = .000$; lack of interest, χ^2 (4) = 27.69, $p = .000$; transportation, χ^2 (4) = 23.14, $p = .000$; mobility, χ^2 (4) = 23.72, $p = .000$; health, χ^2 (4) = 34.16, $p = .000$; and economic, χ^2 (4) = 13.52, $p = .009$. The obstacle more often chosen was lack of interest (33%) followed by health (20%). Nevertheless, the obstacle in which more feelings of loneliness were reported was social isolation or not knowing anyone (32% of the respondents choosing this item reported felling loneliness often or always).

Finally, to better understand which factors could be predictors of feelings of loneliness all factors that were significantly associated with loneliness in the prior analysis were included in a logistic regression model. Namely, the variables included in the model were: age, gender, marital status, professional status, living arrangements, income, region, type of housing, residence settings (c.f. Table 1); subjective health, health conditions (c.f. Table 2); IADL total, ADL total (c.f. Table 3); recreational satisfaction, social satisfaction, social isolation, lack of interest, transportation, mobility, health, and economic obstacles (c.f. Table 4). The model explains 28% of the variance, and is significant χ^2 (39) = 253.886, $p = .000$. Moreover, Table 5 shows that the variables age, marital status, type of housing, residence setting, acute illness, and overall low levels of satisfaction with social life, social isolation, lack of interest, and transportation obstacles are predictors of self-reported feelings of loneliness. Specifically, being younger is a predictor of individuals reporting feelings of loneliness less frequently. Likewise, being married is a predictor of individuals feeling loneliness less frequently. Living at home predicts loneliness, but living in a small town predicts lower levels of reported loneliness. Regarding health conditions, having an acute illness is a predictor of people reporting feelings of loneliness less frequently, whereas having intermediate, low, and no social satisfaction are strong predictors of people reporting more

Table 4
Recreational and social activities and loneliness.

	Loneliness						
	All: 1174, *n* (%)	Never %	Seldom %	Sometimes %	Often %	Always %	Statistics
Recreational activities							(r_{sp}) $p > .05$
Never	206 (18)	37	18	32	10	3	
Seldom	289 (25)	41	20	29	8	2	
Sometimes	346 (30)	40	26	24	6	3	
Often	181 (15)	34	26	28	6	7	
Always	137 (12)	49	20	29	8	4	
Satisfaction with activities							(r_{sp}) $p = .002$
None	121 (10)	32	18	35	11	4	
Low	137 (12)	29	22	30	13	7	
Intermediate	394 (34)	45	22	26	5	2	
High	324 (28)	41	25	24	6	4	
Complete	140 (12)	42	23	24	7	4	
Social activities							(r_{sp}) $p > .05$
Never	217 (19)	43	17	27	10	3	
Seldom	297 (25)	36	23	29	11	2	
Sometimes	403 (34)	40	25	26	5	4	
Often	169 (14)	39	23	28	3	7	
Always	71 (6)	47	18	20	11	7	
Satisfaction with activities							(r_{sp}) $p = .000$
None	69 (6)	32	12	28	18	10	
Low	167 (14)	24	18	37	14	7	
Intermediate	475 (41)	42	24	26	7	1	
High	321 (27)	44	25	23	4	4	
Complete	107 (9)	47	23	22	5	4	
Obstacles to social and recreational activities (*choose any*)							
Social isolation	66 (6)	14	21	33	18	14	(χ^2) $p = .000$
Lack of interest	388 (33)	30	23	34	8	5	(χ^2) $p = .000$
Transportation	117 (10)	25	21	32	15	7	(χ^2) $p = .000$
Mobility	208 (18)	31	19	31	13	6	(χ^2) $p = .000$
Health	233 (20)	25	23	35	10	7	(χ^2) $p = .000$
Economic	156 (13)	30	19	36	10	5	(χ^2) $p = .009$
Medication and medical treatments	24 (2)	13	29	50	4	4	(χ^2) $p > .05$
Family responsibilities	142 (12)	40	28	26	6	1	(χ^2) $p > .05$

frequently feelings of loneliness. Finally, obstacles to social and recreational activities (being socially isolated, lacking interest in social activities, and not having transportation) are predictors of people reporting feelings of loneliness less frequently. However, this last result must be looked at with caution because loneliness is positively associated with those variables. However, because the question regarding obstacles to social and recreational activities was constructed in such a way that participants could choose any obstacle or none, whatever was applicable, there is a considerable amount of people not choosing any obstacle or just one.

