

Introduction

There is growing interest in the role of positive psychological variables on the well-being of older people. However, the levels and the role of these positive variables in institutionalized settings remain to be elucidated. Traditionally, studies in these settings focused on negative psychological variables and negative well-being aspects (e.g., Costa et al., 2013; Creighton, Davison, & Kissane, 2016; Damián, Pastor-Barriuso, & Valderrama-Gama, 2010; Desai et al., 2016; Uma devi, KavithaKiran, & Swachita, 2015; Vicente et al., 2014).

Institutionalization for most older people is not the result of a willingly or easy decision (Bucur, Bucur, & Runcan, 2013; Friedman, Steinwachs, Rathouz, Burton, & Mukamel, 2005; Luppa et al. 2012). In fact, most of the institutionalized elderly present depressive (e.g., Damián et al., 2010; Jerez-Roig et al., 2016; Vicente et al., 2014) and anxiety symptoms (e.g., Creighton et al., 2016; Daniel, Vicente, Guadalupe, Silva, & Santo, 2015), feelings of loneliness (e.g., Costa et al., 2013; Desai et al., 2016; Vicente et al., 2014), and low levels of satisfaction with life (Pardal et al., 2013; Uma devi et al., 2015). However, the presence of these problems is not always linked with institutionalization as there are diverse sociodemographic correlates reported for anxiety (Creighton et al., 2016) and depressive symptoms (Pena, 2014; Runcan, Hațegan, Bărbat, & Alexiu, 2010), loneliness (Costa et al., 2013), affectivity (Espirito-Santo et al., 2013), and satisfaction with life (Pena, 2011).

Since institutionalization is a non-predicted or non-expected life transition, it can constitute a vulnerability factor, whereby positive psychological variables might be expected to play a role in the alleviation of suffering of institutionalized elderly. Optimism is a positive psychological variable that has been expounded as a disposition or attitude to anticipate a positive future (Reker, 1997; Scheier & Carver, 1985), giving strength to the belief that behaviors will influence results (Peterson & Bossio, 2001). Optimism is related to

psychological adjustment (Chang & Sanna, 2001) and also plays a role in physical health (Friedman et al., 2006).

Many positive psychological variables have been correlated with optimism among older adults, including hope (Barros-Oliveira, 2010), mental health (Achat, Kawachi, Spiro, DeMolles, & Sparrow, 2000; Bretherton & McLean, 2014; Vahia et al., 2010), **satisfaction with life** (Ju, Shin, Kim, Hyun, & Park, 2013; Utsey, Hook, Fischer, & Belvet, 2008), social support (Dumitrache, Windle, & Rubio Herrera, 2014; Ferguson & Goodwin, 2010), positive affect and purpose in life (Ferguson & Goodwin, 2010), less **loneliness** in older men (Rius-Ottenheim et al., 2011), less worry, anxiety, neuroticism, and **depressive symptoms** (Stanley et al., 2002). In contrast, it should be noted that one study (Isaacowitz & Seligman, 2001) have shown that the *very* optimistic were at greater risk for **depressive symptoms** after negative life circumstances, and another study (Wrosch, Jobin, & Scheier, 2016) found out that optimism protective role on emotional well-being (EWB) is reduced in the oldest-old.

Similarly, in physical health, optimism correlates with many conditions and aspects, **such as** self-rated health (Chopik, Kim, & Smith, 2015; Dumitrache et al., 2014; Giltay et al., 2007), less ailments (Achat et al., 2000; Chopik et al., 2015; Ikeda et al., 2011), coping with hearing impairment (Andersson, Melin, Lindberg, & Scott, 1995), and with certain degenerative conditions (Ridder, Schreurs, & Bensing, 2000). **Optimism** also seems to decrease the risk of stroke (Kim, Park, & Peterson, 2011) **and** coronary heart disease among men (Kubzansky, Sparrow, Vokonas, & Kawachi, 2001), and to be important in maintaining **a** healthy aging (Lewis, 2013; Steptoe, Wright, Kunz-Ebrecht, & Iliffe, 2006). The less optimistic also behave in unhealthier ways. **They** are less physically active (Giltay et al., 2007) **and** smoke more (Chopik et al., 2015; Giltay et al., 2007; Kubzansky et al., 2001). **Interestingly**, higher alcohol intake **appears to be correlated with being more** optimistic (Giltay et al., 2007). **On the contrary**, others revealed optimism does not correlate with overall physical function in women

(Umstattd, McAuley, Motl, & Rosengren, 2007), smoking, being physically active, or drinking (Achat et al., 2000; Ikeda et al., 2011).

Analogously, some demographic factors present mixed results. While some have indicated optimism increases with age (Ikeda et al., 2011; Lennings, 2000), others showed that it increases before decreasing in an inverted U-shaped pattern (Chopik et al., 2015), or that older adults are less optimistic than adolescents and adults (Barros-Oliveira, 2010).

Another characteristic related with optimism is education level, with those with higher literacy having higher levels of optimism (Achat et al., 2000; Giltay et al., 2007; Ikeda et al., 2011; Kostka & Jachimowicz, 2010). This result is predictable, considering that higher educational attainment level is linked to fewer chronic illnesses (Nilsen et al., 2014; Wilson, Yu, James, Bennett, & Boyle, 2016), more healthier behaviors (van der Berg et al., 2014), and better EWB in older people (Costa et al., 2013; Espirito-Santo et al., 2013).

