

Research Article

Longitudinal Correlates of Loneliness and Psychological Distress During the Lockdown Situation due to COVID-19. Effects of Age and Self-Perceptions of Aging

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Abstract

Objectives: To longitudinally analyze the correlates of loneliness and psychological distress in people exposed to the coronavirus disease 2019 (COVID-19) lockdown, exploring the effects of age and self-perceptions of aging (SPA).

Methods: A longitudinal follow-up of 1,549 participants was carried out at four different time points during the lockdown in Spain. Questions about the risk of COVID-19, age, SPA, family and personal resources, loneliness, and psychological distress were measured.

Results: Changes in loneliness showed a linear longitudinal trajectory through time, but changes in psychological distress showed a U-shaped relationship with time. Age was a relevant predictor of differences in distress, with older people reporting less psychological distress. Change in both dependent variables was related to change in different predictors like family and personal variables and also to negative SPA.

Discussion: In a stressful situation such as the COVID-19 pandemic, older adults may be more resilient to adverse mental health outcomes by using more adaptive resources that strengthen their resilience. Support is provided for the importance of stereotyped views of the aging process that, independently of chronological age, may put people at risk of suffering adverse mental health outcomes such as loneliness and psychological distress in times of crisis.

Keywords: Coping, Crisis, Depression, Expressed emotion, Self-efficacy

The lockdown situation associated with coronavirus disease 2019 (COVID-19) has been found to be related to loneliness and psychological distress (Losada-Baltar et al., 2020; Zhang et al., 2020). Considering the chronically stressful nature of the lockdown scenario, it is not surprising that the stress and coping model of Lazarus and

Folkman (1984) has been the conceptual framework within which several studies aimed at understanding psychological distress in this context have been conducted (Losada-Baltar et al., 2020; van Tilburg et al., 2020; Whitehead & Torossian, 2020). This model highlights not only the stressful context and the emotional consequences for the

individuals, but also the relevance of personal and social resources for understanding the differences in distress between individuals.

One of these personal variables is age. Most of the available cross-sectional studies have found a negative association between age and distress (Barber & Kim, 2020; Losada-Baltar et al., 2020; Palgi et al., 2020). This negative association may be explained through theoretical arguments such as those posited by the Strength and Vulnerability Integration (SAVI) model. This model describes how processes of emotional regulation may contribute to understanding why older adults report lower emotional distress than other age groups when exposed to stressful situations (Charles, 2010). However, in agreement with the SAVI model and previous research (Piazza et al., 2015; Sachs-Ericsson et al., 2016), when stressful events such as the COVID-19 outbreak and associated lockdown elicit sustained physiological arousal, age-related advantages may be attenuated or even disappear.

Self-perceptions of aging (SPA) may also be important predictors of adaptation to stress conditions. In fact, Lazarus and DeLongis (1983) highlighted that “beliefs about self and world are especially worthy of attention because they shape stress and coping over the life course” (p. 250). Under uncontrollable and pervasive stressors such as those related to COVID-19, holding negative SPA may contribute to decreases in the use of adaptive strategies for regulating emotions, thereby increasing levels of distress, as suggested by previous cross-sectional findings (Losada-Baltar et al., 2020).

The number of studies with a longitudinal follow-up of the COVID-19 on the mental health of the population is still sparse and has yielded mixed findings. For example, in a study conducted in China, no significant longitudinal changes in psychological distress were found during the COVID-19 outbreak (Wang et al., 2020). In Spain, Planchuelo-Gómez et al. (2020) reported increases in depression, anxiety, and stress. In a study conducted in Poland, no longitudinal association between feelings of loneliness and mental health during a 2-week period was found (Okruszek et al., 2020). However, in a study conducted in the United Kingdom, Bu et al. (2020) found that levels of loneliness tended to increase during the assessed period for younger adults, women, and those with mental health conditions. In addition, several longitudinal studies conducted in Argentina, Spain, and China reported a higher psychological impact of the lockdown in younger participants (Canet-Juric et al., 2020; González-Sanguino et al., 2020; Wang et al., 2020).

However, the available longitudinal studies outlined above provide information obtained through two assessment points, and there is a need for exploring potential correlates of psychological distress during situations such as the COVID-19 pandemic, considering age-related variables. The longitudinal associations of variables such as personal resources (e.g., coping) or family support with

loneliness and psychological distress have not yet been explored, although this analysis, through several assessment points, may provide unique knowledge about the mechanisms and processes explaining the temporal dynamics of mental health and loneliness in a crisis scenario such as COVID-19.