Table 5
Logistic regression model ($R^2 = .28$).

	OR[a]	Sig. (*p*-values)	Upper 95% CI[b]	Lower 95% CI[b]
Age				
Age 50–64	.823	.003	1.373	.273
Age 65–74	.488	.037	.947	.029
Marital status				
Married	−.890	.003	−.301	−1.480
Type of housing				
Living at home	.800	.042	1.572	.029
Permanent institutional care	0[c]			
Residence settings				
Small town	−.575			
Urban	0[c]	.000	−.255	−.895
Health conditions				
Acute illness	−.769	.000	−.354	−1.185
Social satisfaction				
None	1.668	.000	2.547	.788
Low	1.125	.003	1.855	.395
Intermediate	.751	.021	1.389	.112
Obstacles to social and recreational activities				
Social isolation	−1.414	.000	−.819	−2.008
Lack of interest	−.297	.048	−.002	−.592
Transportation	−.465	.044	−.012	−.918

[a] Odds ratio.
[b] Confidence interval.
[c] This parameter is set to zero because it is redundant.

4. Discussion

The main purposes of the present study were to answer the question of how much loneliness is self-reported in the Portuguese population over 50 years of age, and whether feelings of loneliness could be predicted by any socio-demographic, health related, or social characteristics of the population. These questions are of importance because loneliness can be harmful to the individual, and self-reported loneliness can serve as a barometer for individual well-being (Holmén & Furukawa, 2002). Additionally, loneliness seems to be a risk factor for a variety of illnesses and disorders (Luo et al., 2012; Perlman & Peplau, 1984) – and even mortality (Cacioppo et al., 2003; Luo et al., 2012).

Loneliness was assessed through a single question: How often do you feel lonely? (see also, Holmén & Furukawa, 2002; Routasalo et al., 2006; Savikko et al., 2005). The respondents could answer never, seldom, sometimes, often, and always. The main finding was that the majority of our sample reported no loneliness – which goes in line with prior research (Holmén & Furukawa, 2002). Moreover, 12% of our sample reported feeling lonely often or always, against 62% reporting never or seldom feeling lonely (similar levels of those reporting never or seldom feeling lonely were find by, e.g., Routasalo et al., 2006; Savikko et al., 2005). This result helps deconstructing one of the most prevalent myths about old age, carried by common sense and media, that loneliness is highly prevalent in old age (see also, Dykstra, 2009; Ferreira-Alves & Novo, 2006; Wilken, 2008). Despite not being as prevalent in old age as common sense predicts, loneliness still affects a considerable amount of older people (26% of the respondents in the present study reported feeling lonely sometimes). Importantly, loneliness is not exclusive of old age, affecting a significant amount of people in other age groups as well. In fact, approximately 30–50% of younger adults (aged between 15 and 24) report feeling lonely (Dykstra, 2009). This raises awareness about the need to investigate the factors and predictors of this experience.

An important finding from the present study was that, analogous to studies from other countries, there are several socio-demographic, health related, and social characteristics that are associated with feelings of loneliness. Of significance, some have predictive power regarding the degree of loneliness that is self-reported.