Finally, how about institutionalization? Almost all the reviewed literature on optimism concerns with community-dwelling adults and only six studies analyzed this construct in long-term care settings (Table 1). Among the more recent ones, Kostka and Jachimowicz (2010) reported a low level of optimism among institutionalized older people. In the earliest studies, Reker and Wong (1985) found that the more optimistic perceived more physical and psychological well-being and were less depressed. Later, Reker (1997) revealed that institutionalized elders had lower levels of optimism compared to those living in the community. If we compare the results of these studies with others taking place in various environments (Table 1), different levels of optimism are apparent (Barros-Oliveira, 2010; Kostka and Jachimowicz, 2010; Neto & Barros, 2001). Usually, optimism is higher in the community-dwelling contexts (Giltay et al., 2007; Ikeda et al., 2011; Ju et al., 2013; Kim et al., 2011; Kostka and Jachimowicz, 2010). Bretherton and McLean (2014), studying

Click
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Table 1

1 residents of retirement villages, observed similar levels and additionally, showed that optimism
2 made a unique contribution to psychological health.
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4 As we wrote in the beginning, institutionalization may leave older adults more exposed to
5 negative well-being outcomes. In this context, identifying which positive aspects remain intact
6 is clinically useful, as they may function as intrapersonal resistance factors that are usually
7 responsive to intervention (Bretherton & McLean, 2014). Moreover, evidence indicates that
8 optimism correlates positively with many positive mental and physical health outcomes, and it
9 is predictable that those who score high in optimism would experience better EWB. However,
10 it is still undetermined whether optimism could be a relevant positive aspect for the well-being
11 of institutionalized older people. Moreover, as a somewhat contrasting evidence, some classic
12 studies reported activity, aggression, and narcissistic body image — a “combatative style” —
13 as markers for better adjustment to institutionalization (e.g., Turner, Tobin, & Lieberman,
14 1972).
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17 To the best of our knowledge, studies analyzing optimism levels remain limited among
18 institutionalized older people, as only two studies (Reker, 1997; Reker & Wong, 1985)
19 connected optimism to a well-being outcome (depression). Further, there are just two studies
20 on optimism in Portuguese institutionalized settings (Barros-Oliveira, 2010; Neto & Barros,
21 2001), although with mixed characteristics (day care center; LTCH and community-dwelling).
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24 Considering the indicative evidence, our goals were to: (1) determine relative levels of
25 optimism in the context of other studies and intensity of EWB; (2) investigate the relationship
26 between study variables (optimism and EWB) and sociodemographic-clinical variables, and
27 detect potential covariates; (3) verify if optimism was correlated with depression and analyze
28 to which of other EWB variables was linked (as measured by anxiety, satisfaction with life,
29 affectivity, and loneliness); (4) examine the unique and combined contribution of optimism in
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predicting each EWB, after taking into account the role of covariates in an aging cohort of institutionalized people.

Design and Methods

Participants and procedure

Participants were recruited from five long-term care homes (LTCH) for older people in the Center region of Portugal (Coimbra and Aveiro). LTCH were chosen using geographical convenience sampling. These LTCH are non-profit private institutions of social solidarity, funded by the Portuguese government, that provide integrated continuous care for older adults, in exceptional circumstances with less than 65 years, of every social status, medical conditions, and functional status. Four of the LTCH were in a mixed environment (semirural or semi-urban) and one in an urban context.

Eligibility criteria entailed age above 65 years, the ability to understand questions, and the ability to give informed consent themselves. Additional exclusion criteria comprised the inability to speak and understand Portuguese, cognitive impairments, and diagnosed mental diseases. Of 303 residents, 202 (66.7%) were not eligible and 35 (11.6%) refused to participate or did not answer all questionnaires. A final sample of 66 (21.8%) individuals agreed to bestow data for research goals. This sample included 21 men (31.8%) and 45 women (68.2%), with ages ranging from 65 to 94 years ($M \pm SD = 80.85 \pm 7.49$); the number of children varied from 0 to 4 ($M \pm SD = 1.19 \pm 1.33$), and years of education from 0 to 9 years ($M \pm SD = 2.62 \pm 1.96$). We present other sociodemographic variables, physical-health and medical problems (PMP) in Table 2.

(INSERT TABLE 2 ABOUT HERE) (Click here to go to Table 2)

Participants answered about a variety of sociodemographic and PMP, confirmed in the medical/nursing records. All willing participants responded to the questionnaires with trained psychologists, signing an informed consent informing about the study, procedures, anonymity, and confidentiality. The measures were counterbalanced to avoid order bias and administered individually during a single session. Ethical approval was received from Instituto Superior Miguel Torga Ethics Committee.

Measures

Study variables

The *Optimism Scale* [OS; de Oliveira (1998)] it is a reliable questionnaire, consisting of 4 statements describing attitudes towards the world and the way the individual sees him/herself (e.g., *I face the future with optimism*). Responses are rated on a 5-point scale (*totally disagree* to *totally agree*), with higher scores representing greater dispositional optimism. In the current study, reliability was very good (Cronbach's alpha = .90).

The *Geriatric Anxiety Inventory* [GAI; Pachana et al. (2007); Portuguese version: Daniel et al., (2015)] is a 20 item (e.g., *I always anticipate the worst will happen*) reliable and valid scale (Daniel et al., 2015) measuring Anxiety symptoms in older people, with two response categories (*agree* or *disagree*), with lower scores indicating less symptoms. In the current study, item reliability was excellent (Cronbach's alpha = .96).

The *Geriatric Depression Scale* [GDS; Yesavage et al. (1983); Portuguese version: Barreto, Leuschner, Santos, & Sobral (2003)] is a 30-item reliable questionnaire (e.g., *Do you frequently feel like crying?*) that assesses depressive symptoms in older adults with two possible responses (*yes* or *no*), with lower scores representing elevated mood. In this study, GDS exhibited high internal consistency ($\alpha = .83$).

