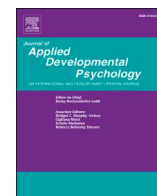




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Loneliness and associated factors among older adults during COVID-19 lockdown in Spain

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ABSTRACT

Considering the health outcomes of loneliness, it is important to understand the effects of the COVID-19 pandemic for older adults to facilitate detection and intervention. The aim of this study was to examine loneliness among Spanish older adults during the first wave lockdown and associated factors, in comparison to younger adults. An online survey was completed by 3508 adults (401 aged 60 or above). Older adults felt higher social loneliness than younger adults, but lower emotional loneliness. Living alone, poor mental health, and poor healthy habits were related to higher loneliness for both age groups. The results suggest that loneliness should be an important factor in primary care, and prevention efforts should be taken, e.g., by generating open and safe community spaces and contexts for social interaction and promoting the access and ability to use technologies that maintain social connections.

The World Health Organization (WHO) declared Coronavirus Disease-2019 (COVID-19) as a “Public Health Emergency of International Concern” in January 2020 and a “worldwide pandemic” in March 2020 (WHO, 2020). In Spain, the first confirmed COVID-19 case was reported on January 31, 2020. Restriction measures were introduced as the number of positive cases increased. Spain implemented a strict lockdown during the first wave from mid-March through June 2020. In this country, social distancing regulations were not merely public health recommendations: rules regarding private and public meetings and the use of public spaces were applied by police and violations carried fines (Real Decreto 463/2020, de 14 de Marzo). As in other countries, in Spain, deaths from COVID-19 were concentrated in older age groups. About 87.1% of deaths were in those older than 70. The risk of dying from confirmed COVID-19, as measured by age-specific rates, was <100 deaths per 100,000 population up to age 65. From that age, the rates progressively increased to 1773.9 deaths per 100,000 population in the group aged 95 and over (INE, 2020). The case fatality ratio was similar in other European countries, the United Kingdom, the United States, and China (Parlapani et al., 2020).

As a consequence of this high vulnerability to infection and mortality from COVID-19 among older adults, health authorities and professionals explicitly discouraged visiting older adults. These policies and recommendations intended to protect this population group, but little discussion focused on the effects of social distancing and social isolation on feelings of loneliness in older adults, and how they coped with these social restriction measures (Armitage & Nellums, 2020; Berg-Weger & Morley, 2020; Frenkel-Yosef, Maytles, & Shkira, 2020; Fuller & Huseh-Zosel, 2020; Grossman, Hoffman, Palgi, & Shkira, 2021; Hartt, 2020; Kotwal et al., 2020; Losada-Baltar et al., 2020). Thus, considering global concerns about the health outcomes of loneliness (Berg-Weger & Morley, 2018; Heinrich & Gullone, 2006; Luo, Hawkey, Waite, & Cacioppo, 2012; Wang, Mann, Lloy-Evans, Ma, & Johnson, 2018), it is necessary to understand the effects of the COVID-19 pandemic for older adults in order to facilitate detection and intervention for this group. The present study aimed to describe feelings of loneliness among Spanish older adults during the first wave lockdown and to identify associated factors. Specifically, the objectives were to examine the levels of different types of loneliness (i.e. social, family and romantic) as well as to explore the

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associations of sociodemographics and health-related variables (i.e. mental health, coping humor, and healthy habits) with loneliness among older adults (aged 60 years or above), as compared to younger adults.

Loneliness epidemic in older adults

Loneliness is conceptualized as a subjective, multidimensional, aversive, and distressing experience with potentially serious consequences (DiTommaso, Brannen, & Best, 2004; Weiss, 2007). Loneliness is an emotionally unpleasant state that implies a discrepancy between what a person expects and what they receive from their relationships. Weiss (2007) differentiated between social loneliness, which results from a perceived lack of affiliations or social relationships, and emotional loneliness, which stems from the absence of a close emotional attachment relationship. This perspective also distinguishes between two domains of emotional loneliness: family and romantic loneliness. It is important to recognize the multidimensional nature of loneliness because the deficits in different relationships are associated with qualitatively different consequences. According to Weiss (2007), emotional loneliness has more deleterious effects on health than social loneliness.

Loneliness is a growing public health concern and is considered a risk factor for morbidity and mortality among older adults (Chan, Raman, Ma, & Malhotra, 2015; Heinrich & Gullone, 2006; Luo et al., 2012; Patterson & Veenstra, 2010). Studies suggest that nearly 50% of older adults experience loneliness (Gerst-Emerson & Jayawardhana, 2015; Zubatsky, Berg-Weger, & Morley, 2020). Hence, loneliness and social isolation have been proclaimed a global epidemic among the older adult population (Berg-Weger & Morley, 2020). Feelings of loneliness in older people are mainly due to normal life events such as retirement, widowhood, or chronic and functional limitations. The social distancing measures resulting from the COVID-19 crisis were added to these normative events and, although crucial in reducing the spread of the coronavirus, they may have had negative outcomes for older adults, who are often already more socially isolated and lonely (Berg-Weger & Morley, 2020; Grossman et al., 2021; van Tilburg, Steinmetz, Stolte, van der Roest, & de Vries, 2020). van Tilburg et al. (2020) found that Dutch community-dwelling adults over 65 years of age were more socially and emotionally lonely during the pandemic first wave lockdown compared to seven months earlier. Luchetti et al. (2020) assessed change in loneliness longitudinally (in January, March, and April 2020) and found that while American older adults reported less loneliness overall compared to younger groups, they were the only group that showed an increase in loneliness during acute phases of social distancing measures. These authors highlighted that “even a small increase in loneliness may pose greater risk for poor health and well-being outcomes...and this increase may have cumulative effects over time” (Luchetti et al., 2020, p.8).

Factors contributing to loneliness in older adults during the COVID-19 first wave lockdown

A number of sociodemographic and health-related factors have been identified that may be associated with levels of loneliness among older adults during the COVID-19 pandemic. According to some studies, *sociodemographic factors* that placed older adults at risk for experiencing loneliness include age, living alone, living in a rural community, widowhood, being female, lower education, and lower financial status (Beam & Kim, 2020; Berg-Weger & Morley, 2020; Frenkel-Yosef et al., 2020; Li, Wang, Xue, Zhao, & Zhu, 2020; Luchetti et al., 2020; Parlapani et al., 2020).

Two age groups have been identified as being more vulnerable to feeling lonely: adolescents and older adults (Beam & Kim, 2020; Li et al., 2020). Some studies (e.g., Wickens et al., 2021), however, found greater odds of loneliness during the first COVID-19 waves among all age groups younger than 60 years compared to those over age 60. According to Beam and Kim (2020), being older is not a sufficient condition for feeling lonely, and loneliness appears to increase with age only over the

age of 80. In any case, while being older is not a risk factor for loneliness in itself, older people who feel lonely are at higher risk of mortality (Luo et al., 2012).

Findings regarding gender are also inconsistent. Some studies concluded that being female was a risk factor for loneliness during the COVID-19 crisis (Bu, Steptoe, & Fancourt, 2020; Li et al., 2020; Losada-Baltar et al., 2020), while others found no differences between genders (Parlapani et al., 2020). Similarly, some evidence showed that gender differences in loneliness were greater among younger and older adults (Wickens et al., 2021), while other data suggested that the gender gap was not affected by age (Lepinteur et al., 2022).