Drawing upon the stress and coping model (Lazarus & Folkman, 1984), the aim of this study was to longitudinally analyze the correlates of loneliness and psychological distress in people exposed to the COVID-19 lockdown, with a special interest in exploring the effects of age and SPA. Besides these main variables, other personal resources (emotion regulation—daily positive emotions, anger/irritability, coping—self-efficacy for coping with the situation, ability to entertain oneself and do daily exercise at home, and quality of sleep), family support, and self-perception of being a burden were explored as potential longitudinal correlates of distress and loneliness during the lockdown scenario.

Method

Participants and Procedure

A total of 1,549 participants from Spain, older than 18 years (mean age was 42.74, $SD = 16.13$; 70.82% women) participated in this study. The descriptive data of all the measured variables across time points are given in Table 1.

The data were gathered during the lockdown situation from Saturday March 21 to Friday May 1, 2020. After the first week of the lockdown period in Spain, a longitudinal follow-up of 1,546 participants was carried out at four different time points: T1 (baseline), T2 and T3, with a week (± 2 days) between assessments, and T4, 2 weeks (± 2 days) after T3. The flow of participants is shown in Figure 1. Participants were asked to complete a survey using the Google Forms platform. All participants provided their consent to participate in the study, which was approved by the Ethics Committee of the Hospital Universitario Fundación Alcorcón. After completing the first questionnaire, participants were requested to facilitate an email address in order to receive the following ones if they were willing to continue with the study.

Measures

In addition to sociodemographic data, the following variables were measured.

Self-perceptions of aging

This variable was measured through the Attitudes Toward Own Aging subscale (Liang & Bollen, 1983) following the procedure used by Levy et al. (2002). This is a five-item scale (e.g., “As you get older, you are less useful”), with higher scores indicating more negative self-perception of aging. The internal consistency (Cronbach’s alpha) in the

Table 1. Descriptive Data Across the Four Time Points of Assessment

	Baseline (n = 1,549)		T2 (n = 705)		T3 (n = 556)		T4 (n = 414)	
	n (%)	M (SD)	n (%)	M (SD)	n (%)	M (SD)	n (%)	M (SD)
Gender (women)	1,097 (70.8)		505 (71.6)		400 (71.9)		295 (71.3)	
Age (years)		42.7 (16.1)		43.4 (16.1)		44.8 (16.2)		46.0 (16.5)
18–29	447 (28.9)		201 (28.5)		146 (26.3)		104 (25.1)	
30–44	378 (24.4)		156 (22.1)		107 (19.2)		70 (16.9)	
45–59	437 (28.2)		206 (29.2)		178 (32.0)		136 (32.9)	
60+	277 (17.9)		136 (19.3)		119 (21.4)		101 (24.4)	
Self-perception of aging		1.8 (1.3)		1.8 (1.4)		1.8 (1.4)		2 (1.6)
Profession of risk of COVID-19	334 (21.7)		143 (20.5)		113 (20.6)		85 (20.7)	
Health risk if infected by COVID-19	361 (23.3)		173 (24.5)		130 (23.4)		99 (23.9)	
Time devoted to COVID-19 information		6.1 (2.4)		6.5 (1.4)		6.5 (1.4)		6.5 (1.4)
People coresiding		2.1 (1.3)		2.1 (1.3)		2 (1.3)		1.9 (1.3)
Satisfaction with family support		1.7 (0.5)		1.6 (0.5)		1.7 (0.5)		1.7 (0.5)
Self-perception as a burden		0.4 (0.8)		0.4 (0.7)		0.3 (0.7)		0.3 (0.7)
Contact with relatives not coresiding		7.4 (2.3)		7.5 (2.4)		7.7 (2.3)		7.6 (2.3)
Daily positive emotions		6.7 (1.8)		6.7 (1.9)		6.7 (2)		6.7 (1.8)
Ability to entertain oneself		8.5 (1.5)		8.5 (1.4)		8.5 (1.4)		8.5 (1.4)
Coresidents		2.1 (1.3)		2.1 (1.3)		2 (1.3)		1.9 (1.3)
Perceived self-efficacy		7.6 (1.9)		7.7 (1.7)		7.6 (1.8)		7.6 (1.9)
Daily hours of exercise		1.4 (1)		1.5 (1)		1.6 (1)		1.4 (1)
Sleep quality		2.9 (0.7)		2.9 (0.7)		2.9 (0.7)		2.9 (0.7)
Expressed emotion		5 (3.2)		4.1 (3.3)		3.9 (2.7)		3.7 (2.7)
Perceived loneliness		2.3 (2.6)		2.3 (2.5)		2.4 (2.6)		2.5 (2.7)
Distress		19.0 (10.1)		18.5 (9.9)		17.4 (10.5)		18.0 (10.5)