Satisfaction With Life Scale [SWLS; Diener, Emmons, Larsen, & Griffin (1985); Portuguese version: Neto (1993)] consists of 5 items (e.g., *So far I have gotten the important things I want in life*) assessing the judgmental component of subjective well-being, with responses on a 5-point scale (*strongly disagree* to *strongly agree*) in the Portuguese version. The higher the score, the higher the satisfaction. This scale showed good reliability with Cronbach's alpha of .80.

Positive Affect (PA) and *Negative Affect* (NA) of the *Positive Affect and Negative Affect Schedule* (Watson, Clark, & Tellegen, 1988). The reliable Portuguese adaptation (Simões, 1993) consists of 11 items to assess the positive affect (e.g., *Inspired*) and 11 items for the negative affect (e.g., *Guilty*) with a response format of a five-points Likert scale (*Very little* to *Very much*). For the present study, we retained the 10 analogous items to Watson's original ones for each scale. The correlation coefficient between 11 and 10 items version were high (PA: $r = 0.99, p < .001$; NA: $r = 0.97, p < .001$). Higher scores correspond to elevated positive and negative affect in the respective scales. In the current study, reliabilities for both PANAS subscales were good (Cronbach's alpha's: NA = .79; PA = .78).

The *Loneliness Scale of the California University* (LS-UCLA) was developed to assess the subjective feelings of loneliness (Russell, Peplau, & Ferguson, 1978). The valid Portuguese adaptation (Pocinho, Farate, & Dias, 2010) comprises 16 items with responses rated on a 4-point Likert scale (*Never* to *Often*), with higher scores representing more loneliness. Seven participants (10.1%) refused to answer LS-UCLA. In the current study, reliability was excellent (Cronbach's alpha = .97).

Sociodemographic and physical-medical variables

Demographic characteristics included gender, age, number of children, marital status (dichotomized into "married" — currently married or living with someone as if married — vs. "single" — never married, separated, divorced or widowed), duration of institutionalization,

1 years of education as a metric and categorized variable (categorized into illiterate, 1-3, and ≥ 4
2 years), previous occupation (manual vs. intellectual), and residency area (mixed vs. urban).
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4 Physical health was assessed through a checklist of 32 questions about several PMP, including
5 pain (e.g., *Have you felt any pain in the last two weeks?*), stroke, heart attack, diabetes mellitus,
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7 brain trauma, or epilepsy (e.g., *Have you ever had a stroke?*), sensorial problems (vision and
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9 hearing; e.g., *Do you need/use hearing aids?*), cardiovascular (e.g., *Do you have*
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11 *hypertension?*), genitourinary (e.g., *Do you have difficulties in control urine?*), respiratory
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13 (e.g., *Do you have difficulties in breathing?*), neurological symptoms (e.g., *Do you have*
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15 *difficulties in walking?*), smoking and drinking (e.g., *Do you smoke or ever smoked more than*
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17 *one cigarette a day?*), and physical exercise (e.g., *Do you do any kind of physical exercise for*
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19 *more than 30 mins a day?*). Medical conditions were confirmed in the medical/nursing records.
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21 Eight (11.6%) older adults were not questioned due to institutional time constraints or because
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23 they refused to answer. The overall number of problems resulted from summing up checklist
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25 answers, with higher scores indicating worse physical state.
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36 **Statistical Analysis**

37 We performed data analyses using SPSS for Macintosh, version 24.0 (Chicago, IL, USA).
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39 We tested all variables for normal distribution and homogeneity of variance, and parametric
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41 assumptions were met for all data [(Shapiro-Wilk test $p > .05$; Levene's tests confirmed
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43 homoscedasticity ($p > .05$)], except for GAI, SWLS, and LS-UCLA. However, skewness and
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45 kurtosis values were small, indicating acceptable normal
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47 distributions.
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53 According to the first goal, we wanted to analyze the relative levels of optimism by determining
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55 whether our sample reported a similar degree of optimism as other samples of older adults in
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57 previous research. However, since most previous studies used different optimism scales and
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1 variants, with different response scorings processes (0-2, 0-4, 1-5, 1-6) and different number
2 of items (3, 4, 6, and 8), we converted scores to the *percent of maximum possible* (POMP)
3 according to Cohen, Cohen, Aiken, and West (2010) formula: $M_{POMP} = (M - \text{minimum possible}$
4 $\text{score}) / (\text{maximum possible score} - \text{minimum possible score}) \times 100$. The transformed scores
5 ranged between 0 and 100, permitting direct appraisals of scores throughout different scorings,
6 scales, and scales variants.

7 For the second and third goals, we used Pearson's and point-biserial correlations or eta
8 coefficient to assess the relationships between optimism, EWB and sociodemographic and
9 physical-clinical variables. We also have plotted data, and as the plot resembled a mathematical
10 function (quadratic), we have fitted data to the appropriate curve estimation regression model.
11 Next, following the procedure of Chopik et al. (2015), to model association between age and
12 optimism, we performed a hierarchical multiple regression analysis (HMRA) predicting
13 optimism from the linear, quadratic (age^2), and cubic (age^3) effects of age. Previously, we
14 centered age to calculate the higher-order terms.

15 Finally, we computed a HMRA for each EWB variable. Correlations among optimism and
16 covariates raised no concerns about multicollinearity and covariates were chosen based on
17 methodological grounds. For sociodemographic and/or PMP covariates, they were entered as
18 a control in block 1, followed by optimism in block 2. For EWB covariates, they were included
19 in block 1, then optimism in block 2. As we expect an interaction between optimism and
20 remaining EWB measures, we entered interactions in block 3, following guidelines from
21 Darlington and Hayes (2017).