On the other hand, strong scientific evidence supports an inverse relationship between loneliness and *mental health* that seems to be complex and bidirectional (Van As, Franceschi, Menesini, & Nocentini, 2022), since loneliness may cause a decrease in mental health, but also mental health problems may lead to increased isolation and feelings of loneliness (de Jong Gierveld, van Tilburg, & Dykstra, 2009; Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Luo et al., 2012; Mushtaq, Shuib, Shah, & Mushtaq, 2014). Similarly, previous research with the general population indicated that loneliness due to the COVID-19 pandemic was positively associated with anxiety, stress, concurrent worsening of depression, worries about coronavirus and general health, as well as negatively associated with all quality of life domains (Horesh, Kapel Lev-Ari, & Hasson-Ohayon, 2020). This is consistent with the study by Kotwal et al. (2020), which found that more than half of older adults reported worsened loneliness due to COVID-19 that was associated with worsened depression and anxiety. It is worth noting, however, that other research observed lower levels of depression, anxiety, stress, sadness and loneliness in older adults during the pandemic's first wave, as compared to younger adults (e.g., Bruin de Bruin, 2021; García-Fernández, Romero-Ferreiro, López-Roldán, Padilla, & Rodríguez-Jiménez, 2020; Losada-Baltar et al., 2020).

In view of previous findings, another potential contributing factor to loneliness during the COVID-19 crisis is *coping with humor*, defined as “the degree to which people make use of humor in coping with stress in their lives” (Martin, 1996, p. 251). Some research found that, for older adults, there was a positive impact of humor as a coping strategy to deal with stress, aging, and grief or bereavement (Booth-Butterfield, Wanzer, Weil, & Krezmien, 2014; Caycho-Rodríguez et al., 2019; Wanzer, Sparks, & Frymier, 2009), thus providing them with the ability to change their thinking and regain a sense of mastery over their thoughts, emotions, and behaviors (Booth-Butterfield et al., 2014; Damianakis & Marziali, 2011).

Consistently, coping humor was found to be a resilience factor in the context of COVID-19 fear and hopelessness (Saricali et al., 2020), also among the elderly (Vannini et al., 2021). Fuller and Huseth-Zosel (2020) found that older adults coped with the COVID-19 first wave lockdown through having a positive mindset (e.g., optimism, acceptance, humor), among other strategies, and showed higher rates of these responses as compared to younger adults. In addition, previous studies have observed a significant negative correlation between coping with humor and loneliness (Overholser, 1992; Wanzer, Booth-Butterfield, & Booth-Butterfield, 1996). Therefore, it is reasonable to expect that humor may have helped older adults with the management of loneliness as a stressor in the challenging situation of COVID-19 confinement and social restriction measures. However, there is still no evidence regarding the existence of this relationship.

The current study

In sum, the COVID-19 crisis is an important life challenge for all people, but especially for older adults, who have been identified as the most vulnerable group. The goal of the present study was to explore loneliness in older adults in Spain during the most active phase of the shelter-in-place orders due to the COVID-19 crisis, to identify factors that are associated with loneliness, and to examine whether these

associations differ in older versus younger adults. The gaps in the literature as well as the inconsistent evidence available, as described in the previous section, both substantiate the relevance of the present study and hinders the formulation of hypotheses. Nonetheless, based on the preliminary evidence described above (e.g., Berg-Weger and Morley, 2020; Frenkel-Yosef et al., 2020; Luchetti et al., 2020; Parlapani et al., 2020; Shield et al., 2022; van Tilburg et al., 2020), we developed some exploratory hypotheses. Specifically, we expected that older adults might show lower levels of loneliness than younger ones, and sociodemographics such as being female or living alone might predict higher levels of loneliness regardless of the age group. Likewise, we expected that a good mental health status, the use of a humor coping style, and the adoption of healthy habits would be negatively associated with the experience of loneliness for both older and younger adults.

Method

Participants

This cross-sectional study is part of a larger project targeting the Spanish general population. Participants were recruited through nonrandom sampling using a snowball strategy. The final sample consisted of 3508 subjects ranging from 18 to 83 years old. A non-standard, though widely accepted cutoff threshold to define an older population in developed countries, is the age of 60 (Parlapani et al., 2020). Therefore, for analysis purposes, age was categorized into two large groups: a) Younger adults: age 59 and younger ($N = 3107$, $M = 33.95$, $SD = 12.77$), and b) Older adults: age 60 and over ($N = 401$, $M = 65.69$, $SD = 4.82$). The sample of older adults was composed of 41% men and 59% women and that of younger adults consisted of 27% men and 73% women. Detailed demographic information appears in Table 1.

Procedure

After obtaining ethical and data protection approval, the online survey was designed using Microsoft Forms and the link was sent via email and WhatsApp to multiple contacts, as well as posted on Facebook and Twitter. Participants were recruited via virtual snowball sampling, as they were asked to forward the link to their contacts. Informed consent was obtained by a compulsory question at the beginning of the survey. The study began on 20 March 2020, one week after Spanish authorities announced the first wave lockdown period/statewide emergency declaration, and was available until 21 June 2020, when the statewide emergency ended.

Measures

An online survey was designed ad hoc, including questions and scales related to the following variables:

Sociodemographics. Gender, age, educational level, household composition, living alone (yes/no), area of residence (rural vs. urban), use of a daily schedule during confinement (yes/no), number of days confined at the time of completing the survey (categorized to facilitate analysis; see Table 1), and presence of disability (yes/no).

Healthy habits. Participants reported on their degree of engagement in diverse health-related behaviors during the first wave lockdown (from 1 = *none* to 4 = *high*). Specifically, healthy (daily physical activity, healthy diet low in fat and sugar) and unhealthy (smoking, drinking alcohol, and taking sleeping pills) indicators were included. Unhealthy behaviors were recoded to calculate the total score as a sum of healthy habits. The reliability calculated from Cronbach's alpha is 0.74.

Loneliness. The Spanish version (Yáñez, 2008) of the Social and Emotional Loneliness Scale for Adults-Short version (SESLA-S; DiTommaso et al., 2004) is a self-report measure that assesses the subjective experience of loneliness in adults with three subscales: social loneliness (e.g., I feel part of a group of friends), family loneliness (e.g., I feel close

Table 1

Descriptive statistics of sociodemographic and health-related factors by age group.

			≥ 60 years N (%)	18–59 years N (%)
Sociodemographics	Gender	Male	162 (40.60)	838 (27.10)
		Female	238 (59.40)	2258 (72.90)
	Educational level	Less than high school	33 (8.30)	54 (1.70)
		High school/Bachelors	98 (24.40)	541 (17.50)
		Graduate Degree	270 (76.30)	2512 (80.80)
		Partner	214 (54.30)	481 (15.60)
		Partner and children	69 (17.50)	824 (26.60)
		Father/Mother/Siblings	9 (2.30)	1243 (40.20)
		Children	18 (4.60)	90 (2.90)
		Other	84 (21.30)	455 (14.70)
	Living alone	Yes	78 (19.80)	272 (8.80)
		No	316 (80.20)	2822 (91.20)
	Area of residence	Urban	338 (84.30)	2360 (76.00)
		Rural	63 (15.70)	745 (24.00)
	Daily schedule (Have you set yourself a schedule to plan and organize each day?)	Yes	248 (61.80)	1901 (61.20)
		No	153 (38.20)	1206 (38.80)
	Number of days confined (How many days have you been in confinement?)	Up to 7 days	81 (20.40)	495 (16.43)
		8–24	131 (33.20)	677 (22.47)
		25–44	71 (18.00)	601 (19.95)
		45–58	58 (14.70)	597 (19.81)
		59 or more	54 (13.70)	643 (21.34)
	Disability	Yes	25 (14.00)	81 (7.00)
		No	334 (86.00)	2,887 (93.00)

Note: M = mean; SD = standard deviation.

to my family), and romantic loneliness (e.g., I have a romantic or marital partner who gives me the support and encouragement I need). According to Yáñez (2008), scores have high internal reliability, subscales show high internal consistency, and construct validity is evidenced by significant correlations with measures of attachment style, psychological wellbeing and social desirability (Yáñez, 2008). Participants rated their agreement with each item on a 4-point Likert-type scale (from 1 = *strongly disagree* to 4 = *strongly agree*). The total score of the scale (named

“general loneliness”) was calculated by adding the values of the 12 items after being recoded so that higher scores indicate more loneliness. The Cronbach’s alpha is 0.86.