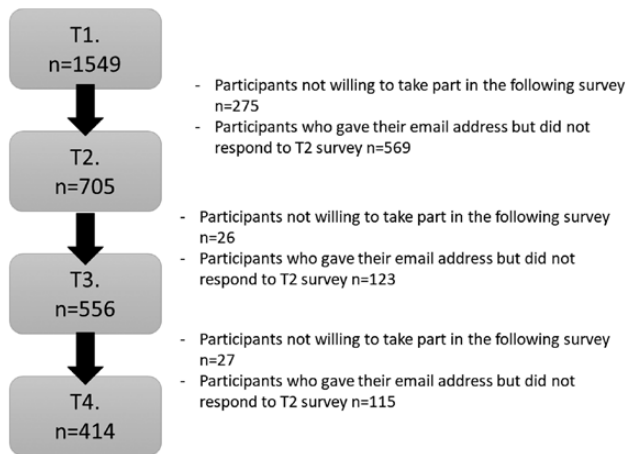


Figure 1. Flowchart of the study.

present study was 0.64 (T1), 0.71 (T2), 0.72 (T3), and 0.75 (T4). The measurement invariance results presented in [Supplementary Tables](#) show that factor loadings could be considered equal for all the groups.

Stressors

The following items were included: “Do you have a profession or vital situation that puts you in a risk situation?” (response options were “no” and “yes”), “Do you consider yourself to be at risk of serious health outcomes if getting COVID-19?” (response options were “no,” “yes,” and “I don’t know”), and “How much time do you devote to looking for and processing information related to COVID-19 and the current situation? (e.g., news, radio or TV, internet, others)” (answers ranged from 0 “Not at all” to 10 “I am attentive to all the possible information”).

Family resources

The items “I am satisfied with the support that I receive from my family” (adapted from the APGAR questionnaire [[Smilkstein, 1978](#)]; with answers ranging from 0 “almost never” to 2 “always”), “I feel that I am a burden to my family” (adapted from the Perceived Burden Scale [[Cousineau et al., 2003](#)]; with answers ranging from 0 “never or almost never” to 4 “almost always”), and “How much contact do you have with relatives different to those you reside with?” (answers from 0 “no contact at all” to 10 “I have all the contact that I need”) were included. Additionally, the number of coresiding people other than themselves was requested.

Personal resources

The following questions were included to measure daily positive emotions (“How many moments of happiness, humor, laughter, or positive emotions do you have per day?”; answers ranging from 0 “no moment at all” to 10 “I have many moments per day”); ability to entertain oneself at home (“To what extent do you feel that

you have resources for entertaining yourself at home?”; answers ranging from 0 “I have nothing to entertain myself with” to 10 “I have all the things I need”); and self-efficacy for coping with the situation (“To what extent do you feel capable of coping effectively with the current situation?”; answers ranging from 0 “not at all capable” to 10 “totally capable”). Daily time devoted to exercise was measured through a scale ranging from 0 “no time at all” to 4 “more than one hour and a half”. Similarly, quality of sleep was assessed through a scale ranging from 0 “very bad” to 3 “very good”. Finally, to measure expressed emotion, the items “To what extent do you like to have people around?,” “I feel that people living with me are driving me crazy,” “I lose my temper with those living with me,” and “I shout at people living with me” adapted from the Family Attitude Scale ([Kavanagh et al., 1997](#)) were included. Internal consistency (Cronbach’s alpha) results in the present study were 0.73 (T1), 0.73 (T2), 0.70 (T3), and 0.76 (T4).

Loneliness

Perceived loneliness was assessed following the procedure proposed by [Kool and Geenen \(2012\)](#), using the single item “How much loneliness do you feel?” with answers ranging from 0 “I do not feel lonely at all” to 10 “I feel absolutely lonely”.

Psychological distress

A five-item scale was used ([Losada-Baltar et al., 2020](#)), measuring anxiety, anger, sadness, fear, and hope (e.g., “How much anxiety do you feel?”; answers ranging from 0 “I do not feel ___ at all” to 10 “I feel totally ___”). Internal consistency (Cronbach’s alpha) results in the present study were 0.80 (T1), 0.81 (T2), 0.84 (T3), and 0.83 (T4).