22 In these HMRA, the R^2 change informs on the variance of each variable explained by each
23 block. Within each block, the standardized regression weights inform on the relative
24 contribution of individual variables.

Results

Objective 1. Assessment of optimism and emotional well-being

We present results of descriptive analyses in Table 3.

[INSERT TABLE 3 ABOUT HERE] ← (Click here to go to Table 3)

Given POMP formula, participants showed a low level of optimism, and lowest in comparison to all other samples (Table 4).

[INSERT TABLE 4 ABOUT HERE] ← (Click here to go to Table 4)

Objective 2. Relationships of study variables with sociodemographic-clinical variables

Correlation analysis between sociodemographic and study variables (Table 5) revealed no significant relationships ($p > .05$), except for education level, with those with a lower level education feeling more loneliness. Not doing physical exercise correlates moderately with less optimism and more loneliness. Having body pain correlates with less positive affect; urinary incontinence with less optimism, smoking with less negative affect; diabetes with more depressive symptoms; hearing loss with more depressive and loneliness symptoms, less satisfaction with life; and number of PMP with more loneliness.

[INSERT TABLE 5 ABOUT HERE] ← (Click here to go to Table 5)

As optimism and age had a nonlinear relation, we calculated the eta coefficient, resulting in a value of 0.56 ($\eta^2 = 31.5\%$). According to the curve estimation regression model, higher values were among the youngest-olds (≤ 70 years: $M \pm SD = 10.12 \pm 6.20$), and the oldest-olds (≥ 91

years: $M \pm SD = 10.00 \pm 3.46$), with a descended of optimism between 71 and 80 years, and a slight ascended between 81 and 94 years (Figure 1).

[INSERT FIGURE 1] [← \(Click here to go to Figure 1\)](#)

However, the HMRA revealed that none of the age effects (linear, quadratic, cubic) was the best fit to the data for optimism ($R = .07$, $F(1, 65) = 0.29$, $p > .05$), dismissing a U-shape association.

Objective 3. Optimism and emotional well-being relationships

Each of the well-being variables, except negative affect, correlated significantly with OS (Table 5), positively with SWLS and PA, and negatively with GAI, GDS and LS-UCLA. Effect sizes were moderate and the percentage of variance explained ranged from a low of 9.61% (OS and GDS) to a high of 12.8% (OS and PA).

Objective 4. Predicting emotional well-being by optimism

Optimism was a significant predictor of GAI ($\beta = -.33$, $p = .006$). HMRA for GAI included GDS, SWLS, NA, and PA in block 1, followed by OS in block 2, and preceding EWB x OS interaction on block 3 ($\Delta R^2 = .00$). In the final model, only optimism predicted GAI ($\beta = -.36$, $p < .01$).

Similarly, optimism was a predictor of GDS ($\beta = -.31$, $p = .011$). After the inclusion of hearing loss and diabetes in block 1, and OS in block 2 ($\Delta R^2 = .06$), diabetes and OS predicted GDS (respectively, $\beta = 2.08$, $p < .05$; $\beta = -2.06$, $p < .05$). When GAI, SWLS, NA, PA, LS-UCLA were included in block 1, OS in block 2, and preceding EWB x OS interaction in block 3 ($\Delta R^2 = .029$), only NA predicted GDS ($\beta = .40$, $p < .05$).

In relation to SWLS, optimism was a significant predictor ($\beta = .35, p < .05$). After entering hearing loss in block 1 and OS in block 2 ($\Delta R^2 = .07$), optimism did not significantly predicted SWLS ($p > .05$). In the second model, GAI, GDS, PA, LS-UCLA were entered in block 1, OS in block 2, and preceding EWB x OS interaction in block 3 ($\Delta R^2 = .001$). In the final model, none of the variables/interaction predicted SWLS ($p > .05$).

Optimism was also a significant predictor of PA ($\beta = .36, p < .01$). In the first model, after including pain in block 1 and OS in block 2 ($\Delta R^2 = .10$), optimism still predicted PA ($\beta = 2.63, p < .05$). In the second model, GAI, GDS, SWLS, LS-UCLA in block 1, OS in block 2, and preceding EWB x OS interaction in block 3 ($\Delta R^2 = .00$), none of the variables/interaction predicted PA ($p > .05$).

Finally, optimism was too a unique significant predictor of LS-UCLA ($\beta = -.34, p < .01$). In first HMRA, after taking account physical activity and hearing loss in block 1, only hearing loss predicted LS-UCLA ($\Delta R^2 = .03; \beta = -.26, p < .05$). Optimism contribution did not disappear after second HMRA took in account GDS, SWLS, PA in block 1, OS in block 2, and previous EWB x OS interaction in block 3 ($\Delta R^2 = .03; \beta = -.50, p = .053$).