Coping With Humor. The Spanish version (Caycho-Rodríguez et al., 2019) of the Coping Humor Scale (CHS-5) is a self-report measure that evaluates the “degree to which respondents make use of humor in coping with stress in their lives” (Martin, 1996, p. 251). The scale shows adequate reliability and validity according to Caycho-Rodríguez et al. (2019) and is composed of five items (e.g., I have often found that my problems have been greatly reduced when I have tried to find something funny in them). Participants rated their agreement with each item on a 4-point Likert-type scale (from 1 = *strongly disagree* to 4 = *strongly agree*). The total score of the scale was obtained by adding the five items. The Cronbach’s alpha is 0.78.

Mental Health. The Spanish version (Rivera-Riquelme, Piqueras, & Cuijpers, 2019) of the Mental Health Inventory-5 (MHI-5) is a valid and reliable self-report instrument for assessing mental health in adults (Berwick et al., 1991). MHI-5 contains five items, each introduced by the question: “How much of the time, during the last month, have you ...?” (e.g., ...been a very nervous person; felt downhearted and blue). Participants rated frequency on a 5-point Likert-type scale (from 1 = *never* to 5 = *almost always*). The total score was calculated by summing the items. The Cronbach’s alpha is 0.86.

Results

Analytic plan

First, the frequency distributions of the variables were calculated, their most relevant characteristics (including the normality of the distributions) were analyzed, and possible drafting errors were filtered out (e.g. cases out of range). Four one-way ANOVA were performed to examine the differences in loneliness scores (i.e., general, family, romantic and social) as a function of age group (≥ 60 years vs. 18–59 years). In addition, two-way ANOVA were carried out considering the general loneliness score as the dependent variable, and age group together with the diverse socio-demographic factors as independent variables. Scheffé’s a posteriori tests were conducted to analyze the main effect of the factors, and post hoc tests with Bonferroni adjustment were carried out to analyze the interactions.

Finally, multiple regression analysis was conducted in order to test whether mental health, coping humor, healthy habits, age group, and the interaction of age group with the three health-related factors were significant predictors of general loneliness. All the assumptions for regression analysis were satisfied (see Table S3 in Supplementary Material).

The IBM Statistical Package for Social Sciences (SPSS version 24.0) software was used for all these calculations. Statistical significance was set at $p < .05$.

Loneliness during the first wave lockdown

Descriptive statistics for the study variables appear in see Table 1. The values of central tendency, dispersion, and correlations of the scales related to mental health, coping humor, healthy habits, and feelings of loneliness, including its three subscales, are presented as Supplementary Material in Table S1. The distribution of perceived loneliness presents a positive asymmetry resulting in a significant percentage of subjects with low values in this variable. The same result was found in the three subscales. In view of these distributions and as a prior step to the subsequent analyses, we normalized these measures of loneliness using the Box and Cox transformation (See Table S2 in Supplementary Material).

The one-way ANOVA for the four loneliness scores (general, family, romantic and social) showed significant differences for family loneliness ($F_{(1,3506)} = 14.53, p < .001, \eta^2 = 0.001$), romantic loneliness ($F_{(1,3506)} = 15.61, p < .001, \eta^2 = 0.004$) and social loneliness ($F_{(1,3506)} = 17.36, p <$

$.001, \eta^2 = 0.005$), but not for general loneliness. Mean scores were significantly lower among older adults as compared to younger adults as regards family loneliness ($M = 4.73, SD = 1.40; M = 5.03, SD = 1.51$, respectively) and romantic loneliness ($M = 4.72, SD = 1.36; M = 5.04, SD = 1.51$, respectively). However, social loneliness mean score was lower among younger adults ($M = 4.49, SD = 1.48$) as compared to older adults ($M = 5.20, SD = 1.63$).

Factors associated with loneliness during the first wave lockdown

According to the results of the two-way ANOVA, several significant main effects were found predicting general loneliness from household composition, number of days confined, living alone, daily schedule, and presence of disability (Table 2).

Post hoc tests showed significantly ($p < .001$) lower levels of general loneliness in those living with their partner or with their partner and children as compared to those living with their father/mother/siblings, with their children, or with others. Likewise, general loneliness was lower among those confined during 25–44 days at the time of completing the survey as compared to those confined less or more days. Those living accompanied, those who performed daily planning and organization, and those with no disabilities also showed significantly lower levels of general loneliness in comparison to those living alone, those who did not set a schedule to plan and organize each day, and those with disabilities (see Table 3). Except for the variable living alone, these patterns were similar for the two age groups, as the interaction was not significant (see Table 2).

Age group interacted with the variable living alone ($F_{(2,3507)} = 4.19, p = .04, \eta^2 = 0.001$). According to post hoc tests ($p < .001$), among those living accompanied, older adults showed lower levels of general loneliness, compared to younger adults. In addition, age group interacted with gender ($F_{(2,3507)} = 3.65, p = .03, \eta^2 = 0.003$): levels of general loneliness were lower among male older adults and female younger adults, as compared to female older adults and male younger adults ($p < .001$) (see Table 3).

The multiple regression analysis of general loneliness indicated that the model proposed was significant ($F_{(7,3507)} = 77.72, p < .001$, adjusted $R^2 = 0.135$). The interaction of age group with the three health-related factors was not significant. Therefore, in both age groups, mental health and healthy habits were significant and negative predictors of general

Table 2

Results of the two-way ANOVA for general loneliness as a function of socio-demographics and age group.

Independent variables	F	Sig.	η^2
Gender	0.65	0.52	0.000
Age	0.13	0.72	0.000
Gender * Age group	3.65	0.03	0.003
Educational level	0.36	0.70	0.000
Age group	0.20	0.65	0.000
Educational level * Age group	0.71	0.49	0.000
Household composition	49.97	0.00	0.054
Age group	1.49	0.22	0.000
Household composition * Age group	2.39	0.06	0.003
Living alone	113.25	0.00	0.031
Age group	1.68	0.20	0.000
Living alone * Age group	4.19	0.04	0.001
Area of residence	0.00	0.97	0.000
Age group	1.34	0.25	0.000
Area of residence * Age group	0.00	0.95	0.000
Daily schedule	16.68	0.00	0.005
Age group	2.48	0.12	0.001
Daily schedule * Age group	0.01	0.94	0.000
Number of days confined	2.81	0.02	0.003
Age group	3.81	0.06	0.001
Number of days confined * Age group	1.69	0.15	0.002
Disability	3.14	0.04	0.000
Age group	0.09	0.77	0.000
Disability * Age group	0.23	0.79	0.000

Table 3

Descriptives of general loneliness as a function of sociodemographics, by age group.

