



Regular Research Article

Understanding Psychological Distress and Protective Factors Amongst Older Adults During the COVID-19 Pandemic

Nichole Sams, B.A., Dylan M. Fisher, B.S., Felicia Mata-Greve, Ph.D., Morgan Johnson, M.S., Michael D. Pullmann, Ph.D., Patrick J. Raue, Ph.D., Brenna N. Renn, Ph.D., Jaden Duffy, B.S., Doyanne Darnell, Ph.D., Isabell Griffith Fillipo, B.A., Ryan Allred, B.A., Kathy Huynh, B.A., Emily Friedman, M.I.D., C.P.E., Patricia A. Areán, Ph.D.

ARTICLE INFO

Article history:

Received December, 16 2020

Revised February, 23 2021

Accepted March, 15 2021

KEY WORDS:

Social isolation
aging
COVID
resiliency

ABSTRACT

Objectives: *This study examined the emotional distress and loneliness during COVID-19 and the roles of resiliency and activities. **Design:** A cross-sectional national survey. **Setting:** Amazon Mechanical Turk (mTurk) and Prolific Research Platforms. **Participants:** Five hundred and one U.S. dwelling English-speaking adults 60 years old and older. **Measurements:** Participants completed an online survey with the PHQ-9; GAD-7; Short Health Anxiety Inventory; 3-item UCLA Loneliness scale; PROMIS measures of global health, instrumental, and emotional support; 10-item Connor-Davidson Resilience Scale; and COVID-19 needs assessment. **Results:** Across the sample 13% reported moderate depressive symptoms, 9% reported moderate anxiety symptoms, and 26% endorsed being “lonely.” The emotionally distressed group endorsed more loneliness, lower resiliency, less physical exercise, and worse physical health. The low Socio-Economic Status group endorsed less loneliness, less likely to engage in physical exercise and worse physical health. The lonely group endorsed less resilience, less physical exercise, and worse physical health. A multiple logistic regression found that resilience, socioeconomic status, and physical health were significant predictors of loneliness, whereas global health was the best predictor of emotional distress. **Conclusions:** Even after prolonged social distancing, older adults in this study did not report greater psychological distress compared to earlier studies of older adults during COVID-19. Older adults with lower SES, worse*

From the University of Washington Department of Psychiatry and Behavioral Sciences (NS, DMF, FMG, MJ, MDP, JD, DD, IGF, PAA), Seattle, WA; University of Washington ALACRITY Center (NS, FMG, MJ, MDP, PJR, JD, RA, KH, EF, PAA), Seattle, WA; University of Washington AIMS Center (PJR, PAA), Seattle, WA; and the University of Nevada Las Vegas Department of Psychology (BNR), Las Vegas, NV. Send correspondence and reprint requests to Patricia A. Areán, Ph.D. University of Washington Department of Psychiatry and Behavioral Sciences, 1959 NE Pacific Street, Seattle, WA 98195 e-mail: parean@uw.edu

© 2021 American Association for Geriatric Psychiatry. Published by Elsevier Inc. All rights reserved.

<https://doi.org/10.1016/j.jagp.2021.03.005>

physical health, and less resiliency, were more likely to report more loneliness. It is this group that should be the focus of intervention. (Am J Geriatr Psychiatry 2021; 29:881–894)

Highlights

- **What is the primary question addressed by this study?**

The purpose of this study was to determine the mental health impact of social distancing due to COVID-19 and to measure the whether resilience, socio-economic status, ethnic and minority status, physical health and engagement with activities predicted psychological distress and loneliness during this time.

- **What is the main finding of this study?**

After 3 months of social distancing policies, approximately one quarter of US dwelling older adults endorse psychological distress in the form of depression, general anxiety or health related anxiety, and that those with poorer physical health, lower SES and lower resiliency are at greatest risk for psychological distress.

- **What is the meaning of the finding?**

Our results suggest that special attention be given to those with fewer financial resources and that strategies to help at-risk older adults should include those aimed at increasing physical and social activity, and social and instrumental support, similar to those interventions found to be effective for distress older adults during non-pandemic times.

OBJECTIVE

On March 11, 2020 the coronavirus disease (COVID-19), caused by the SARS-CoV-2 virus, was declared a pandemic by the World Health Organization¹ with older people identified as being at high risk for adverse outcomes. The rapid outbreaks of COVID-19 resulting in numerous deaths in senior housing amplified the need across the globe to implement stay at home orders, and in the United States, such restrictions were recommended by the Center for Disease Control and Prevention to prevent the spread of the virus.² While these measures were important to implement, there has been concern that these measures put older adults at risk for negative mental, cognitive and physical health³ outcomes resulting from increased social isolation and perceived loneliness. Interestingly, early reports on the social and mental health consequences of COVID-19 social distancing measures have found that mental health outcomes of older adults remain stable,⁴ and older adults seem to experience far less mental health consequences in the context of COVID-19 than younger adults.⁵ One North American study showed a significant increase in depressive symptoms in older adults; however, rates were still lower than in their younger populations.⁶ A U.S. study including older

adults with current and past histories of mental illness⁷ reported mental health was not exacerbated by COVID-19 social distancing measures.