Supplementary analyses

Considering the results above and the study of Chopik et al. (2015), we additionally calculated the percentiles of optimism, and mean scores of well-being variables for each percentile (Figure 2). ANOVA revealed significant differences in almost EWB variables (GDS, $F = 3.36, p = .024, \eta^2 = .14$; SWLS, $F = 3.90, p = .016, \eta^2 = .24$; PA, $F = 4.57, p = .006, \eta^2 = .19$; LS-UCLA, $F = 3.65, p = .018, \eta^2 = .16$), except GAI and NA ($p > .05$). Although GT2 Hochberg's tests did not reveal any differences (Bonferroni corrected $p > .0083$), except the comparison low vs. very-optimistic for PA, there were large effect sizes in the following comparisons: GAI, low-optimistic vs. very-optimistic (Cohen's $d = .84$); SWLS, low vs. moderately-optimistic,

low *vs.* optimistic, and low *vs.* very-optimistic (Cohen's $d = 1.26$; Hedges's $g = 0.97$; Hedges's $g = 0.95$); PA, low *vs.* very-optimistic and optimistic *vs.* very-optimistic (Cohen's $d = .88$; Hedges's $g = 0.89$); LS-UCLA, low *vs.* very-optimistic (Cohen's $d = 1.14$).

[INSERT FIGURE 2 ABOUT HERE] <— (Click here to go to Figure 2)

Discussion

The present study analyzed optimism levels and tested whether optimism could be a relevant positive aspect for the well-being of institutionalized older people as assessed by anxiety and depressive symptoms, satisfaction with life, affectivity, and feelings of loneliness. Results indicate that the current sample is not very optimistic and that optimism correlates moderately with all the well-being variables among institutionalized older adults. However, optimism associations with these variables do not hold when controlling for physical-emotional covariates.

According to the first objective, older adults of the present study reveal lower levels of optimism compared to similar groups reported in the literature, both Portuguese (Barros-Oliveira, 2010; Neto & Barros, 2001), and non-Portuguese (Bretherton & McLean 2014; Kostka & Jachimowicz, 2010). However, the combination of older age and the LTCH of the present sample could explain why optimism was so low. In fact, there are findings suggesting that the oldest-old have declines in optimism (Chopik et al., 2015). Moreover, in the study of Kostka and Jachimowicz (2010) the group of elderly residents of LTCH were younger than our sample, and had a lower level of optimism compared to a veteran home and a community-dwelling group (their LTC and veteran homes groups had similar ages). Our explanation is also sustained by the higher optimism levels reported in samples from mixed residency settings (Barros-Oliveira, 2010; Bretherton & McLean, 2014; Neto & Barros, 2001), and in

community-dwelling groups (Giltay et al., 2007; Ikeda et al., 2011; Ju et al., 2013; Kim et al., 2011). Nevertheless, in Kostka and Jachimowicz (2010)'s study, although younger than our older adults, the age differences were small, which suggests the existence of context differences and that current findings must be supported by other studies with institutionalized elders in order to be generalized. Other explanations for our findings are the high levels of anxiety (Daniel et al., 2015), depressive (Yesavage et al., 1983) and loneliness symptoms (Pocinho et al., 2010), and the low levels of positive affect (Kercher, 2016) and satisfaction with life (Diener et al., 1985). As we have mentioned in the introduction, these characteristics have been correlated with optimism (respectively: anxiety, Stanley et al., 2002; depressive symptoms, Achat et al., 2000; positive affect, Ferguson & Goodwin, 2010; satisfaction with life, Ju et al., 2013; Utsey et al., 2008). Moreover, medical conditions and comorbidities can also account for the lower levels of optimism of the current study (Andersson et al., 1995; Giltay, Kamphuis, & Kalmijn, 2006; Kim et al., 2011; Lewis, 2013; Steptoe et al., 2006).

In regards to the second objective, except for age, sociodemographic characteristics do not significantly associate with optimism. The finding concerning age is not surprising, because the literature reported mixed results (Barros-Oliveira, 2010; Giltay et al., 2007; Kostka & Jachimowicz, 2010; Lennings, 2000). Nevertheless, the inverted U-shaped course of optimism reported by Chopik et al. (2015) is not apparent in our study, and although there is a trend (higher levels in ≤ 70 and ≥ 91 years, with a decrease of optimism in the first 20 years and then a slight increase in the second half), a clear U-shape association between age and optimism is not observed. We do not know if institutionalized elders perceive death more closely, but considering that as a hypothesis, our findings are somewhat consistent with a recent study with people closed to death (including terminally-ill patients and death row inmates). This study revealed that people tend to be more positive as death approaches, partially because of a differential attention to social connection and religion (Goranson, Ritter, Waytz, Norton, &

Gray, 2017). Another way to consider our results, is the evidence indicating that those who get into the very old age tend to have a positive outlook on life, and those with worse mental status tend to die earlier (e.g., Richmond, Law, & Kay-Lambkin, 2011). Given the low number of elders over 91 years, and the small overall sample size, new avenues are open to research, including the analysis of perception of death, attention to social connection, and religiousness in the institutionalized context.

As most studies reported that optimism increases with educational level (Giltay et al., 2007; Ikeda et al., 2011; Kostka & Jachimowicz, 2010), our result comes into question. However this could be related with the context of the sample (Kostka & Jachimowicz, 2010), and with the general low educational level of the present sample. In Giltay et al. (2007), there is a relevant number of higher educated elders and in Ikeda et al. (2011) it is apparent a higher level of education. In the Kostka and Jachimowicz (2010) institutionalized group, education level does not correlate with optimism, contrarily to the correlations observed in the other groups, and their group also had the lowest education level.

Although marital status is rarely reported (Achat et al., 2000), it is thought that a partner provides emotional and instrumental support that could act as a source of positive affect (Pressman & Cohen, 2005). However, there is no influence of this characteristic, which is backed up in another study with a different older sample (Achat et al., 2000). Probably this happens because optimism is more of a positive *perception* and *expectation* (cognitive aspect) (Scheier & Carver, 1985) than an affect or emotion.