	General loneliness (≥ 60 years)				General loneliness (18–59 years)				Total		
	M	SD	N		M	SD	N		M	SD	N
<i>Gender</i>											
Male	4.72	1.63	162		5.13	1.48	838		5.06	1.51	1000
Female	5.00	1.38	238		4.97	1.51	2258		4.97	1.49	2496
<i>Educational level</i>											
Primary school	5.05	1.63	33		4.85	1.57	54		4.93	1.58	87
Secondary school	4.89	1.46	98		5.13	1.48	541		5.09	1.48	639
University	4.86	1.49	270		4.99	1.50	2512		4.98	1.50	2782
<i>Household composition</i>											
Partner	4.54	1.43	214		4.31	1.37	481		4.38	1.39	695
Partner and children	4.54	1.44	69		4.39	1.44	824		4.40	1.44	893
Father, mother and/or siblings	4.71	1.03	9		5.42	1.37	1243		5.42	1.37	1252
Children	5.20	1.18	18		5.89	1.29	90		5.78	1.29	108
Other situations	5.83	1.22	84		5.60	1.41	455		5.64	1.39	539
<i>Living alone</i>											
Yes	5.91	1.18	78		5.83	1.32	272		5.85	1.29	350
No	4.59	1.41	316		4.94	1.50	2822		4.90	1.49	3138
<i>Area of residence</i>											
Rural	4.89	1.40	63		5.01	1.41	745		5.00	1.40	808
Urban	4.88	1.51	338		5.01	1.53	2360		5.00	1.53	2698
<i>Daily schedule</i>											
Yes	4.76	1.51	248		4.88	1.49	1901		4.87	1.49	2149
No	5.09	1.44	153		5.22	1.49	1206		5.21	1.49	1359
<i>Number of days confined</i>											
Up to 7 days	5.03	1.46	81		5.01	1.38	495		5.01	1.39	576
8–24	5.06	1.44	131		5.02	1.47	677		5.00	1.47	808
25–44	4.59	1.63	71		4.85	1.48	601		4.82	1.50	672
45–58	5.04	1.34	58		5.10	1.55	663		5.09	1.54	721
59 days or more	4.54	1.49	54		5.10	1.55	597		5.10	1.55	651
<i>Disability</i>											
Yes	5.34	2.19	25		5.26	1.88	81		5.28	1.95	106
No	4.87	1.44	344		5.02	1.49	2887		5.00	1.50	3221

Note: M = mean; SD = standard deviation.

loneliness (Table 4). However, coping humor was not a significant predictor of general loneliness.

Table 4

Regression model of general loneliness on health-related factors moderated by age group.

	Unstandardised coefficients		Standardised coefficients	t	Sig.
	B	Error estándar	Beta		
(Constant)	7.622	0.316		24.11	0.000
Coping Humor	−0.003	0.014	−0.007	−0.21	0.832
Mental Health	−0.106	0.010	−0.377	−10.68	0.000
Healthy Habits	−0.126	0.035	−0.119	−3.62	0.000
Age Group	−0.114	0.211	−0.024	−0.53	0.590
Age Group × Coping Humor	0.025	0.051	0.020	0.48	0.628
Age Group × Mental Health	0.071	0.056	0.061	1.27	0.202
Age Group × Healthy Habits	0.035	0.051	0.029	0.68	0.494

Discussion

Confinement by COVID-19 has been a challenge for the general population that likely had effects on their loneliness and wellbeing, especially for older adults. The aim of the present study was to explore the experience of loneliness and associated factors among older adults in Spain relative to younger adults during the most active phase of the shelter-in-place orders resulting from the COVID-19 crisis. Taking into account the outcomes of loneliness on health (Berg-Weger & Morley, 2018; Heinrich & Gullone, 2006; Luo et al., 2012; Wang et al., 2018), it is important to understand the psychological effects of pandemic lockdowns on older adults. The results of this study suggest that older adults felt more social and less emotional loneliness than younger adults during the initial COVID lockdown period of confinement. In addition, the results indicated that a good mental health status and the adoption of healthy habits were related to lower loneliness regardless of age. This evidence may be useful when considering preventive or therapeutic interventions with these age groups.

Age-related levels of loneliness

Contrary to expectations, older adults did not show significant differences in levels of general loneliness with respect to younger adults. Perhaps, this is partly explained by the low proportion of old-old adults (over age 80) in this study, which appears to be the population with the

highest vulnerability to loneliness (Armitage & Nellums, 2020; Bu et al., 2020; Damianakis & Marziali, 2011). Likewise, these similar global values observed for both age groups might be related to the fact that general loneliness was calculated by summing three subscale scores, and significant differences were observed as regards these three types of loneliness. Specifically, older adults reported lower rates of emotional (i. e. romantic and family) loneliness but higher rates of social loneliness as compared to younger adults, possibly partly because the former usually have smaller and more family-oriented social networks. It should also be considered that Spanish culture is characterized by a high level of social interaction and contact (Martín, Alemán, & Castellano, 2021). In Spain, older adults usually have available a variety of public social, educational, and recreational activities and resources for active aging that allow them to socialize, travel, and participate socially (IMSERSO, 2021), but these aspects were suppressed in the beginning of the pandemic. In contrast, older adults were not entirely deprived of their family and romantic life because visiting and caring for older and dependent people was one of the few activities permitted during the time of confinement.

Young adults showed higher emotional loneliness and lower social loneliness compared to older adults. In our study, a higher portion of younger adults reported not living with their partner, which might explain their greater emotional deprivation, while their social interactions might be fulfilled in the work environment (a permitted activity in many professions) or through the use of social networks and technology (Cooper et al., 2021). In any case, it is worth noting that social support is related to major health outcomes (Baquytayan, 2015). The high level of social loneliness felt by older adults could be related to adverse effects on their health (Chan et al., 2015; Luo et al., 2012), and the search for social contact to alleviate this feeling might lead to COVID-19 risk behaviors (e.g., going out, seeking the company of peers).

Sociodemographic factors, loneliness and age

Regarding sociodemographic risk factors for loneliness, this study suggests that loneliness levels during the first confinement did not significantly differ as a function of gender, educational level, or area of residence (rural vs. urban) for either younger or older adults. The non-significant gender effect contradicts our expectations and some previous studies (e.g. Bu et al., 2020; Losada-Baltar, Jiménez-Gonzalo, et al., 2020) but is in line with other research that found no gender-based differences in levels of loneliness among older adults during the COVID-19 crisis (Parlapani et al., 2020).

However, the interaction of gender and age group here observed suggests that male older adults and female younger adults experienced lower loneliness during the first lockdown. Female younger adults might have assumed a greater burden of family responsibilities during that period due to the closure of schools and universities (Zamarro & Prados, 2021), which might have kept them busy and with a sense of purpose, thus reducing the perception of loneliness. Male older adults might have engaged in home activities (e.g. gardening, cooking, etc.) that provided a sense of purpose and personal satisfaction, and worked as a behavioral coping strategy with a buffering effect on loneliness feelings (Bu et al., 2020; Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Lazarus & Folkman, 1984).

As expected, those living with other people seemed to feel lower levels of loneliness than those living alone, a finding previously reported by other studies (Lampraki, Hoffman, Roquet, & Jopp, 2022). However, this effect also interacted with age groups, suggesting that accompanied older adults were more resilient to loneliness than accompanied younger adults. Older adults, due to their time of life, may especially value and take advantage of the companionship and emotional support of their partner or other people living in the household, and therefore feel greater fulfillment of their socioemotional needs. On the other hand, younger adults might miss relationships with other socio-emotional bonds (e.g. friends, co-workers, non-cohabiting partner, etc.) to a greater extent and therefore feel more lonely (Teater, Chonody, &

Hannan, 2021).