Caution should be taken in interpreting this data. These early surveys may be influenced by the perception that such measures were temporary.⁸ Mental health challenges may be more prominent after prolonged exposure to social distancing⁹ and certain populations of older adults may be at greater risk than others. Recent data on the over-representation of COVID-19 cases and deaths among individuals from low-income backgrounds or that identify as people of color,^{10,11} suggests that these underrepresented groups of older adults may be at greater risk for adverse mental health outcomes. In addition, psychological resiliency and level of activity in older adults may play an important role in psychological well-being under social distancing measures. Much could be learned from those older adults who have been socially isolated during this time and have sustained positive psychological functioning.¹² There is also concern that older adults with underlying physical health conditions might be at increased risk for emotional distress during COVID-19.¹³ Studies repeatedly demonstrate a link between physical health and loneliness, such that increased loneliness is linked to higher risk for mortality.¹⁴ Recent work has shown that loneliness and emotional distress are linked to

worries about worsening health among older adults under stay at home orders.¹⁵

The purpose of this national cross-sectional study was to better understand emotional distress, loneliness, and resilience among older adults after prolonged exposure to social distancing in the context of COVID-19. First, this study sought to document the emotional distress, loneliness and social support, resiliency and activity levels, and physical health among older adults. Because of the disproportionate impact of COVID-19 on underrepresented groups, we also examined differences by income and reported racial and ethnic background (i.e., proxies for systemic discrimination). Second, we examined how each of these constructs predicted loneliness and distress. Information from this survey might inform which older adults should be the focus of intervention efforts, and what strategies may serve to reduce the negative consequences of social distancing policies in future pandemics.

METHODS

Study Design and Participants

We conducted a national, cross-sectional study of 501 older adults (60+ years old) in the United States using two online crowdsourcing survey platforms: Prolific and Amazon.com, Inc. Mechanical Turk (MTurk). After a brief screen, preregistered participants elected to complete a survey about mental health and coping among older adults in the U.S. during COVID-19. Participants were ineligible to participate if they were under 60 years of age, non-English speaking, or lived outside of the U.S. Responses were collected from June 16, 2020 to June 25, 2020. Participants provided informed consent online prior to completing the anonymous, confidential survey. Participants were paid \$5.00 for participation. The research was approved by the University of Washington's institutional review board.

Participants were preregistered within the crowdsourcing platform from MTurk and Prolific. These platforms permit users to efficiently complete surveys and other tasks in exchange for compensation. Previous research has highlighted the benefits of such platforms, which allow for efficient data collection from populations with diverse backgrounds.^{16,17}

We planned to collect a sample representative of this age group of the U.S. by opening several surveys

with prescreening for race and ethnicity.¹⁸ Specifically, 11% of slots were earmarked for African American or Black individuals, 16.4% for Hispanic or Latinx persons, 5.85% for Asian Americans or individuals of Asian descent, 0.14% for Pacific Islanders and 1.3% for Indigenous People^a.

Because on-line recruitment can sometimes result in "bad actors" (individuals or entities who participate in bad faith to accumulate monetary incentives,¹⁹ we instituted a number of safe-guards. The first was to use research platforms (described above) that conduct their own extensive participant vetting. These procedures include but are not limited to: every account needs a unique non-VOIP phone number to verify; restricted signups based on IP and ISP; limit the number of accounts that can use the same IP address and the machine to prevent duplicate accounts; limit the number of unique IPs per study; PayPal accounts for getting paid must be unique to a participant account. This means that in order to have two participant accounts that get paid, you would also need to have two PayPal accounts. PayPal also has steps to prevent duplicate accounts; analyze internal data to monitor for unusual usage patterns.²⁰ In addition to platform specific quality checks, we employed our own systems, such as attention checks²¹ and review of open-ended answers to questions. These methods confirmed that our final sample in this study could be qualified as "good actors."

Measures

Demographics

Participants completed a demographic questionnaire, which inquired about age, gender, living situation, marital status, race, ethnicity, English language use, and socioeconomic status.

Mental health

Participants completed the Patient Health Questionnaire – 9-item (PHQ-9)²² and the Generalized Anxiety

^a We use the American Psychological Association 2020 recommended term "traditionally under-represented" for what most people refer to as "minority". We also use the DHHS terms for racial and ethnic populations in the US.