Data Analysis

Missing cases were analyzed to test the plausibility of assuming that the *Missing at Random* mechanism required by *Full Information Maximum Likelihood* (FIML) was feasible ([Supplementary Material](#)). The following analyses were then performed in R’s *lavaan* package ([Rosseel, 2012](#)). All the variables of the study were standardized with reference to baseline to reduce the computational burden of the estimation and to ease the interpretability of the results (parameters can be interpreted in standardized metric). Different latent growth models were fitted to the data to determine the longitudinal trajectories of loneliness and psychological distress. Linear and quadratic longitudinal trajectories were explored in [Supplementary Materials](#). Once the longitudinal trajectory of each dependent variable was established, models with predictors were estimated for both dependent variables to examine the most relevant covariates. Two types of predictors were used in

these models, time-invariant and time-varying predictors. The time-invariant predictors do not change during the study and thus paths between them and the latent intercept and the latent slopes of the latent growth model were established. The time-varying predictors change during the study and their relations (paths) with the dependent variables were established in each measurement occasion (please note that the parameters were fixed for all the measurement occasions in each predictor). Although there is a directionality in the paths of the model, results should be thus interpreted as the covariance of change in the predictor and in the dependent variables. Additionally, a multi-group confirmatory factor analysis was conducted to test the measurement invariance of the SPA variable in [Supplementary Materials](#). ML and FIML were used as robust estimators for all the models.

Results

Longitudinal Trajectories for Loneliness and Psychological Distress

Linear and quadratic longitudinal trajectories were analyzed for both dependent variables ([Supplementary Materials](#)). Loneliness presented a linear longitudinal trajectory with an excellent model fit ($\chi^2(5) = 4.5415$, $p = .474$; comparative fit index [CFI] = 1.00; Tucker-Lewis Index [TLI] = 1.00; root mean square error of approximation [RMSEA] [90% CI] = 0.000 [0.000–0.034]; Akaike information criterion [AIC] = 7770.5). This model showed a nonstatistically significant intercept for loneliness ($b = -0.006$, $SE = 0.025$, z -value = -0.227 , $p = .820$) due to its being standardized, and a statistically significant positive linear slope ($b = 0.034$, $SE = 0.012$, z -value = 2.887 , $p < .001$), indicating an average increase of 0.034 standard deviations for each assessed moment (the total linear effect size for loneliness was 0.136).

Conversely, psychological distress presented a quadratic longitudinal trajectory where the quadratic term variance was fixed to zero. It had excellent model fit ($\chi^2(2) = 2.701$, $p = .259$; CFI = 1.00; TLI = 0.99; RMSEA [90%

CI] = 0.015 [0.000–0.055]; AIC = 22,343.67). This model showed a nonstatistically significant intercept for loneliness ($b = 0.003$, $SE = 0.025$, z -value = 0.131 , $p = .896$) due to its being standardized, a statistically significant linear slope ($b = -0.140$, $SE = 0.029$, z -value = -4.841 , $p < .001$), and a statistically significant quadratic slope ($b = 0.038$, $SE = 0.010$, z -value = 3.834 , $p < .001$).

Measurement moments were compared within latent growth curve models. In loneliness, linear differences between measurement moments were always the same for adjacent moments ($b = -0.034$, $SE = 0.012$, z -value = -2.887 , $p = .004$). As psychological distress had a quadratic longitudinal trajectory, a more complete post hoc comparison for measurement moments has been presented in [Table 2](#). Psychological distress presented a quadratic relation where an initial high reduction was followed by an increase through time (i.e., a U-shaped relationship between change in psychological distress and time was found), indicating that psychological distress tends to return to its initial state.

Longitudinal Model for Loneliness With Predictors

Model fit with predictors was adequate ($\chi^2(472) = 3,089.222$, $p < .001$, AIC = 107,642.429, RMSEA = 0.060 [90% CI = 0.058–0.062], standardized root mean-square [SRMR] = 0.114). [Table 3](#) presents the model results. Although it was not statistically significant, a negative effect of age was found to explain the levels of loneliness through time ($b = -0.154$, $SE = 0.085$, z -value = -1.811 , $p = .070$). The changes in the variable were the same for all the ages. A statistically significant effect was found for the number of coresiding people which negatively explains the levels of loneliness but not the changes of the variable through time. A positive relationship (covariance) was found between loneliness and the following predictors through time: negative SPA, perceiving themselves as a burden, reporting more self-efficacy, higher expressed emotion, and higher psychological distress. In contrast, a negative relationship (covariance) was found between loneliness and the following predictors through time: an increase in satisfaction with family support, contact with relatives not coresiding, positive emotions, having more ability to entertain oneself, and better sleep quality.