4.1. Socio-demographic factors and loneliness

In the present study, the variables age, gender, marital status, living arrangements, region, residential settings, type of housing, professional status, and income were all significantly associated with loneliness (Table 1). We found no significant differences in loneliness between the four considered age groups: adults (50–64), young-old (65–74), old (75–84), and very-old (85–98). However, there was an association between age and loneliness, with the old and very-old groups tending to self-report more loneliness than adults and young-old groups. As Dykstra (2009) mentioned, loneliness in older people is only a problem of those that are very-old, as in the present study (see also, Aylaz, Akturk, Erci, Ozturk & Aslan, 2012; Routasalo et al., 2006; Savikko et al., 2005). In fact, groups adult and young-old are predictors of feelings of loneliness (Table 5). Specifically, younger groups of people in our sample tended to report less feelings of loneliness compared with the older groups. People of all ages may be affected by the emotional condition of loneliness, not only older people (Dykstra, 2009). However, with passage of time, and due to progressive loss of friends, family, and people who share values and ways of living, people may become more isolated. So, possibly it is not age per se that influences loneliness in older adults, but age-related factors such as widowhood or physical incapacity (e.g., Jylha, 2004; Perlman, 2004; Pinquart & Sorensen, 2001). In a review of the literature about the association between loneliness and age, Rook (2000) stated that loneliness is higher in adolescence and young adulthood. Then, it decreases throughout adult life, to increase again in advanced age/or late adulthood, perhaps as a result of widowhood, and the advance of health problems that impede mobility. In a study involving people over 60 years of age, during a 20 years long observational study in Finland, Jylha (2004) observed an increase in loneliness with age. Nevertheless, a multivariate analysis showed that only the composition of the familiar lodger, and social participation were related to loneliness. Jylha (2004) also observed that an increase in loneliness re-appeared in more advanced ages.

In the present study, gender was also associated with loneliness with females reporting more loneliness than man. Studies have generally found differences between genders, with older women being more likely to feel lonely than older men (e.g., De Jong Gierveld et al., 2006; Jylha, 2004; Pinquart & Sorensen, 2001). This result must be regarded with caution, and in relation to other variables, namely the marital status, which is also significantly associated with loneliness. We have found that there are more than twice women in widowhood (48%), and single (12%), than men. Relating this with the previous finding, that marital status is strongly related to loneliness, it appears that, it is not the condition of gender but the conditions of being widow or single which are truly related to loneliness (the percentage of divorced men and women is the same, 6%). In fact, in the present study the condition of being married is a predictor of the level of self-reported loneliness, with those married reporting less loneliness, whereas gender is not a predictor. Other studies have also shown that marital status is associated with loneliness (e.g., De Jong Gierveld et al., 2006), that higher levels of loneliness were associated to unmarried and widowed conditions (e.g., Perlman & Peplau, 1984; Savikko et al., 2005). So, marriage seems to protect against loneliness (Dykstra & De Jong-Gierveld, 2004; Stack, 1998). For instance, Tornstam (1992) found in a random Swedish sample of 2795 individuals between 15 and 80 years of age, that married individuals were, on average, less lonely than unmarried individuals. In yet another study the same trend was observed. In a semi-structured interview of single, married, divorced, and widowed individuals between 25 and 75 years of age, De Jong-Gierveld (1987) reported that living with a partner predicted the lowest levels of loneliness. As in our study, Wenger, Davies, Shahtahmasebi, and Scott (1996) also found that women reported more loneliness, and this result was also interpreted not as a gender issue but due to women living longer than men, and consequently having higher probability of becoming widow.

Living arrangements were also associated with loneliness, with those living alone reporting feeling lonely more often than those who live with someone. Other authors have found similar results; for instance, De Jong-Gierveld (1987) found that living alone is a major risk factor for loneliness in older adults. In a Portuguese study conducted by Paúl, Fonseca, and Amado (2003), rural old people reported having significantly more social relations than people living in an urbane setting. In our study we found that residence settings (rural vs small town vs urban) were associated and a predictor of self-reported loneliness, with those living in an urban setting reporting more loneliness. This finding, however, is in opposite direction to what many studies show, that people living in rural areas feel lonelier (e.g., Routasalo et al., 2006; Savikko et al., 2005). Possibly, the fact that in the Portuguese population, those living in a rural setting have a denser social network (Paúl et al., 2003), it may provide the occasion for more frequent and meaningful social contacts, and hence, less self-reported feelings of loneliness.

Region of living is also associated with loneliness, with those living inland reporting feeling lonely more often. Additionally, type of housing was not only associated with self-reported loneliness but also a predictor, with those living in a permanent residential facility tending to report more loneliness than those living at home (see, Savikko et al., 2005). This is perhaps the most illustrative case of how being with other people, sharing services and routines, does not necessarily mean that people are connected.