Disorder – 7-item (GAD-7).²³ Because of the health consequences of COVID-19, we also had participants complete the Short Health Anxiety Inventory (SHAI).²⁴ In the event that a participant endorsed an item suggesting thoughts of self-harm or suicide (i.e., 9th item of the PHQ-9), they received crisis resources consistent with standards of care for remote administration of the PHQ-9 outlined by Mental Health America. Per previous validation studies, the PHQ-9 performs comparatively well to the Geriatric Depression Scale for older adults,²⁵ and people of color in the United States.²⁶ Previous studies suggest that the GAD-7 is well-validated among older adults²⁷ and low-income people of color in the United States.²⁸

Loneliness was measured using the UCLA Three-Item Loneliness Scale.²⁹ The UCLA Loneliness Scale has demonstrated good reliability and validity among older adults³⁰ in the United States. In addition, the validation article oversampled people of color.²⁹ In addition, a recent study¹⁵ used this measure with a racially and ethnically diverse (30% people of color) sample of older adults.

Social and instrumental support was measured with the Patient Reported Outcomes Measurement Information System (PROMIS) instrumental and emotional support scale.³¹ Electronically delivered PROMIS measures have been successfully validated with older adults,³² and older traditionally under-represented populations.³³

Physical health was measured with the PROMIS Global Health scale.³⁴ As above, PROMIS measures have been well validated with older adults and older traditionally under-represented populations.

Psychological resiliency was measured using the 10-item Connor-Davidson Resilience Scale (10-item CD-RISC).³⁵ This scale defines resilience as one's ability to cope with an adverse event by adapting to changes, managing stress, and tolerating unpleasant feelings. The CD-RISC is a 10-item measure that consists of several statements about coping (e.g., "I am not easily discouraged by failure"). Participants rate how well this statement fits their response on a scale from 0 *Not true at all* to 4 *True nearly all of the time*. The CD-RISC has been validated with a demographically representative community sample of older adults in San Diego county. Of note, the study used digit dial sampling.³⁶

Activity level and social distancing practices

Participants completed a survey the team created concerning level of vocational, social, and physical activity, as well as their adherence to social-distancing practices. This survey included the challenges to activity level that social distancing created as well as any new activities older participants engaged in since COVID-19 (see Supplemental Materials).

Data Analyses

To simplify interpretation of the data, we created a distress composite score. Participants were placed in the "distressed" category if they endorsed one or more of the following: moderate to severe depressive symptoms (score ≥ 10 on the PHQ-9), moderate to severe anxiety symptoms (score ≥ 10 on the GAD-7), and/or clinically significant health anxiety symptoms (scoring ≥ 20 on the SHAI). Loneliness was dichotomized to "lonely" (scored 6–9 on the Three-Item Loneliness Scale) and "not lonely" (scored 5 or less on the Three-Item Loneliness Scale).³⁷

Financial status was dichotomized to reflect socioeconomic status via financial stability (endorsed being "comfortable") or financial instability (endorsed "having just enough to get along" or "can't make ends meet").

Because of the low number of participants in each racial and ethnic group, we also dichotomized race and ethnicity into persons of color and White persons. We used self-reported race and ethnicity as a proxy for systemic racism.³⁸

For the first aim, which sought to document mental health outcomes among older adults, we assessed mean scores and frequencies across the entire sample. We examined demographic information, global physical health, instrumental support, emotional support, and resilience and levels of depression, anxiety, health anxiety, and loneliness, separately and as interpretive scores. We tested differences among these variables between distress (i.e., distress versus non-distress groups), race and ethnicity (i.e., people of color versus White persons) and socioeconomic status (i.e., financial stability versus financial instability). All mean differences were assessed using Fisher's exact tests or independent samples t tests and calculated effect sizes (Cohen's *d*).

To examine the association between race and ethnicity, socioeconomic status, resiliency, and new activity engagement and 1) psychological distress and 2) loneliness we conducted two series of multiple logistic regressions in stepwise fashion. The first stepwise regression predicted the distress composite score, with race and ethnicity, socioeconomic status, resiliency, new activity engagement, social distance participation, and global physical health as predictor variables. The second stepwise regression predicted, loneliness, and race and ethnicity, financial stability, resiliency, new activity engagement, social distance participation, and global physical health were specified as explanatory variables. Because 23 individuals did not provide information regarding socioeconomic status, they were dropped from the regression analyses, leaving 478 participants. All statistical analyses were performed with SAS version 9.4. To account for Type 1 error, we used the Benjamini-Hochberg (B-H) procedure, as is appropriate for exploratory analyses where a less conservative approach to adjusting for familywise error is warranted.³⁹ The BH procedure applies an acceptable “false discovery rate,” which is the acceptable fraction of tests that are erroneously statistically significant. We applied a false discovery rate (Q) of 10% applied to 60 statistical tests.