Table 2. Comparing Measurement Moments in Latent Growth Curve Models for Psychological Distress

Comparison	Estimate	SE	z-Value	p
T1–T2	0.102	0.020	5.071	<.001
T1–T3	0.130	0.026	4.947	<.001
T1–T4	0.081	0.034	2.399	.016
T2–T3	0.027	0.011	2.399	.016
T2–T4	-0.021	0.033	-0.632	.527
T3–T4	-0.048	0.025	-1.936	.053

Notes: SE = standard error. T1–T4 = Measurement moment 1 to 4. Measurement moment comparisons were computed as the difference between moments within latent growth curve models. A quadratic longitudinal trajectory was found for psychological distress.

Longitudinal Model for Psychological Distress With Predictors

Model fit with predictors was adequate ($\chi^2(469) = 3,093.329$, $p < .001$, AIC = 108,032.768, RMSEA = 0.060 [90% CI = 0.058–0.062], SRMR = 0.113). [Table 4](#) presents the model results. Age was negatively related to the levels of psychological distress (older participants presented lower psychological distress) through time ($b = -0.364$, $SE = 0.084$, z -value = -4.360 , $p < .001$), but

Table 3. Results for Latent Growth Curve Model With Predictors for Loneliness

Intercepts and slopes	Estimate	SE	z-value
Intercept (mean)	0.034	0.022	1.496
Linear slope (mean)	0.023	0.012	1.860
Intercept (variance)	0.371	0.025	14.663**
Linear slope (variance)	0.001	0.000	1.030
Intercept and linear slope covariance	-0.008	0.008	-0.996
Path estimates	Estimate (std. estimate)	SE	z-value
<i>Time-invariant predictors</i>			
Gender (ref: men) → Intercept	0.227 (0.138)	0.268	0.849
Gender (ref: men) → Slope	12.327 (0.270)	6.404	1.925
Age (years) → Intercept	-0.154 (-0.076)	0.085	-1.811
Age (years) → Slope	0.035 (0.001)	1.092	0.032
People coresiding → Intercept	-0.490 (-0.298)	0.262	-7.950**
People coresiding → Slope	0.803 (0.018)	1.217	0.660
Profession of risk (ref: No) → Intercept	0.193 (0.118)	0.200	0.966
Profession of risk (ref: No) → Slope	9.239 (0.203)	4.799	1.925
<i>Time-varying predictors</i>			
Health risk from COVID-19 (ref: No)	-0.056	0.038	-1.483
Self-perception of aging	0.066	0.016	4.136**
Time devoted to information	0.002	0.015	0.168
Satisfaction with family support	-0.037	0.013	-2.875**
Self-perception as a burden	0.113	0.017	6.657**
Contact with relatives not coresiding	-0.083	0.016	-5.230**
Positive emotions	-0.101	0.016	-6.350**
Ability to entertain oneself	-0.113	0.016	-7.059**
Self-efficacy	0.034	0.016	2.128*
Daily hours of exercise	-0.012	0.015	-0.809
Sleep quality	-0.035	0.015	-2.89*
Expressed emotion	0.115	0.028	4.138**
Psychological distress	0.281	0.020	14.352**

Notes: SE = standard error; std. estimate = standardized estimate. Time-varying estimations are equal to standardized estimates due to all the variables being standardized. Time-varying predictor parameters were fixed to be equal across measurement moments.

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

the changes in the variable were the same for all ages. In this way, a positive relationship (covariance) was found between psychological distress and the following predictors through time: negative SPA, more time devoted to news about the illness, perceiving themselves as a burden, reporting more contact with relatives not coresiding with, higher expressed emotion, higher reported loneliness, and having health risk from COVID-19. Conversely, a negative relationship (covariance) was found between psychological distress and the following predictors through time: an increase in positive emotions, self-efficacy and sleep quality, and having more ability to entertain oneself at home.

Discussion

The findings support that the mandatory COVID-19 lockdown situation at home has increased loneliness in the general population; a significant linear increase in this feeling was observed through the lockdown period. Changes through time in loneliness scores were similar for all age

groups. The finding that the number of coresiding people was not significant in the prediction of changes in loneliness through time provides further support for the distinction between social isolation and loneliness when analyzing their interplay with other variables (Shankar et al., 2011). The increase in loneliness was higher in those reporting higher negative SPA and self-perception as a burden, fewer personal resources (lower daily positive emotions, higher anger/irritability, less ability to entertain oneself, and lower sleep quality), lower satisfaction with family support, less contact with relatives not coresiding with, and higher distress. Surprisingly, a higher report of self-efficacy was found to be associated with higher reported loneliness through the lockdown period (this finding will be discussed later).