In the present study, professional status and income levels also had a significant association with levels of reported loneliness, with those working and those earning more reporting less loneliness. Consistent with this observation, research has shown that a low socioeconomic condition is associated with a high level of loneliness (Hawkley et al., 2008; Perlman & Peplau, 1984; Savikko et al., 2005), and in other studies having an occupation is also related with loneliness (Aylaz et al., 2012). In Pinquart and Sorensen's (2001) meta-analysis, they search for studies that have correlated loneliness to old age and found that individuals from higher social classes typically have more resources and opportunities available to them, which could prevent isolation and explain lower levels of loneliness. Researchers have also found an association between loneliness and self-reported adequacy of financial resources in older people (Cohen-Mansfield & Parpura-Gill, 2007; Mullins, Sheppard, & Andersson, 1991). Wenger et al. (1996) also confirm the relationship between the socioeconomic status and social isolation.

4.2. Health factors, functionality and loneliness

In our study, subjective or perceived health, and health conditions are also associated with loneliness (see, Savikko et al., 2005). In fact, those perceiving their health as weak, and those with a chronic disease reported feeling lonely more often (Table 2). This contrasts with those that report having an acute illness, in which 70% report never or seldom feeling lonely. In fact, acute illness is a predictor of feelings of loneliness (Table 5). So, it seems that having a transitory health problem does not influence feelings of loneliness. Dykstra, van Tilburg and De Jong Gierveld (2005) argued that a decline in health may affect people's ability to manage their tasks, resulting in unmet needs if help cannot be obtained. This inability is probably more debilitating for people with chronic disease than to those with acute illness, which will reflect in the feelings of loneliness. Hence, perceived poor-health represents "unmet needs", and these unmet needs together with feelings of dependency could lead to loneliness (Dykstra et al., 2005). In fact, in our study, feelings of independency and autonomy were negatively associated with feelings of loneliness, with those performing more independently their daily activities reporting loneliness less often (Table 3). These results are in agreement with previous findings in which self-reported loneliness was higher among those more dependent when performing the Activities of Daily Living (Hacihasanoglu, Yildirim, & Karakurt, 2012). Interestingly, functionality, independence, and autonomy do not have predictive power of feelings of loneliness as we might have anticipated.

4.3. Social satisfaction and loneliness

Satisfaction with recreational and social activities, rather than frequency of participation in recreational and social activities, is associated with feelings of loneliness (Table 4). Specifically, the more self-reported satisfaction with recreational and social activities the lesser are the feelings of loneliness. Importantly, satisfaction with social activities is a predictor of loneliness (Table 5). Our results relate with previous findings, that is, it is the perceived quality of the social interactions that predicts loneliness (e.g., Perlman & Peplau, 1984; Routasalo et al., 2006). For instance, in an observational study in Finland, Jylha (2004) found that social participation was related to loneliness. In another Finnish population-based study, Routasalo and collaborators (2006) showed that perceived social satisfaction, and fulfillment of expectations were negatively associated with feelings of loneliness, not frequency of social contacts.

Additionally, several obstacles to involvement in social and recreational activities were associated with loneliness: social isolation, lack of interest, transportation, mobility, health, and economic (Table 4). Of importance, of these obstacles, social isolation, lack of interest, and transportation are predictors of loneliness (Table 5). Honigh-de Vlaming, Haveman-Nies, Groeniger, Groot, and vant't Veer (2014) studied a community dwelling of older people and found that between 2005 and 2010 loneliness did not change. However, and this is the relevant finding for the present discussion, there was an exception: older adults with limitations in one or more activity increased their self-reported loneliness from 2005 to 2010. This is of relevance because we found that associated and a predictor of loneliness was the obstacle to social and recreational activities "transportation". So, lack of transportation could be seen as a limitation to activity, which could then influence the degree of self-reported loneliness.