RESULTS

Sample Description

We recruited 501 older adults. The sample was largely female (66.3%), college educated (80.6%), White (75.0%) and living in mixed aged communities (76.4%). Half the sample was married or partnered (51.9%) and not currently working (51.9%). Less than half the sample indicated they were financially comfortable (39.1%), while 50.2% endorsed having just enough to get along, and 10.7% said they could not make ends meet (Table 1).

Depression, Anxiety, and Health Related Anxiety

In the total sample, 23% reported mild levels of depression (PHQ-9 of 5-9), and 12.8% reported moderate-to-severe levels of depression (PHQ-9 \leq 10). Generalized anxiety was more prevalent at mild levels, with 18.8% reporting GAD-7 scores between 5

and 9, and 8.6% reported a GAD-7 of 10 or greater (i.e., moderate to severe ranges). Rates of health-related anxiety were similar, with 15.8% reporting significant number of anxiety symptoms. When these data were combined into one composite distressed score, we found overall, that 23.8% of the sample qualified as distressed.

We also found that people who were less financially stable were more likely to be depressed than those who were financially stable. We found similar findings for generalized anxiety and health-related anxiety. No differences in depression, generalized anxiety and health-related anxiety were found between people of color and White persons (Table 2).

Loneliness, Emotional, and Instrumental Support

Table 3 reports effect sizes and outcomes for social isolation measures stratified by distress, socioeconomic status, race/ethnicity, and loneliness. A majority of the sample (73.5%) did not report being lonely on the UCLA 3-item Loneliness Scale, and reported having average levels of instrumental (M = 52.2 SD = 11.2) and social support (M = 51.0, SD = 1.0). We found significant differences between distressed and non-distressed groups on self-reported loneliness ($t(161.4) = -8.72$, $p < 0.001$), instrumental support ($t(498) = 2.22$, $p = 0.027$), and emotional support ($t(499) = 5.33$, $p < 0.001$). Likewise, compared to those who were financially stable, those who were financially unstable were more likely to be lonely ($t(465.1) = -5.75$, $p < 0.001$), have less instrumental support ($t(476) = 6.32$, $p < 0.001$), and less emotional support ($t(476) = 5.89$, $p < 0.001$). Interestingly, we found no differences in loneliness and instrumental support by reported race and ethnicity. People of color reported small but significantly less emotional support than the White subsample ($t(499) = 2.74$, $p = 0.006$).

Resiliency and Activity Level

Table 4 reports effect sizes and descriptive statistics for resiliency and activity levels stratified by distress, financial status, race/ethnicity, and loneliness. Overall, participant self-report of psychological resiliency was within normal limits for U.S. norms (i.e., mean score of 30.8 to 32.1³⁶ of resiliency (M = 31.7, SD = 6.1).⁴⁰ Lower levels of resiliency were associated with being lonely ($t(191.3) = 7.60$, $p < 0.0001$) being distressed ($t(174.7) = 11.55$, $p < 0.0001$) and being

TABLE 1. Sample Characteristics Stratified by Distress, Socioeconomic Status, Race and Ethnicity, and Loneliness