Regarding distress, the findings show a U-shaped trajectory of distress feelings through the lockdown period: a decrease in distress is observed after baseline, but distress levels at the end of the lockdown period increase again to similar levels to those observed at baseline. Focusing on age, although changes in distress with time were similar

Table 4. Results for Latent Growth Curve Model With Predictors for Psychological Distress

Intercepts and slopes	Estimate	SE	z-value
Intercept (mean)	0.001	0.022	0.052
Linear slope (mean)	-0.043	0.032	-1.375
Quadratic slope (mean)	0.001	0.012	0.070
Intercept (variance)	0.361	0.025	14.397**
Linear slope (variance)	0.004	0.003	1.260
Intercept and linear slope covariance	0.038	0.015	2.490*
Intercept and quadratic slope covariance	-0.009	0.005	-2.057*
Linear and quadratic slopes covariance	-0.001	0.001	-1.075
Path estimates	Estimate (std. estimate)	SE	z-value
<i>Time-invariant predictors</i>			
Gender (ref: men) → Intercept	0.478 (0.287)	0.595	0.803
Gender (ref: men) → Slope	-6.640 (-0.436)	4.893	-1.357
Age (years) → Intercept	-0.364 (-0.219)	0.084	-4.360**
Age (years) → Slope	-0.024 (-0.002)	0.586	-0.040
People coresiding → Intercept	0.070 (0.042)	0.081	0.863
People coresiding → Slope	0.010 (0.001)	0.586	0.017
Profession of risk (ref: No) → Intercept	0.532 (0.320)	0.451	1.179
Profession of risk (ref: No) → Slope	-4.982 (-0.327)	3.703	-1.346
<i>Time-varying predictors</i>			
Health risk from COVID-19 (ref: No)	0.093	0.036	2.581*
Self-perception of aging	0.130	0.015	8.647**
Time devoted to information	0.121	0.014	8.589**
Satisfaction with family support	-0.003	0.013	-0.257
Self-perception as a burden	0.054	0.016	3.35**
Contact with relatives not coresiding	0.037	0.015	2.478*
Positive emotions	-0.117	0.015	-7.974**
Entertainment resources	-0.037	0.015	-2.434*
Self-efficacy	-0.235	0.015	-16.198**
Daily hours of exercise	-0.007	0.014	-0.485
Sleep quality	-0.114	0.014	-7.953**
Expressed emotion	0.190	0.026	7.401**
Loneliness	0.048	0.015	3.291**

Notes: SE = standard error; std. estimate = standardized estimate. Variables did not predict quadratic slopes due to the quadratic term variance being fixed to zero. Time-varying estimations are equal to standardized estimates due to all the variables being standardized. Time-varying predictor parameters were fixed to be equal across measurement moments.

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

for all ages, older participants reported lower distress through time. Our findings suggest that age-related advantages that were observed at the outbreak of COVID-19 (Losada-Baltar et al., 2020) are not attenuated through time. As it was found for loneliness, increases in distress were also higher in participants reporting more negative SPA and self-perceptions of being a burden. With regard to stressors, personal and support-related variables, higher increases in distress through time are observed for those devoting more time to information, having more fear regarding own health, fewer personal resources (coping—lower self-efficacy and ability to entertain oneself at home, more anger/irritability, and less quality of sleep), more contact with relatives not coresiding, and more loneliness.

The longitudinal association between self-efficacy for coping with the situation and lower distress, but higher loneliness, may be explained by the potential contrast experienced by participants with higher levels of self-efficacy between their self-perception of self-efficacy for coping with the situation, associated with lower distress, and the limitations imposed by the lockdown situation (e.g., impossibility of reconnecting with their social contacts and relationships), which may increase loneliness.

A relevant finding of the present study is the identification of the significant influence of holding negative SPA on participants' increase in loneliness and distress levels, irrespective of chronological age. These results are consistent with previous studies that have linked negative SPA to adverse outcomes (Klusmann, 2019; Xiao et al., 2019).

Taken together, the findings of this study are coherent with the theoretical arguments of the stress and coping model (Lazarus & Folkman, 1984) and the Stereotype Embodiment theory (Levy, 2009), as they show the relevance of personal and social resources for understanding the psychological impact of the stress associated with the COVID-19 pandemic, highlighting the contribution of age and SPA in the stress process.