Continuing with the second objective, from the PMP, only physical exercise and urinary incontinence correlate statistically with optimism. Some of these results are partially supported by other studies (Giltay et al., 2007; Kostka & Jachimowicz, 2010; Steptoe et al., 2006), although Giltay et al. (2007) uncovered associations not revealed in the present research (cardiovascular and diabetes conditions). It is known that health deteriorates with age (e.g.,

Kennedy et al., 2014), and given the associations between health and optimism (e.g., Achat et al., 2000; Dumitrache et al., 2014; Ridder et al., 2000), one could expect that with the declining health, a decrease in optimism would follow. However, review of Chopik et al. (2015) suggests that changes in health do not cause changes in optimism, and in fact we did not find a correlation between optimism and the number of PMP (like Ikeda et al., 2001). The hypothesis from Chopik et al. (2015), in the line of Fredrickson's broaden-and-build theory (2004), could give an explanation. According to the authors, the relation between optimism and health is reciprocal going along in recurring cycles, either negative or positive. Another line of argumentation could be the different social representations associated with clinical conditions. Older Portuguese institutionalized adults with urinary incontinence may feel more socially isolated and stigmatized, as some evidence points out (Monz et al., 2005; Senra & Pereira, 2015), which, in turn could reflect in lower optimism.

In regards of third objective, correlation analysis showed that higher levels of optimism correlate moderately with fewer anxiety, depressive, and loneliness symptoms, and more satisfaction with life and positive affect (with no correlation with negative affect). These findings bring additional evidence to the revised literature (Giltay et al., 2007; Ikeda et al., 2011; Isaacowitz & Seligman, 2002; Kostka & Jachimowicz, 2010; Rius-Ottenheim et al., 2011; Vahia et al., 2010). It is worth to note that the very optimistic have low levels of satisfaction with life and positive affect and higher levels of anxiety, depressive and loneliness symptoms, which is supported by Isaacowitz and Seligman (2002), indicating that extreme optimism could be a maladaptive attitude also for institutionalized older people.

For the last objective, optimism uniquely predicted each EWB variable. However, optimism predictive role disappears after taking into account a diversity of emotional, sociodemographic, and PMP aspects, except for anxiety symptoms and feelings of loneliness. Nevertheless, most old participants have high levels of anxiety, depression, loneliness, negative

affect, and low levels of positive affect and satisfaction with life. Therefore, the predictive or non-predictive role of optimism over and above covariates should not be regarded as a definitive outcome. Nevertheless, we highlight the fact that optimism did not make a unique contribution to loneliness over and above clinical covariates. Instead, loneliness was predicted by hearing loss, which is in line with results of a multinational study on social representations of hearing loss (Manchaiah et al., 2015).

Some limitations of the current study need to be recognized. The sample size was not large enough and more participants should be recruited to permit the statistical analyses of the actual study. Depending on the number of predictors/covariates, according to G*Power software (Faul, Erdfelder, Buchner, & Lang, 2009), between 92 and 118 participants would be needed for a medium effect ($f^2 = 0.15$), with an 80% power and alpha of .05. Still, sociodemographic, PMP, and EWB covariates were controlled for and interactions were tested in the regression models. The sample was engaged from individuals living in the central region of Portugal, which may limit the generalizability of the findings. Other determinants of optimism could be assessed, most notably stress (Bretherton & McLean, 2014) and personality (Stanley et al., 2002). Finally, as a cross-sectional, this study does not elucidate the type of relationship between optimism and well-being, which probably is bidirectional. Likely, optimistic older people are more prone to have a healthy and positive lifestyle, and their lifestyle possibly reinforces back their optimism. As a proposal for future investigations, longitudinal designs should be considered to verify the direction of relationships.

Conclusions and clinical implications

Optimism is low among Portuguese institutionalized older people and relates to aspects of physical and emotional well-being. Additionally, given the relationships with emotional well-being, institutionalized elders with low levels of optimism should be assessed for an anxiety

and/or a depressive disorder, and, in that case, be referred for treatment. Moreover, they should also be screened for loneliness and low satisfaction with life, and maybe psychosocial interventions could be of help. If future studies support our findings, we are optimistic that they will inspire further research to analyze interventions that promote optimism-beneficial combinations of well-being in this population.

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Figure 1. Scatter plot of optimism and age. Fitted curve are based on a quadratic curve estimation regression model.

Figure 2. Anxiety (GAI) and depressive symptoms (GDS), satisfaction with life (SWLS), negative (NA), and positive affect (PA), and loneliness (LS-UCLA) mean scores for each optimistic type.

Table 1

Levels of optimism in older adults living in different residential settings

Context	Studies	Measure	<i>M</i> ± <i>SD</i>	<i>Min-Max</i>
LTCH	Kostka & Jachimowicz (2010)	LOT-R variant	14.0 ± 4.1	0 – 24
	Reker (1997) ^b	Own scale	13.1 ± 8.8	—
Mixed ^a	Kostka & Jachimowicz (2010)	LOT-R variant	16.0 ± 5.5	0 – 24
	Barros-Oliveira (2010)	Own scale	3.55 ± 0.73	0 – 5
	Neto & Barros (2001)	Own scale	13.5 ± 3.4	0 – 20
	Bretherton & McLean (2014) ^c	LOT-R	15.9 ± 3.7	0 – 24
Community-dwelling	Giltay et al. (2007)	Own scale	4.9 ± 1.8	0 – 8
	Ikeda et al. (2011)	LOT variant	22.0 ± 4.2	0 – 32
	Ju et al. (2013) ^d	LOT-R	24.2 ± 4.1	6 – 30
	Kim et al. (2011)	LOT-R 3 items	13.57 ± 3.48	3 – 18
	Kostka & Jachimowicz (2010)	LOT-R variant	16.2 ± 3.9	0 – 24
	Reker (1997)	Own scale	22.6 ± 12.5	—

Note. *M* = mean scores; *SD* = standard deviation; *Min-Max* = Minimum and maximum scores; LTCH = Long-term care homes; LOT = Life Orientation Test; LOT-R = Life Orientation Test-Revised.