In addition, significant results were found for other sociodemographic factors, suggesting that having a disability was a risk factor for loneliness, in line with prior findings (Heinze et al., 2021), while living accompanied by the partner (vs. other relatives or people) and having a daily schedule were protective factors. Health care and rehabilitation for people with disabilities were reduced during the COVID-19 lockdown, and these services may also provide socioemotional support for this population group. In addition, some people with disabilities may have difficulty wearing masks or using communication tools, and thus face increased communication barriers (Heinze et al., 2021).

Apparently, the duration of confinement at the time of completing the survey had a significant but not linear relationship with loneliness. Perhaps, participants focused their attention on the advantages of the lockdown during its early stage and did not expect it to be long-lasting, and with the passage of time, became habituated to isolation and developed more useful coping strategies to deal with social restrictions and uncertainty. However, there is no consistency across studies with regard to the impact of this variable, with some research suggesting that loneliness leveled off after the issuance of stay-at-home orders, and other studies indicating that loneliness progressively increased with the spread of the pandemic (Bartrés-Faz et al., 2021).

Health-related factors, loneliness and age

As regards the contribution of health-related factors, this study provides evidence to support the expectation that showing good mental health and having healthy habits significantly predicted a lower level of perceived loneliness for both older and younger adults during the COVID-19 first wave. Unexpectedly, coping humor was not found to be a significant predictor. Humor might be a helpful coping mechanism to mitigate the stress and other negative psychological effects derived from the lockdown (Jarego et al., 2021), but have a limited effectiveness in dealing with loneliness and its underlying causes, such as social isolation.

The inverse relationship between loneliness and mental health here observed is well established in previous literature, although the direction of causality is unclear (Heinrich & Gullone, 2006). On the one hand, mental health disorders are related with higher levels of loneliness feelings (Chrostek, Grygiel, Anczewska, Wciórka, & Świtaj, 2016; Ludwig et al., 2020; Meltzer et al., 2013; Perese & Wolf, 2009), perhaps due to the lack of social support or the stigma of mental disorder (Chrostek et al., 2016; Meltzer et al., 2013). Loneliness has also been linked to individual characteristics that may be related to mental health difficulties, such as low self-esteem, pessimism, guilt, or reduced happiness (Ludwig et al., 2020). In the case of older adults, previous work indicates that this age group experience less negative emotions in their daily lives (e.g., Carstensen et al., 2000), which might contribute to greater mental health, and consequently, to experiencing less loneliness in a situation of confinement. Likewise, being older may buffer the negative effects of the lockdown on mental health, as age and previous adverse experiences may help to put in perspective the impact of the COVID emergency (Parlapani et al., 2020). In addition, older adults may be more fearful of contagion (Maxfield & Pituch, 2021), and as such, confinement measures may contribute to them experiencing a greater sense of emotional security and thus fewer mental health problems. In fact, some studies show that during the pandemic, older adults experienced fewer symptoms of anxiety and depression and less psychological distress (Losada-Baltar et al., 2020; Schweda et al., 2021).

On the other hand, it is not surprising that engaging in healthy habits plays a significant role in the reduction of loneliness for adults under and over 60, as they are considered to be behavior-based coping strategies and, as such, they may have a buffering effect on undesired feelings of loneliness (Lazarus & Folkman, 1984). Consistently, a sedentary lifestyle and alcohol consumption in older adults during COVID-19 pandemic have shown to increase the risk of loneliness, according to some studies

(Cuesta-Lozano et al., 2020; Shield et al., 2022).

Consistent with theoretical perspectives on coping in later life (e.g., Lazarus & Folkman, 1984), our data suggest that older adults use a variety of strategies to adapt to a stressful period of social isolation, such as COVID-19 confinement: emotion-based strategies such as coping with humor, and behavior-based strategies such as engaging in healthy behaviors and keeping busy. Thus, in our sample, a high percentage of older adults had a medium or high level of humor-based coping (70%), maintained healthy habits (79%) and organized their daily activities (62%). Previous findings had already shown older adults' stability in loneliness over the confinement period, suggesting their resilience and ability to cope and adapt (Fuller & Huseeth-Zosel, 2020; Kotwal et al., 2020; Losada-Baltar, Jiménez-Gonzalo, et al., 2020). Loneliness and social isolation constitute a widespread problem among older people (Chan et al., 2015; Gerst-Emerson & Jayawardhana, 2015; Heinrich & Gullone, 2006; Luo et al., 2012; Patterson & Veenstra, 2010), and this may help them cope better during the lockdown, as they may perceive less loss in interpersonal relationships due to confinement compared to younger adults. This explanation is, however, speculative, and further research is needed. Another interpretation by Bundy, Lee, Sturkey, and Caprio (2021) posits that, during COVID-19 confinement, the meaning of loneliness changed and began to be understood as a circumstance that affected the whole population, rather than a feature of their social life, which decreased the perception of loneliness.

In sum, this study supports prior research indicating that loneliness is a multifactorial subjective phenomenon that is difficult to explain both during the pandemic period and outside of it. More specifically, the data here obtained are in line with prior evidence (e.g., Fuller & Huseeth-Zosel, 2020) suggesting that having good mental health, engaging in healthy behaviors, and scheduling daily activities are factors significantly related to low levels of loneliness in older adults during confinement. Nonetheless, we found relatively low effect sizes.

Even so, this study represents an advance in the knowledge about loneliness and related factors in older adults in times of particular challenge, and questions the idea that this age group has little resources to deal with adverse situations. On the contrary, this study sends a positive message, because older adults seem to have strategies and skills to cope with stressful situations such as the social isolation resulting from the COVID-19 crisis. However, pandemic or not, it is essential to bear in mind the importance of caring for those who feel lonely, especially if they are older, because even a small increase in loneliness can have very harmful effects on the health of older adults (Luchetti et al., 2020).

Recommendations for practice

Some recommendations can be proposed based on the findings of this study and the existing literature on loneliness during lockdown orders due to COVID-19. Loneliness could be an important factor in primary care, and prevention efforts should be taken with those most vulnerable to loneliness, such as young people and older adults, with a special focus on the old-old adults, as they are the most affected by the harmful effects of loneliness (Beam & Kim, 2020), as well as on those with previous mental health problems.

Likewise, policy makers are advised to consider whether social distancing measures should necessarily entail the order to stay at home. Either in a pandemic or a non-pandemic scenario, it might be possible and helpful to generate open and safe community spaces and contexts for social interaction that mitigate the effects that isolation may have on mental health and perceived loneliness, thus promoting neighborhood and proximity social networks that allow the population, particularly older adults, to interact and feel part of a community.

On the other hand, it is worth noting that old people currently appear to be more enthusiastic about using technology because they have experienced its usefulness and the possibilities it offers in times of pandemic (e.g., Bunbury, Pérez, & Osuna-Acedo, 2022). Indeed, the lack

of access to information and communication technologies (ICT) leads to increased isolation that may result in distress, depression, cognitive and health impairment, and prevents older people from enjoying many resources for leisure, sport and health. This has implications for life, social relations and the ability to stay informed and connected (Bunbury et al., 2022). Therefore, the ability and access to use of technologies could be an effective strategy to deal with social isolation and restrictions, by maintaining or increasing social connections and participation. Training vulnerable groups, such as older adults, in the use of ICTs can thus make a significant difference regarding the harmful effects of loneliness (Kotwal et al., 2020; Xie et al., 2020). Likewise, those with more difficulties in using new technologies might benefit from the development of adapted technological solutions that facilitate access to the Internet or are based on tools familiar to older adults (e.g. telephone, television). Interestingly, these interventions could also improve healthcare for older adults both in periods of confinement and at other times when the individual is unable to get to the health center (Zubatsky et al., 2020).