<i>Sample Characteristics</i>	Distressed (N = 119) x̄(SD) / n(%)	Financial Instability (N = 291) x̄(SD) / n(%)	Persons of Color (N = 125) x̄(SD) / n(%)	Lonely (N = 133) x̄(SD) / n(%)	Total (N = 501) x̄(SD) / n(%)
Age	65.1 (4.5)	65.2 (4.6)	64.5 (4.3)	65.6 (4.6)	65.5 (4.6)
Gender, n (%)					
Man	32 (27.8%)	70 (24.7%)	44 (35.8%)	36 (27.7%)	165 (33.7%)
Woman	83 (72.2%)	213 (75.3%)	79 (64.2%)	94 (72.3%)	324 (66.3%)
Missing	4	8	2	3	12
Living situation, n (%)					
Alone	27 (22.9%)	102 (35.2%)	33 (26.4%)	60 (45.5%)	154 (30.8%)
With Others	91 (77.1%)	188 (64.8%)	92 (73.6%)	72 (54.5%)	346 (69.2%)
Missing	1	1	0	1	1
Propertyinfo (not mutually exclusive), n (%)					
No	6 (5.0%)	13 (4.5%)	5 (4.0%)	9 (6.8%)	17 (3.4%)
Yes, I own the home that I live in.	80 (67.2%)	181 (62.2%)	76 (60.8%)	83 (62.4%)	351 (70.1%)
Yes, I own a home that I do not live in.	2 (1.7%)	2 (0.7%)	2 (1.6%)	2 (1.5%)	4 (0.8%)
Yes, I rent a home that I live in.	32 (26.9%)	95 (32.6%)	42 (33.6%)	41 (30.8%)	131 (26.1%)
Current residence, n (%)					
A mixed age neighborhood or community	71 (63.4%)	219 (77.9%)	86 (72.9%)	91 (70.0%)	369 (76.4%)
Age-restricted, active adult community	7 (6.3%)	12 (4.3%)	5 (4.2%)	6 (4.6%)	26 (5.4%)
Residential Care Home/Adult Family Home	5 (4.5%)	4 (1.4%)	2 (1.7%)	3 (2.3%)	6 (1.2%)
Nursing Home/Skilled Nursing Facility	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.8%)	1 (0.2%)
Supportive Housing	2 (1.8%)	1 (0.4%)	2 (1.7%)	0 (0.0%)	2 (0.4%)
Co-housing Arrangement	3 (2.7%)	2 (0.7%)	4 (3.4%)	3 (2.3%)	4 (0.8%)
Home Sharing	9 (8.0%)	14 (5.0%)	6 (5.1%)	7 (5.4%)	20 (4.1%)
Other	15 (13.4%)	29 (10.3%)	13 (11.0%)	19 (14.6%)	55 (11.4%)
Missing	7	10	7	3	18
Marital status, n (%)					
Married or Partnered	69 (58.0%)	125 (43.0%)	66 (52.8%)	49 (36.8%)	260 (51.9%)
Divorced	22 (18.5%)	83 (28.5%)	29 (23.2%)	47 (35.3%)	127 (25.3%)
Separated	2 (1.7%)	8 (2.7%)	7 (5.6%)	7 (5.3%)	12 (2.4%)
Widowed	3 (2.5%)	16 (5.5%)	7 (5.6%)	6 (4.5%)	30 (6.0%)
Never Married	23 (19.3%)	59 (20.3%)	16 (12.8%)	24 (18.0%)	72 (14.4%)
Race (not mutually exclusive), n(%)					
American Indian/Native Alaskan	4 (3.4%)	7 (2.4%)	11 (8.8%)	2 (1.5%)	11 (2.2%)
Asian	6 (5.0%)	9 (3.1%)	19 (15.2%)	5 (3.8%)	19 (3.8%)
Black/African American	13 (10.9%)	40 (13.7%)	60 (48.0%)	17 (12.8%)	60 (12.0%)
White/European American	93 (78.2%)	228 (78.4%)	20 (16.0%)	104 (78.2%)	396 (79.0%)
Hispanic/Latinx	12 (10.1%)	24 (8.2%)	39 (31.2%)	14 (10.5%)	39 (7.8%)
Other	0 (0.0%)	1 (0.3%)	1 (0.8%)	1 (0.8%)	1 (0.2%)
Race dichotomized, n (%)					
White or European American	86 (72.3%)	77 (26.5%)	125 (100.0%)	37 (27.8%)	376 (75.0%)
Person of Color	33 (27.7%)	214 (73.5%)	0 (0.0%)	96 (72.2%)	125 (25.0%)
Education, n (%)					
< High School	4 (3.4%)	4 (1.4%)	3 (2.4%)	4 (3.0%)	4 (0.8%)
High School	24 (20.2%)	57 (19.7%)	17 (13.6%)	18 (13.5%)	93 (18.6%)

(continued on next page)

TABLE 1. (continued)

Sample Characteristics	Distressed (N = 119) x̄(SD) / n(%)	Financial Instability (N = 291) x̄(SD) / n(%)	Persons of Color (N = 125) x̄(SD) / n(%)	Lonely (N = 133) x̄(SD) / n(%)	Total (N = 501) x̄(SD) / n(%)
Associates	28 (23.5%)	72 (24.8%)	34 (27.2%)	32 (24.1%)	106 (21.2%)
Bachelors	38 (31.9%)	95 (32.8%)	44 (35.2%)	50 (37.6%)	171 (34.2%)
Postgraduate	25 (21.0%)	62 (21.4%)	27 (21.6%)	29 (21.8%)	126 (25.2%)
Missing	0	1	0	0	1
Currently working, n (%)					
No	60 (50.4%)	144 (49.5%)	54 (43.2%)	76 (57.1%)	260 (51.9%)
Yes	59 (49.6%)	147 (50.5%)	71 (56.8%)	57 (42.9%)	241 (48.1%)
Financial status, n (%)					
Cannot make ends meet	21 (18.4%)	51 (17.5%)	13 (11.1%)	19 (15.2%)	51 (10.7%)
Have just enough to get along	65 (57.0%)	240 (82.5%)	64 (54.7%)	77 (61.6%)	240 (50.2%)
Are comfortable	28 (24.6%)	0 (0.0%)	40 (34.2%)	29 (23.2%)	187 (39.1%)
Missing	5	0	8	8	23

financially unstable ($t(476) = 4.33, p < 0.0001$), as compared to not being lonely, distressed, or financially unstable, respectively. All subgroups were below normal limits for resiliency among U.S. older adults (i.e., mean score of 30.8 to 32.1).³⁶ No differences in resiliency were found between White persons and people of color.