^aIncluded a veteran setting (Kostka & Jachimowicz, 2010); day-care centers (Barros-Oliveira, 2010); community dwelling and LTCH (Neto & Barros, 2001); and retirement villages (Bretherton & McLean; 2014).

^bThe author presents a range from 0 to 60 for a 12-item scale with 5 categories of response, but subjects can list *up to* 12 items.

^cWe assumed this range given that **authors** state they have used the LOT-R of Scheier, Carver, and Bridges (1994).

^dWe presumed this range as authors indicate the number of items, a 5-point scale, and an average suggesting a range between 0 and 30 and a scoring system varying between 1 and 5.

Table 2

Sociodemographic and physical-medical characteristics^a (n = 66)

Variables		n (%)
Age categories (years)	65-70	8 (12.1)
	71-80	20 (30.3)
	81-90	31 (47.0)
	91-100	7 (10.6)
Marital status	Single ^b	53 (80.3)
	Married ^c	13 (18.8)
Education level	Illiterate	20 (30.3)
	1-3 years	15 (22.7)
	≥ 4 years	31 (47.0)
Previous occupation	Manual	61 (92.4)
	Intellectual	5 (7.6)
Residency area	Mixed urban-rural	50 (75.8)
	Urban	16 (24.2)
Physical activity	Yes	32 (53.3)
Body pain in the last 2 weeks	Yes	32 (53.3)
Urinary incontinence	Yes	30 (47.6)
Smoking	Yes	10 (16.7)
Drinking	Some/many times a day	12 (18.2)
Difficulty in walking	Yes	41 (68.3)
Cardio-respiratory conditions	Yes	34 (56.7)
Neurological conditions	Yes	41 (68.3)
Diabetes	Yes	11 (18.3)
Vision impairment	Yes	25 (37.9)
Hearing loss	Yes	13 (21.7)
Tinnitus	Yes	10 (16.7)
		<i>M (DP)</i>
Duration of stay in LTCH (months)		62.47 (51.04)
Number of physical-medical problems		4.62 (2.14)

^a Percentages are the valid ones, not including 8 subjects that were not assessed.

^b Never married (16.7%), separated, divorced (12.1%) or widowed (51.5%).

^c Married or living with someone as if married.

Table 3

Means, standard-deviations, minimum and maximum scores, of optimism and other well-being variables

Scales	<i>n</i>	<i>M</i> ± <i>SD</i>	Min-Max
Optimism Scale	66	7.59 ± 4.23	0 - 16
Geriatric Anxiety Inventory	66	12.00 ± 7.20	0 - 20
Geriatric Depression Scale	66	14.23 ± 5.90	0 - 24
Satisfaction With Life Scale	66	12.31 ± 5.58	5 - 22
Positive Affect Scale	64	27.50 ± 7.06	14 – 48
Negative Affect Scale	64	27.73 ± 9.07	14 - 41
Loneliness Scale	60	33.35 ± 15.83	16 - 64

Note. *M* = mean of the total scores; *SD* = standard deviation. Min = minimum; Max = maximum.

Table 4

Comparison of optimism between analogous samples

Context	Samples	N	Age (M ± SD)	Optimism M _{POMP} (%)
LTCH	Actual sample of the present study	66	80.85 ± 7.49	47.4
	Kostka & Jachimowicz (2010)	112	78.90 ± 6.90	58.3
Mixed*	Barros-Oliveira (2010)	115	77.20 ± 7.00	63.8
	Neto & Barros (2001)	104	74.20 ± 6.60	59.4
	Bretherton & McLean (2014)	212	80.42 ± 7.31	66.4
Community-dwelling	Giltay et al. (2007)	115 men	84.0 ± 3.5	61.8
	Ikeda et al. (2011)	507 men	70.9 ± 6.7	68.8
	Ju et al. (2013)	252	72.62 ± 6.90	75.7
	Kim et al. (2011)	6044	68.54 ± 9.62	70.5
	Kostka & Jachimowicz (2010)	110	69.6 ± 4.6	81.0

Note. M_{POMP} = average rating of the maximum possible score; LTCH = Long-term care homes. *Included day-care centers (Barros-Oliveira, 2010); community dwelling and LTCH (Neto & Barros, 2001); and retirement villages (Bretherton & McLean; 2014).

Table 5

Pearson and point-biserial correlation coefficients between well-being variables, optimism, and potential confounders