Finally, promoting coping humor strategies in vulnerable groups might be a useful strategy to help them deal more effectively with loneliness, although this study did not find a significant effect. Humorous literature, films and television might be used by health promotion practitioners and therapists to reduce the negative psychological effects of the COVID-19 pandemic (Saricali, Satici, Satici, Gocet-Tekin, & Griffiths, 2022). Among older adults, a "7 humor habits program" has shown to increase wellbeing through various steps, including: become less serious and more playful about life, find the funny side of things happening in everyday life, learn to laugh at yourself, and change of perspective on difficult situations (Momtaz, Ansari, & Foroughan, 2020).

Study limitations and future research

Study limitations include the use of self-report measures, snowball sampling, and a cross-sectional design that hinders the assessment of possible changes over time in the levels of loneliness and the factors associated (e.g., as compared to pre- or post-confinement times). The reader should also bear in mind that our data refer to the first wave lockdown in 2020, so future research might examine the health impact of long-term social isolation derived from the various COVID-19 lockdowns imposed over the last years. In addition, we did not collect enough data from those over 80 years, who appear to be more vulnerable to loneliness (Parlapani et al., 2020), so this would require further study.

Hence, our findings should be viewed with some caution, but they are particularly important because they are based on a peri-crisis survey conducted under unique psychological circumstances. It is also worth noting that the present study, unlike others, used a multidimensional measure of loneliness, as opposed to general measures that might mask different types of loneliness caused by dissatisfaction with diverse types of interpersonal contact (e.g., social or emotional).

One of the most important lessons learned from this study is that loneliness is a reality among older adults, and we must be aware of contributing factors in order to reduce its prevalence and harmful effects on mental, physical, and social health, both in pandemic and non-pandemic periods. Based on our preliminary findings, attention should be given to people with the detected risk factors. In both younger and older adults these include living alone, having a disability, poor mental health status, and unhealthy habits. This work may also help us understand and address the problems arising from COVID-19 control measures which might have had long-term consequences for mental health (Santomauro et al., 2021).

Sciences such as virology and epidemiology are familiar with the cyclical nature of epidemics and pandemics, so the data provided by this study may be useful not only for the current COVID-19 situation, but also for future health crises and in case further containment and isolation measures could be considered.

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Ethics

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Author statement

IVM, EGO, RPG: preparation of the Abstract, Introduction, Method, Discussion and References sections of the manuscript. RPG, APP: study concept and design; APP, BOB: data analyses and preparation of the Method and Results sections, including Tables and Supplementary Material. All authors reviewed the manuscript. All authors read and approved the final manuscript.

Declaration of Competing Interest

No potential conflict of interest was reported by the authors.

Data availability

Data will be made available on request.