The obtained results may also contribute to understanding the mixed or contradictory findings of previous longitudinal studies, which reported either no changes in peoples' mental health through time (Wang et al., 2020) or increases (Planchuelo-Gómez et al., 2020). The U-shaped trajectory of distress feelings suggests that emotions have fluctuated during the lockdown period. It may be possible that people react differently to the changing circumstances associated with the pandemic.

This study has several limitations. Although the findings suggest that there are no significant differences between those who continued participating through the complete study process and those who left the study, differences between both groups in other variables may exist. Also, as further discussed in the study of Losada-Baltar et al. (2020), the sample may not be representative of the general Spanish population. In addition, even though acceptable to good reliability indexes have been found for the different scales that have been used through all the four assessment points, the use of single items for measuring the wide-ranging effects of the lockdown situation is a limitation of the study. Also, relevant variables that have been shown to have a longitudinal impact on loneliness or distress have not been measured, such as income (Bu et al., 2020) or availability of medical resources (Qiu et al., 2020). In addition, even though this study has a longitudinal design, the data were recruited early in the pandemic with four assessment points during approximately 1 month, so the limited follow-up time may not have been enough to capture the long-term effects of the lockdown situation. Finally, the obtained longitudinal data allow an analysis to be made of covariation between predictors and dependent variables that were measured, but does not allow a conclusion to be drawn as to which variables elicit changes in other variables.

Taken together, the findings suggest that specific personal characteristics make some individuals more resilient to the stressful nature of the lockdown situation, reducing the chances of feeling loneliness and psychological distress. One of these characteristics is older age, but also a positive perception of one's own aging process. Internalizing the negative stereotypes toward aging seems to be related to negative mental health outcomes, independently of chronological age.

Supplementary Data

Supplementary data are available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

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Conflict of Interest

None declared.

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References

- Barber, S. J., & Kim, H. (2020). COVID-19 worries and behavior changes in older and younger men and women. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 76(2), 17–23. doi:10.1093/geronb/gbaa068
- Bu, F., Steptoe, A., & Fancourt, D. (2020). Loneliness during lockdown: Trajectories and predictors during the COVID-19 pandemic in 35,712 adults in the UK. *medRxiv*. doi:10.1101/2020.05.29.20116657
- Canet-Juric, L., Andrés, M. L., Del Valle, M., López-Morales, H., Poó, F., Galli, J. I., Yerro, M., & Urquijo, S. (2020). A longitudinal study on the emotional impact cause by the COVID-19 pandemic quarantine on general population. *Frontiers in Psychology*, 11, 2431. doi:10.3389/fpsyg.2020.565688
- Charles, S. T. (2010). Strength and vulnerability integration: A model of emotional well-being across adulthood. *Psychological Bulletin*, 136(6), 1068–1091. doi:10.1037/a0021232
- Cousineau, N., McDowell, I., Hotz, S., & Hébert, P. (2003). Measuring chronic patients' feelings of being a burden to their caregivers: Development and preliminary validation of a scale. *Medical Care*, 41(1), 110–118. doi:10.1097/00005650-200301000-00013
- González-Sanguino, C., Ausín, B., Castellanos, M. A., Saiz, J., López-Gómez, A., Ugidos, C., & Muñoz, M. (2020). Mental health consequences of the coronavirus 2020 pandemic (COVID-19) in Spain. A longitudinal study. *Frontiers in Psychiatry*, 87, 172–176. doi:10.3389/fpsy.2020.565474
- Kavanagh, D. J., O'Halloran, P., Manicavasagar, V., Clark, D., Piatkowska, O., Tennant, C., & Rosen, A. (1997). The Family Attitude Scale: Reliability and validity of a new scale for measuring the emotional climate of families. *Psychiatry Research*, 70(3), 185–195. doi:10.1016/s0165-1781(97)00033-4
- Klusmann, V., Sproesser, G., Wolff, J. K., & Renner, B. (2019). Positive self-perceptions of aging promote healthy eating