Fisher's exact tests revealed no statistically significant differences between our groups of interest for number of weeks practicing social distancing, trying new activities, attending activities at home, or visiting family. In comparing the distressed and nondistressed groups, 38.7% of the distressed group reported that they were less likely to get physical exercise compared to 27.5% of the nondistressed group, ($p = 0.023$). In terms of loneliness, 38.3% of the lonely group reported being less likely to engage in physical exercise compared to 27.2% of the nonlonely group ($p = 0.020$). For Socio-Economic Status (SES), 21.4% of those who were financially unstable reported engaging in less physical activity compared to 35.1% of the financially stable group ($p = 0.002$). In addition, 63.6% of those who were financial stable reported not attending social events or group activities in the greater community compared to 54.0% of those who were financial unstable ($p = 0.038$). The only difference in the impact of COVID-19 for people of color was that 32.8% persons of color reported being less likely to go outside during COVID-19 compared to 18.6% of White persons ($p = 0.002$).

Physical Health

Table 3 reports effect sizes and descriptive statistics for levels of physical health stratified by distress, financial status, race/ethnicity, and loneliness. The sample reported levels of global physical health ($M = 50.7$ $SD = 7.8$) consistent with the U.S. national average. Individuals in the distressed group reported significantly worse global physical health compared to the nondistressed group, ($t(499) = 12.23, p < 0.001$). Likewise, those who reported less financial stability reported significantly worse global physical health scores ($t(476) = 7.20, p < 0.001$). We found no significant differences in global physical health between self-reported race and ethnicity, ($t(499) = 0.59, p = 0.550$). Individuals considered lonely reported significantly worse global physical health than nonlonely individuals, ($t(499) = 8.08, p < 0.001$).

TABLE 2. Distress Stratified by Socioeconomic Status, Race and Ethnicity, and Loneliness

Distress Measures	Financial Status				Race and Ethnicity				Loneliness			
	Financial Stability (N = 187) x̄(SD) / n(%)	Financial Instability (N = 291) x̄(SD) / n(%)	Group Difference(1-2)	d*	White Persons (N = 376) x̄(SD) / n(%)	Persons of Color (N = 125) x̄(SD) / n(%)	Group Difference (1-2)	d*	Not Lonely (N = 368) x̄(SD) / n(%)	Lonely (N = 133) x̄(SD) / n(%)	Group Difference (1-2)	d*
PHQ9 total score^a (range: 0–27)	2.8 (3.8)	5.0 (4.6)	−2.2 (0.4)	−0.5	4.0 (4.4)	4.3 (4.7)	−0.3 (.5)	−0.1	2.9 (3.3)	7.5 (5.4)	−4.7 (.5)	−1.0
PHQ interpretation²												
Without depressive symptoms	152 (81.3%)	154 (52.9%)	28.4%		247 (65.7%)	75 (60.0%)	5.7%		283 (76.9%)	39 (29.3%)	47.6%	
Mild depressive symptoms	19 (10.2%)	91 (31.3%)	−21.1%		85 (22.6%)	30 (24.0%)	−1.4%		66 (17.9%)	49 (36.8%)	−18.9%	
Moderate depressive symptoms	11 (5.9%)	30 (10.3%)	−4.4%		28 (7.4%)	13 (10.4%)	−3.0%		14 (3.8%)	27 (20.3%)	−16.5%	
Moderately severe depressive symptoms	5 (2.7%)	13 (4.5%)	−1.8%		13 (3.5%)	7 (5.6%)	−2.1%		4 (1.1%)	16 (12.0%)	−10.9%	
Severe depressive symptoms	0 (0.0%)	3 (1.0%)	−1.0%		3 (0.8%)	0 (0.0%)	0.8%		1 (0.3%)	2 (1.5%)	−1.2%	
GAD-7 total score^a (range: 0–21)	2.2 (3.6)	4.0 (4.5)	−1.8 (0.4)	−0.4	3.3 (4.2)	3.6 (4.5)	−0.3 (0.4)	−0.1	2.2 (3.0)	6.5 (5.5)	−4.4 (.5)	−1.0
GAD-7 interpretation^b												
Without anxiety symptoms	156 (83.4%)	192 (66.0%)	17.4%		277 (73.7%)	87 (69.6%)	4.1%		311 (84.5%)	53 (39.8%)	44.7%	
Mild anxiety	21 (11.2%)	69 (23.7%)	−12.5%		71 (18.9%)	23 (18.4%)	0.5%		47 (12.8%)	47 (35.3%)	−22.5%	
Moderate anxiety	6 (3.2%)	16 (5.5%)	−2.3%		14 (3.7%)	10 (8.0%)	−4.3%		7 (1.9%)	17 (12.8%)	−10.9%	
Severe anxiety	4 (2.1%)	14 (4.8%)	−2.7%		14 (3.7%)	5 (4.0%)	−0.3%		3 (0.8%)	16 (12.0%)	−11.2%	
Short health anxiety^a score	10.1 (7.3)	13.7 (8.1)	−3.6 (0.7)	−0.5	11.9 (7.4)	13.5 (9.4)	−1.5 (0.9)	−0.2	10.7 (7.1)	16.8 (8.7)	−6.0 (.8)	−0.8
Short health anxiety interpretation²												
Without anxiety symptoms	167 (89.3%)	236 (81.1%)	8.2%		323 (85.9%)	99 (79.2%)	6.7%		333 (90.5%)	89 (66.9%)	23.6%	
Anxiety symptoms present	20 (10.7%)	55 (18.9%)	−8.2%		53 (14.1%)	26 (20.8%)	−6.7%		35 (9.5%)	44 (33.1%)	−23.6%	