References

- Armitage, R., & Nellums, L. B. (2020). Emerging from COVID-19: Prioritising the burden of loneliness in older people. *British Journal of General Practice*, 70(697), 382.2–382. <https://doi.org/10.3399/bjgp20X711869>
- Baqutayan, S. M. S. (2015). Stress and coping mechanisms: A historical overview. *Mediterranean Journal of Social Sciences*, 6(2S1), 479–488. <https://doi.org/10.5901/mjss.2015.v6n2s1p479>
- Barrés-Faz, D., Macià, D., Cattaneo, G., Borràs, R., Tarrero, C., Solana, J., ... Pascual-Leone, A. (2021). The paradoxical effect of COVID-19 outbreak on loneliness. *BJPsych Open*, 7(1), Article e30. <https://doi.org/10.1192/bjo.2020.163>
- Beam, C. R., & Kim, A. J. (2020). Psychological sequelae of social isolation and loneliness might be a larger problem in young adults than older adults. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(S1), S58–S60. <https://doi.org/10.1037/tra0000774>
- Berg-Weger, M., & Morley, J. E. (2020). Loneliness and social isolation in older adults during the COVID-19 pandemic: Implications for Gerontological social work. *The Journal of Nutrition, Health & Aging*, 24(5), 456–458. <https://doi.org/10.1007/s12603-020-1366-8>
- Berwick, D. M., Murphy, J. M., Goldman, P. A., Ware, J. E., Barsky, A. J., & Weinstein, M. C. (1991). Performance of a five-item mental health screening test. *Medical Care*, 29(2), 169–176.
- Booth-Butterfield, M., Wanzer, M. B., Weil, N., & Krezmien, E. (2014). Communication of humor during bereavement: Intrapersonal and interpersonal emotion management strategies. *Communication Quarterly*, 62(4), 436–454. <https://doi.org/10.1080/01463373.2014.922487>
- Bu, F., Steptoe, A., & Fancourt, D. (2020). Who is lonely in lockdown? Cross-cohort analyses of predictors of loneliness before and during the COVID-19 pandemic. *Public Health*, 186, 31–34. <https://doi.org/10.1016/j.puhe.2020.06.036>
- Bunbury, E., Pérez, R., & Osuna-Acedo, S. (2022). Competencias Digitales en personas mayores: de amenaza a oportunidad. *Vivat Academia. Revista de Comunicación*, 155, 173–195. <https://doi.org/10.15178/va.2022.155.e1383>
- Bundy, H., Lee, H. M., Sturkey, K. N., & Caprio, A. J. (2021). The lived experience of already-lonely older adults during COVID-19. *Gerontologist*, 61, 870–877. <https://doi.org/10.1093/geront/gnab078>
- Carstensen, L. L., Pasupathi, M., Mayr, U., & Nesselroade, J. R. (2000). Emotional experience in everyday life across the adult life span. *Journal of personality and social psychology*, 79(4), 644. <https://doi.org/10.1037/0022-3514.79.4.644>
- Caycho-Rodríguez, T., Reyes-Bossio, M., Ventura-León, J., Arias Gallegos, W. L., Domínguez-Vergara, J., & Azabache-Alvarado, K. (2019). Evidencias psicométricas de una versión breve de la Coping Humor Scale en adultos mayores peruanos. *Revista Española de Geriatria y Gerontología*, 54(4), 230–236. <https://doi.org/10.1016/j.regg.2018.09.012>
- Chan, A., Raman, P., Ma, S., & Malhotra, R. (2015). Loneliness and all-cause mortality in community-dwelling elderly Singaporeans. *Demographic Research*, 32(1), 1361–1382. <https://doi.org/10.4054/DemRes.2015.32.49>
- Chrostek, A., Grygiel, P., Anczewska, M., Wciórka, J., & Świtaj, P. (2016). The intensity and correlates of loneliness in people with psychosis. *Comprehensive Psychiatry*, 70, 190–199. <https://doi.org/10.1016/j.comppsy.2016.07.015>
- Cooper, K., Hards, E., Moltrecht, B., Reynolds, S., Shum, A., McElroy, E., & Loades, M. (2021). Loneliness, social relationships, and mental health in adolescents during the COVID-19 pandemic. *Journal of Affective Disorders*, 289(January), 98–104. <https://doi.org/10.1016/j.jad.2021.04.016>
- Cuesta-Lozano, D., Simón-López, L. C., Mirón-González, R., García-Sastre, M., Bonito-Samino, D., & Asenjo-Estevé, Á. L. (2020). Prevalence rates of loneliness and its impact on lifestyle in the healthy population of Madrid, Spain. *International Journal of Environmental Research and Public Health*, 17(14), 1–12. <https://doi.org/10.3390/ijerph17145121>
- Damianakis, T., & Marziali, E. (2011). Community-dwelling older adults' contextual experiencing of humour. *Ageing and Society*, 31(1), 110–124. <https://doi.org/10.1017/S0144686X10000759>
- DiTommaso, E., Brannen, C., & Best, L. A. (2004). Measurement and validity characteristics of the short version of the social and emotional loneliness scale for adults. *Educational and Psychological Measurement*, 64(1), 99–119. <https://doi.org/10.1177/0013164403258450>
- Frenkel-Yosef, M., Maytles, R., & Shrira, A. (2020). Loneliness and its concomitants among older adults during the COVID-19 pandemic. *International Psychogeriatrics*, 32(10), 1257–1259. <https://doi.org/10.1017/S1041610220003476>
- Fuller, H. R., & Huseth-Zosel, A. (2020). Lessons in resilience: Initial coping among older adults during the COVID-19 pandemic. *The Gerontologist*, 61(1), 114–125. <https://doi.org/10.1093/geront/gnaa170>
- García-Fernández, L., Romero-Ferreiro, V., López-Roldán, P. D., Padilla, S., & Rodríguez-Jiménez, R. (2020). Mental health in elderly Spanish people in times of COVID-19 outbreak. *The American Journal of Geriatric Psychiatry*, 28, 1040–1045. <https://doi.org/10.1016/j.jagp.2020.06.027>
- Gerst-Emerson, K., & Jayawardhana, J. (2015). Loneliness as a public health issue: The impact of loneliness on health care utilization among older adults. *American Journal of Public Health*, 105(5), 1013–1019. <https://doi.org/10.2105/AJPH.2014.302427>
- Grossman, E. S., Hoffman, Y. S. G., Palgi, Y., & Shrira, A. (2021). COVID-19 related loneliness and sleep problems in older adults: Worries and resilience as potential moderators. *Personality and Individual Differences*, 168, Article 110371. <https://doi.org/10.1016/j.paid.2020.110371>
- Hartt, M. (2020). COVID-19: A lonely pandemic. *Cities & Health*, 1–3. <https://doi.org/10.1080/23748834.2020.1788770>
- Heinrich, L. M., & Gullone, E. (2006). The clinical significance of loneliness: A literature review. *Clinical Psychology Review*, 26(6), 695–718. <https://doi.org/10.1016/j.cpr.2006.04.002>
- Heinze, N., Hussain, S. F., Castle, C. L., Godier-McBard, L. R., Kempapidis, T., & Gomes, R. S. M. (2021). The long-term impact of the COVID-19 pandemic on loneliness in people living with disability and visual impairment. *Frontiers in Public Health*, 9, Article 738304. <https://doi.org/10.3389/fpubh.2021.738304>
- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A Meta-analytic review. *Perspectives on Psychological Science*, 10(2), 227–237. <https://doi.org/10.1177/1745691614568352>
- Horesh, D., Kapel Lev-Ari, R., & Hasson-Ohayon, I. (2020). Risk factors for psychological distress during the COVID-19 pandemic in Israel: Loneliness, age, gender, and health status play an important role. *British Journal of Health Psychology*, Article bjh.p.12455. <https://doi.org/10.1111/bjhp.12455>
- INE. (2020). *Defunciones según la causa de muerte. Avance Enero-Mayo de 2019 y 2020*.
- Jarego, M., Pimenta, F., Pais-Ribeiro, J., Costa, R. M., Patrao, I., Coelho, L., & Ferreira-Valente, A. (2021). Do coping responses predict better/poorer mental health in Portuguese adults during Portugal's national lockdown associated with the COVID-19? *Personality and Individual Differences*, 175, Article 110698.
- de Jong Gierveld, J., van Tilburg, T., & Dykstra, P. A. (2009). Loneliness and social isolation. In A. L. Vangelisti, & D. Perlman (Eds.), *The Cambridge handbook of personal relationships* (pp. 485–500). Cambridge University Press. <https://doi.org/10.1017/CBO9780511606632.027>
- Kotwal, A., Holt-Lunstad, J., Newmark, R. L., Cenzer, I., Smith, A. K., Covinsky, K. E., ... Perissinotto, C. M. (2020). Social isolation and loneliness among San Francisco Bay Area older adults during the COVID-19 shelter-in-place orders. *Journal of the American Geriatrics Society*, Article jgs.16865. <https://doi.org/10.1111/jgs.16865>
- Lampraki, C., Hoffman, A., Roquet, A., & Jopp, D. S. (2022). Loneliness during COVID-19: Development and influencing factors. *PLoS One*, 17(3). <https://doi.org/10.1371/journal.pone.0265900>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. Springer.
- Lepinteur, A., Clark, A. E., Ferrer-i-Carbonell, A., Piper, A., Schröder, C., & D'Ambrosio, C. (2022). Gender, loneliness and happiness during COVID-19. *Journal of Behavioral and Experimental Economics*, 101, Article 101952. <https://doi.org/10.1016/j.soec.2022.101952>
- Li, S., Wang, Y., Xue, J., Zhao, N., & Zhu, T. (2020). The impact of covid-19 epidemic declaration on psychological consequences: A study on active weibo users. *International Journal of Environmental Research and Public Health*, 17(6). <https://doi.org/10.3390/ijerph17062032>
- Losada-Baltar, A., Jiménez-Gonzalo, L., Gallego-Alberto, L., Pedrosa-Chaparro, M. D. S., Fernandes-Pires, J., & Márquez-González, M. (2020). "We are staying at home." Association of self-perceptions of aging, personal and family resources, and loneliness with psychological distress during the lock-down period of COVID-19. *The Journals of Gerontology: Series B*. <https://doi.org/10.1093/geronb/gbaa048>