Variables	OS	GAI	GDS	SWLS	NA	PA	LS-UCLA
OS	—						
GAI	-.33*	—					
GDS	-.31*	.65***	—				
SWLS	.35*	-.53***	-.59***	—			
NA	-.01	.57***	.52***	-.23	—		
PA	.36**	-.39**	-.48***	.42**	-.15	—	
LS-UCLA	-.34**	.24	.46***	-.40*	.19	-.40**	—
Gender	-.11	.21	.03	-.04	.20	-.12	.01
Age	-.07	-.20	-.07	.27	.01	.18	.12
Children	.44	-.07	.17	.16	.30	.08	.43
Marital status	-.03	.18	.22	-.07	.05	-.10	.10
Stay in LTCH	-.02	-.11	-.15	-.08	.06	-.10	-.39
Previous occupation	.11	-.06	.24	.09	.11	.11	.03
Residency area	.01	-.11	-.10	-.16	-.21	.06	.02
Education (Years)	.11	-.16	.06	.07	-.21	.06	-.27*
Physical exercise	-.33**	.00	-.05	.07	-.11	-.18	.37**
Body pain	-.11	.11	.01	.00	.14	-.28*	.02
Urinary incontinence	-.25*	.11	.24	-.18	-.01	.01	.11
Smoking	.17	-.24	-.08	-.16	-.32*	-.04	-.17
Drinking	.20	-.13	-.01	.01	-.17	.07	-.02
Walking difficulty	.02	-.01	.06	.20	.03	.13	.10
Cardio-respiratory conditions	-.00	.10	-.17	.17	-.03	.08	.07
Neurological conditions	-.03	.13	.17	-.01	.10	-.15	.13
Diabetes	-.06	.06	.28*	-.33	.08	-.15	.16
Vision impairment	-.11	.12	.09	-.23	.13	-.10	.07
Hearing loss	-.24	.05	.28*	-.37*	.00	-.18	.37**
Tinnitus	-.01	.15	.08	.13	.12	-.12	-.00
Number PMP	-.18	.08	.19	-.19	-.02	-.17	.27*

Note. OS = Optimism Scale; GAI = Geriatric Anxiety Inventory; GDS = Geriatric Depression Scale; SWLS = Satisfaction With Life Scale; NA = Negative Affect; PA = Positive Affect; LS-UCLA = Loneliness Scale of the California University; LTCH = Long-term care homes; PMC = physical-medical problems. Higher categories for dichotomized variables: female gender; married status; mixed residency area; intellectual previous occupation; presence of problem.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1

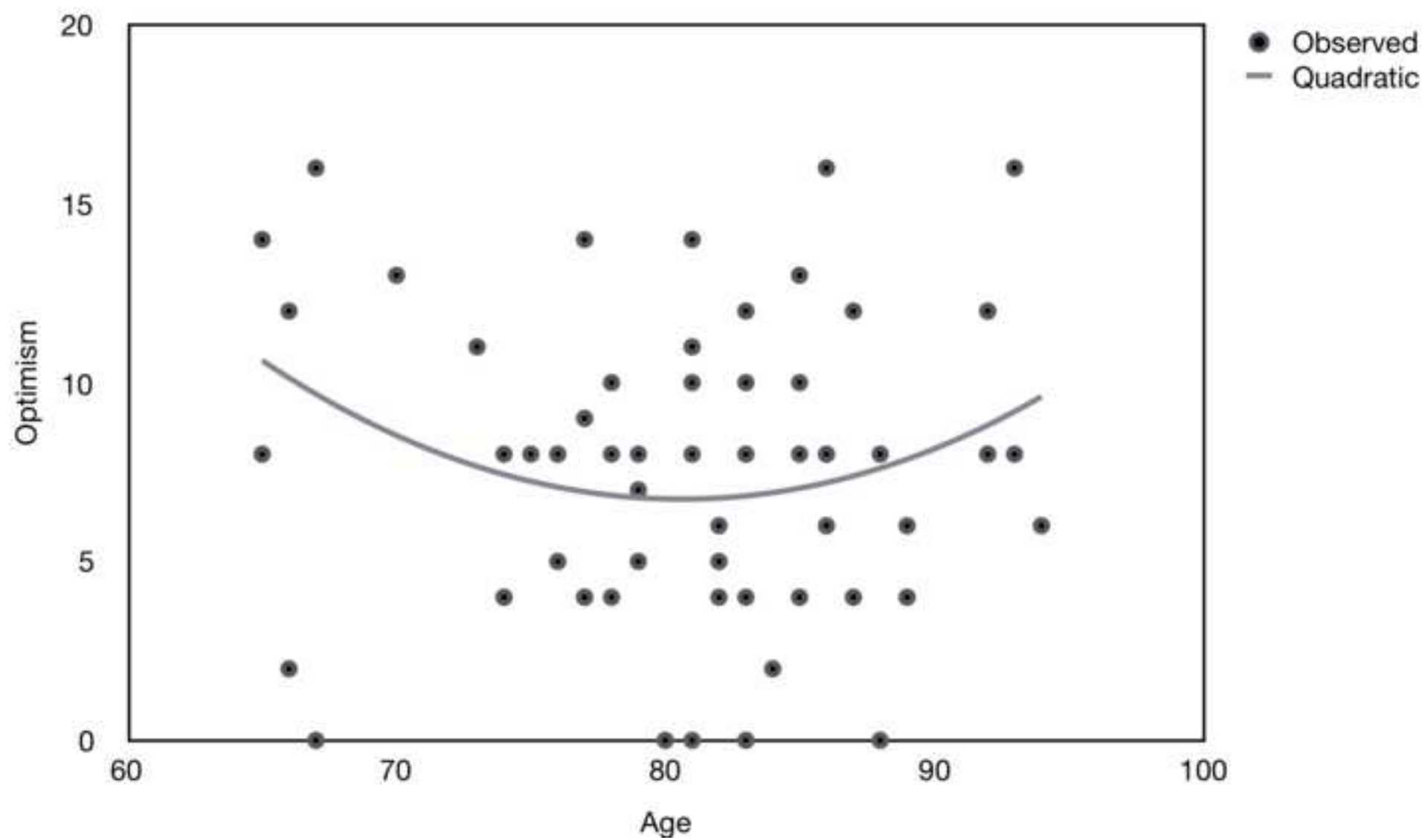


Figure 2