Approximated degrees of freedom for independent sample t tests range from 161.09 to 499.

BOLD indicates p-value < 0.05 and less than Benjamin-Hochberg critical value, considered to be statistically significant.

d* indicates Effect Size (Cohen's d).

^aIndependent sample t test.

^bFisher Exact p-value.

TABLE 3. Social Isolation Measures Stratified by Distress, Socioeconomic Status, Race and Ethnicity, and Loneliness

Social Isolation Measures	Distress				Financial Status				Race and Ethnicity				Loneliness			
	Non-distressed (N = 382) x̄(SD) / n(%)	Distressed (N = 119) x̄(SD) / n(%)	Group Difference (1-2)	d*	Financial Stability (N = 187) x̄(SD) / n(%)	Financial Instability (N = 291) x̄(SD) / n(%)	Group Difference(1-2)	d*	White Persons (N = 376) x̄(SD) / n(%)	Persons of Color (N = 125) x̄(SD) / n(%)	Group Difference(1-2)	d*	Not Lonely (N = 368) x̄(SD) / n(%)	Lonely (N = 133) x̄(SD) / n(%)	Group Difference(1-2)	d*
UCLA Loneliness ^a (range: 3–9)	4.2 (1.4)	5.9 (1.9)	-1.7 (.2)	-1.0	4.1 (1.4)	4.9 (1.9)	-0.9 (.1)	-0.5	4.6 (1.7)	4.7 (1.9)	-0.2 (.2)	-0.1				
UCLA Loneliness Interpretation ^b																
Not Lonely	318 (83.2%)	50 (42.0%)	41.2%		158 (84.5%)	195 (67.0%)	17.5%		280 (74.5%)	88 (70.4%)	4.1%					
Lonely	64 (16.8%)	69 (58.0%)	-41.2%		29 (15.5%)	96 (33.0%)	-17.5%		96 (25.5%)	37 (29.6%)	-4.1%					
Instrumental support T-Score ^a	52.8 (11.1)	50.2 (11.1)	2.6 (1.2)	0.2	56.2 (10.4)	49.9 (11.0)	6.4 (1.0)	0.6	52.5 (11.2)	51.1 (11.0)	1.5 (1.2)	0.1	54.5 (10.4)	45.7 (10.6)	8.8 (1.1)	0.8
Emotional support T-score ^a	52.2 (9.0)	47.2 (9.1)	5.0 (1.0)	0.5	54.2 (8.6)	49.2 (9.2)	5.0 (.8)	0.5	51.7 (9.4)	49.1 (8.6)	2.6 (1.0)	0.3	53.1 (8.6)	45.3 (8.5)	7.8 (.9)	0.8
Global Physical Health T-score ^a	52.8 (6.9)	44.0 (6.7)	8.8 (0.7)	1.1	53.8 (7.4)	48.8 (7.4)	5.0 (.7)	0.6	50.9 (7.8)	50.4 (7.8)	0.5 (.8)	0.1	52.3 (7.4)	46.3 (7.2)	6.0 (.7)	0.8

Approximated degrees of freedom for independent sample t tests range from 161.43 to 499.