- Losada-Baltar, A., Márquez-González, M., Jiménez-Gonzalo, L., Pedrosa-Chaparro, M. del S., Gallego-Alberto, L., & Fernandes-Pires, J. (2020). Diferencias en función de la edad y la autopercepción del envejecimiento en ansiedad, tristeza, soledad y sintomatología comórbida ansioso-depresiva durante el confinamiento por la COVID-19. *Revista Española de Geriatria y Gerontología*, 55(5), 272–278. <https://doi.org/10.1016/j.regg.2020.05.005>
- Luchetti, M., Lee, J. H., Aschwanden, D., Sesker, A., Strickhouser, J. E., Terracciano, A., & Sutin, A. R. (2020). The trajectory of loneliness in response to COVID-19. *American Psychologist*. <https://doi.org/10.1037/amp0000690>
- Ludwig, K. A., Nye, L. N., Simmons, G. L., Jarskog, L. F., Pinkham, A. E., & Harvey, P. D. (2020). Correlates of loneliness among persons with psychotic disorders. *Social Psychiatry and Psychiatric Epidemiology*, 55, 549–559. <https://doi.org/10.1007/s00127-019-01789-5>
- Luo, Y., Hawkey, L. C., Waite, L. J., & Cacioppo, J. T. (2012). Loneliness, health, and mortality in old age: A national longitudinal study. *Social Science and Medicine*, 74(6), 907–914. <https://doi.org/10.1016/j.socscimed.2011.11.028>
- Martin, R. A. (1996). The situational humor response questionnaire (SHRQ) and coping humor scale (CHS): A decade of research findings. *Humor: International Journal of Humor Research*, 9, 251–272.
- Martín, J. C., Alemán, P. F., & Castellano, R. (2021). Escala de envejecimiento activo. *Pedagogía Social Revista Interuniversitaria*, 37. https://doi.org/10.7179/PSRI_2021.37.06
- Maxfield, M. Y., & Pituch, K. A. (2021). COVID-19 worry, mental health indicators, and preparedness for future care needs across the adult lifespan. *Aging & Mental Health*, 25, 1273–1280. <https://doi.org/10.1080/13607863.2020.1828272>
- Meltzer, H., Bebbington, P., Dennis, M. S., Jenkins, R., McManus, S., & Brugha, T. (2013). Feelings of loneliness among adults with mental disorder. *Social Psychiatry and Psychiatric Epidemiology*, 48, 5–13. <https://doi.org/10.1007/s00127-012-0515-8>
- Momtaz, Y., Ansari, M., & Foroughan, M. (2020). The effectiveness of humor training on the elderly's well-being. *Aging Psychology*, 6, 119–130.
- Mushtaq, R., Shuib, S., Shah, T., & Mushtaq, S. (2014). Relationship between loneliness, psychiatric disorders and physical health? A review on the psychological aspects of loneliness. *Journal of Clinical and Diagnostic Research*, 8(9), WE01–WE04. <https://doi.org/10.7860/JCDR/2014/10077.4828>
- Overholser, J. C. (1992). Sense of humor when coping with life stress. *Personality and Individual Differences*, 13(7), 799–804. [https://doi.org/10.1016/0191-8869\(92\)90053-R](https://doi.org/10.1016/0191-8869(92)90053-R)
- Parlapani, E., Holeva, V., Nikopoulou, V. A., Sereslis, K., Athanasiadou, M., Godosidis, A., ... Diakogiannis, I. (2020). Intolerance of uncertainty and loneliness in older adults during the COVID-19 pandemic. *Frontiers in Psychiatry*, 11(August), 1–12. <https://doi.org/10.3389/fpsy.2020.00842>
- Patterson, A. C., & Veenstra, G. (2010). Loneliness and risk of mortality: A longitudinal investigation in Alameda County California. *Social Science and Medicine*, 71(1), 181–186. <https://doi.org/10.1016/j.socscimed.2010.03.024>
- Perese, E. F., & Wolf, M. (2009). Combating loneliness among persons with severe mental illness: Social network interventions' characteristics, effectiveness, and applicability. *Issues in Mental Health Nursing*, 26, 591–609. <https://doi.org/10.1080/01612840590959425>
- Rivera-Riquelme, M., Piqueras, J. A., & Cuijpers, P. (2019). The revised mental health Inventory-5 (MHI-5) as an ultra-brief screening measure of bidimensional mental health in children and adolescents. *Psychiatry Research*, 274, 247–253. <https://doi.org/10.1016/j.psychres.2019.02.045>
- Santomauro, D. F., Herrera, A. M. M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D. M., ... Ferrari, A. J. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*, 398(10312), 1700–1712. [https://doi.org/10.1016/S0140-6736\(21\)02143-7](https://doi.org/10.1016/S0140-6736(21)02143-7)
- Saricali, M., Satıcı, S. A., Satıcı, B., Gocet-Tekin, E., & Griffiths, M. D. (2022). Fear of COVID-19, mindfulness, humor and hopelessness: A multiple mediation analysis. *International Journal of Mental Health and Addiction*, 20, 2151–2164. <https://doi.org/10.1007/s11469-020-00419-5>
- Schweda, A., Weissmüller, B., Bäuerle, A., Dörrie, N., Musche, V., Fink, M., ... Skoda, E. M. (2021). Phenotyping mental health: Age, community size, and depression differently modulate COVID-19-related fear and generalized anxiety. *Comprehensive Psychiatry*, 104, Article 152218. <https://doi.org/10.1016/j.comppsy.2020.152218>
- Shield, K. D., Chrystoja, B. R., Ali, S., Sohi, I., Rehm, J., Nigatu, Y. T., ... Wells, S. (2022). Changes in alcohol consumption in Canada during the COVID-19 pandemic: Associations with anxiety and self-perception of depression and loneliness. *Alcohol and Alcoholism*, 57(2), 190–197. <https://doi.org/10.1093/alc/alcab055>
- Teater, B., Chonody, J. M., & Hannan, K. (2021). Meeting social needs and loneliness in a time of social distancing under COVID-19: A comparison among young, middle, and older adults. *Journal of Human Behavior in the Social Environment*, 31(1–4), 43–59. <https://doi.org/10.1080/10911359.2020.1835777>
- van Tilburg, T. G., Steinmetz, S., Stolte, E., van der Roest, H., & de Vries, D. H. (2020). Loneliness and mental health during the COVID-19 pandemic: A study among Dutch older adults. *The Journals of Gerontology: Series B*, 1–7. <https://doi.org/10.1093/geronb/gbaa111>
- Van As, B. A. L., Imbimbo, E., Franceschi, A., Menesini, E., & Nocentini, A. (2022). The longitudinal association between loneliness and depressive symptoms in the elderly: A systematic review. *International Psychogeriatrics*, 34, 657–669. <https://doi.org/10.1017/S1041610221000399>
- Vannini, P., Gagliardi, G. P., Kuppe, M., Dossett, M. L., Donovan, N. J., Gatchel, J. R., et al. (2021). Stress, resilience, and coping strategies in a sample of community dwelling older adults during COVID-19. *Journal of Psychiatric Research*, 138, 176–185. <https://doi.org/10.1016/j.jpsychires.2021.03.050>
- Wang, J., Mann, F., Lloy-Evans, B., Ma, R., & Johnson, S. (2018). Associations between loneliness and perceived social support and outcomes of mental health problems: A systematic review. *BMC Psychiatry*, 18, 156. <https://doi.org/10.1186/s12888-018-1736-5>
- Wanzer, M. B., Booth-Butterfield, M., & Booth-Butterfield, S. (1996). Are funny people popular? An examination of humor orientation, loneliness, and social attraction. *Commun. Q*, 44(1), 42–52. <https://doi.org/10.1080/01463379609369999>
- Wanzer, M. B., Sparks, L., & Frymier, A. B. (2009). Humorous communication within the lives of older adults: The relationships among humor, coping efficacy, age, and life satisfaction. *Health Communication*, 24(2), 128–136. <https://doi.org/10.1080/10410230802676482>
- Weiss, R. S. (2007). Reflections on extended Bowlby theory. *The Scope of Social Psychology: Theory and Applications*, 253–262. <https://doi.org/10.4324/9780203965245>
- WHO. (2020). *Coronavirus 2019 (COVID-19) Situation Report—51*.
- Wickens, C. M., McDonald, A. J., Elton-Marshall, T., Wells, S., Nigatu, Y. T., Jankowicz, D., & Hamilton, H. A. (2021). Loneliness in the COVID-19 pandemic: Associations with age, gender and their interactions. *Journal of Psychiatric Research*, 136, 103–108. <https://doi.org/10.1016/j.jpsychires.2021.01.047>
- Xie, B., Charness, N., Fingerman, K., Kaye, J., Kim, M. T., & Khurshid, A. (2020). When going digital becomes a necessity: Ensuring older Adults' needs for information, services, and social inclusion during COVID-19. *Journal of Aging and Social Policy*, 32(4–5), 460–470. <https://doi.org/10.1080/08959420.2020.1771237>
- Yáñez, S. (2008). Adaptación al castellano de la escala para la evaluación de la soledad social y emocional en adultos SESLA-S. *International Journal of Psychology and Psychological Therapy*, 8(1), 103–116.
- Zamarro, G., & Prados, M. J. (2021). Gender differences in couples' division of childcare, work and mental health during COVID-19. *Review of Economics of the Household*, 19(1), 11–40. <https://doi.org/10.1007/s11150-020-09534-7>
- Zubatsky, M., Berg-Weger, M., & Morley, J. (2020). Using telehealth groups to combat loneliness in older adults through COVID-19. *Journal of the American Geriatrics Society*, 68(8), 1678–1679. <https://doi.org/10.1111/jgs.16553>