In sum, our results show that the prevalence of self-reports of never or seldom feeling lonely is equivalent to other countries. Specifically, Savikko and collaborators (2005) reported that among the Finnish elderly population, 61% reported never or seldom feeling lonely, which is equal to what we found in the Portuguese population. However, whereas only 5% reported feeling lonely often or always in the Finnish study, in the present report 12% chose those categories (8% chose often and 4% always). This result goes in line with Dykstra's (2009) review, that individuals from southern European countries report more loneliness than individuals from northern countries. However, we believe that this North-South difference could be more attributable to the way the question was built, than to a North-South difference per se. In the present study, respondents had 5 categories of response to choose from (Never, Seldom, Sometimes, Often, and Always), whereas in the Finnish study respondents had only 3 categories (Never–Seldom, Sometimes, and Often–Always). This could have biased the Finnish population to choose the category "sometimes" when, if available, the suitable alternative would have been "often". Finally, our results show that, in all, the same variables that predict loneliness in other countries are the roughly same in the Portuguese population. This result strengths our belief that the North-South difference could be more the result of the categories available to the respondents.

5. Conclusion

The phenomenon of loneliness is multivariate, has multiple meanings, and can be experienced negatively or positively. It is not exclusive to old age, and we must be cautious about loneliness's relationship with old age spread by the media. Absence of studies on loneliness patterns or trajectories among older adults, make the present report a valuable insight into this topic. Additionally, few studies have examined the variables that might predict different patterns of loneliness, which is another contribution from the present report. We used a single-self-rating-question to measure loneliness and found that age, marital status, type of housing, residence settings, health conditions, social satisfaction, social isolation, lack of interest, and transportation are predictors of self-reported feelings of loneliness. These results are analogous to

Savikko and collaborators (2005) observations in which poor functional status, widowhood, poor income, living alone, poor health, female gender, and high age are predictors of loneliness. The study of loneliness is of significance because it can influence perceived quality of life, and is often associated with poor physical condition. Moreover, it is related with poor mental health, as depression (Cacioppo et al., 2006). Potentially, the study of loneliness is an avenue of research to improve health, and the quality of life of older people.

Conflict of interest

José Ferreira-Alves, Paula Magalhães, Lara Viola and Ricardo Simoes certify that they do not have any conflict of interest that could compromise the subject matter or materials discussed in this article.

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Appendix A

Correlations between independent variables included in the logistic regression model. Numbers stand for the independent variables: 1 – age; 2 – gender; 3 – marital status; 4 – professional status; 5 – living arrangements; 6 – income; 7 – region; 8 – type of housing; 9 – residence settings; 10 – subjective health; 11 – health conditions; 12 – recreational satisfaction; 13 – social satisfaction; 14 – social isolation; 15 – lack of interest; 16 – transportation; 17 – mobility; 18 – health; 19 – economic; 20 – IADL total; and 21 – ADL total.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1		**	**	**	**	**	–	**	–	**	**	–	–	–	–	**	**	**	–	**	**
2			**	–	*	**	–	–	**	**	**	–	*	–	–	–	**	*	*	–	**
3				**	**	**	–	–	*	*	–	–	–	–	–	–	–	–	*	–	**
4					–	**	–	**	–	**	**	–	–	–	–	*	**	**	–	**	**
5						–	–	**	**	–	–	–	–	–	–	–	**	–	**	**	**
6							–	**	–	**	**	–	–	–	–	*	–	**	**	**
7								*	–	–	*	–	–	–	–	*	–	–	–	**	**
8									*	–	*	–	**	–	–	–	**	–	**	**	**
9										**	–	**	**	–	–	**	–	–	–	**	*
10											**	*	**	*	–	**	**	**	**	**	**
11												–	**	–	–	**	**	**	–	**	**
12													**	**	**	–	**	*	–	**	**
13														**	**	**	**	**	–	**	**
14															*	*	–	–	–	–	–
15																–	–	–	–	**	–
16																	**	**	**	**	**
17																		**	–	**	**
18																			*	**	**
19																				*	–
20																					**
21																					

– no correlation.
* Correlation is significant at .05 level.
** Correlation is significant at .01 level.

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