- behavior across the life span via social-cognitive processes. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 74(5), 735–744. doi:10.1093/geronb/gbx139
- Kool, M. B., & Geenen, R. (2012). Loneliness in patients with rheumatic diseases: The significance of invalidation and lack of social support. *The Journal of Psychology*, 146(1–2), 229–241. doi:10.1080/00223980.2011.606434
- Lazarus, R. S., & DeLongis, A. (1983). Psychological stress and coping in aging. *American Psychologist*, 38(3), 245–254. doi:10.1037/0003-066X.38.3.245
- Lazarus, R. F. & Folkman, S. C. S. (1984). *Stress, appraisal and coping*. Springer Publishing Company.
- Levy, B. (2009). Stereotype embodiment: A psychosocial approach to aging. *Current Directions in Psychological Science*, 18(6), 332–336. doi:10.1111/j.1467-8721.2009.01662.x
- Levy, B. R., Slade, M. D., Kunkel, S. R., & Kasl, S. V. (2002). Longevity increased by positive self-perceptions of aging. *Journal of Personality and Social Psychology*, 83(2), 261–270. doi:10.1037//0022-3514.83.2.261
- Liang, J., & Bollen, K. A. (1983). The structure of the Philadelphia Geriatric Center Morale scale: A reinterpretation. *Journal of Gerontology*, 38(2), 181–189. doi:10.1093/geronj/38.2.181
- Losada-Baltar, A., Jiménez-Gonzalo, L., Gallego-Alberto, L., Pedroso-Chaparro, M. D. S., Fernandes-Pires, J., & Márquez-González, M. (2020). “We’re 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: Psychological Sciences and Social Sciences*, 76(2), 10–16. doi:10.1093/geronb/gbaa048
- Okruszek, L., Aniszewska-Stańczuk, A., Piejka, A., Wiśniewska, M., & Żurek, K. (2020). Safe but lonely? Loneliness, mental health symptoms and COVID-19. *PsyArXiv*, 11, 579181. doi:10.31234/osf.io/9njps
- Palgi, Y., Shrira, A., Ring, L., Bodner, E., Avidor, S., Bergman, Y., Cohen-Fridel, S., Keisari, S., & Hoffman, Y. (2020). The loneliness pandemic: Loneliness and other concomitants of depression, anxiety and their comorbidity during the COVID-19 outbreak. *Journal of Affective Disorders*, 275, 109–111. doi:10.1016/j.jad.2020.06.036
- Piazza, J. R., Charles, S. T., Luong, G., & Almeida, D. M. (2015). One size fits all? Applying theoretical predictions about age and emotional experience to people with functional disabilities. *Psychology and Aging*, 30(4), 930–939. doi:10.1037/pag0000045
- Planchuelo-Gómez, A., Odriozola-González, P., Iruiria, M. J., & de Luis-García, R. (2020). Longitudinal evaluation of the psychological impact of the COVID-19 crisis in Spain. *Journal of Affective Disorders*, 277, 842–849. doi:10.1016/j.jad.2020.09.018
- Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *General Psychiatry*, 33(2), e100213. doi:10.1136/gpsych-2020-100213
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling and more. Version 0.5–12 (BETA). *Journal of Statistical Software*, 48(2), 1–36. doi:10.18637/jss.v048.i02
- Sachs-Ericsson, N. J., Rushing, N. C., Stanley, I. H., & Sheffler, J. (2016). In my end is my beginning: Developmental trajectories of adverse childhood experiences to late-life suicide. *Aging & Mental Health*, 20(2), 139–165. doi:10.1080/13607863.2015.1063107
- Shankar, A., McMunn, A., Banks, J., & Steptoe, A. (2011). Loneliness, social isolation, and behavioral and biological health indicators in older adults. *Health Psychology*, 30(4), 377–385. doi:10.1037/a0022826
- Smilkstein, G. (1978). The family APGAR: A proposal for a family function test and its use by physicians. *The Journal of Family Practice*, 6(6), 1231–1239.
- 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: Psychological Sciences and Social Sciences*. doi:10.1093/geronb/gbaa111
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., McIntyre, R. S., Choo, F. N., Tran, B., Ho, R., Sharma, V. K., & Ho, C. (2020). A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, Behavior, and Immunity*, 87, 40–48. doi:10.1016/j.bbi.2020.04.028
- Whitehead, B. R., & Torossian, E. (2020). Older adults’ experience of the COVID-19 pandemic: A mixed-methods analysis of stresses and joys. *The Gerontologist*, 61(1), 36–47. doi:10.1093/geront/gnaa126
- Xiao, L., Yang, H., Du, W., Lei, H., Wang, Z., & Shao, J. (2019). Subjective age and depressive symptoms among Chinese older adults: A moderated mediation model of perceived control and self-perceptions of aging. *Psychiatry Research*, 271, 114–120. doi:10.1016/j.psychres.2018.11.034
- Zhang, S. X., Wang, Y., Rauch, A., & Wei, F. (2020). Unprecedented disruption of lives and work: Health, distress and life satisfaction of working adults in China one month into the COVID-19 outbreak. *Psychiatry Research*, 288, 112958. doi:10.1016/j.psychres.2020.112958