BOLD indicates p-value < 0.05 and less than Benjamin-Hochberg critical value, considered to be statistically significant.

d* indicates Effect Size (Cohen's d).

^aIndependent sample t-test.

^bFisher Exact p-value.

TABLE 4. Resiliency and Activity Level Stratified by Distress, Socioeconomic Status, Race and Ethnicity, & Loneliness

Resiliency and Activity	Distress				Financial Status				Race and Ethnicity				Loneliness			
	Non-distressed (N = 382) x̄(SD) / n(%)	Distressed (N = 119) x̄(SD) / n(%)	Group Difference (1-2)	d*	Financial Stability (N = 187) x̄(SD) / n(%)	Financial Instability (N = 291) x̄(SD) / n(%)	Group Difference(1-2)	d*	White Persons (N = 376) x̄(SD) / n(%)	Persons of Color (N = 125) x̄(SD) / n(%)	Group Difference(1-2)	d*	Not Lonely (N = 368) x̄(SD) / n(%)	Lonely (N = 133) x̄(SD) / n(%)	Group Difference(1-2)	d*
Connor Davidson Resilience Scale Score ^a	31.7 (6.1)	23.3 (7.1)	8.4 (.7)	1.2	31.6 (6.8)	28.7 (7.2)	2.9 (.7)	0.4	29.7 (7.3)	29.6 (7.0)	0.1 (.8)	<0.01	31.3 (6.2)	25.4 (8.1)	5.9 (.8)	0.8
New activity engagement participation ^b	99 (25.9%)	23 (19.3%)	6.6%		47 (25.1%)	69 (23.7%)	1.4%		96 (25.5%)	26 (20.8%)	4.7%		96 (26.1%)	26 (19.5%)	6.6%	
Not attending social events or group activities at residence ^b	176 (46.1%)	55 (46.2%)	-0.1%		80 (42.8%)	139 (47.8%)	-5.0%		170 (45.2%)	61 (48.8%)	-3.6%		178 (48.4%)	53 (39.8%)	8.6%	
Not attending social events or group activities in greater community ^b	222 (58.1%)	63 (52.9%)	5.2%		119 (63.6%)	157 (54.0%)	9.6%		215 (57.2%)	70 (56.0%)	1.2%		219 (59.5%)	66 (49.6%)	9.9%	
Have not seen family ^b	212 (55.5%)	67 (56.3%)	-0.8%		103 (55.1%)	164 (56.4%)	-1.3%		214 (56.9%)	65 (52.0%)	4.9%		202 (54.9%)	77 (57.9%)	-3.0%	
Not getting physical exercise ^b	105 (27.5%)	46 (38.7%)	-11.2%		40 (21.4%)	102 (35.1%)	-13.7%		110 (29.3%)	41 (32.8%)	-3.5%		100 (27.2%)	51 (38.3%)	-11.1%	

Approximated degrees of freedom for independent sample t-tests range from 174.65 to 499.

BOLD indicates p-value < 0.05 and less than Benjamin-Hochberg critical value, considered to be statistically significant.

d* indicates Effect Size (Cohen's d).

^aIndependent sample t test.

^bFisher Exact p-value.

TABLE 5. Distress Step-Wise Logistic Regression

Variables	Model 1			Model 2			Model 3									
	DF	OR	95% CI ^a	Wald χ^2	p-value ²	DF	OR	95% CI ^a	Wald χ^2	p-value ²	DF	OR	95% CI ^a	Wald χ^2	p-value ²	
White Persons	1	0.72	0.41	1.26	1.35	0.25	0.74	0.42	1.30	1.10	0.29	0.71	0.38	1.30	1.26	0.26
Financial Instability	1	1.76	1.03	3.03	4.20	0.04	1.90	1.09	3.31	5.10	0.02	1.16	0.63	2.14	0.22	0.64
Conner Davidson Resilience Scale	1	0.83	0.79	0.86	77.26	<0.01	0.83	0.79	0.86	76.44	<0.01	0.87	0.83	0.91	38.66	<0.01
New Activity Engagement	1	0.79	0.43	1.44	0.61	0.44	0.78	0.43	1.42	0.66	0.42	0.86	0.44	1.68	0.20	0.66
Social Distance Participation	1						0.37	0.11	1.26	2.52	0.11	0.34	0.09	1.37	2.30	0.13
Global Physical Health												0.85	0.82	0.89	47.16	0<.01

^a 95% Wald Confidence Interval.

Predictors of Distress and Loneliness

Distress

Table 5 reports three multiple logistic regressions conducted in a stepwise fashion. The first regression tested whether race and ethnicity, socioeconomic status, resiliency and new activity engagement predicted composite distress versus nondistress scores. The overall model was statistically significant, ($\chi^2_{(4)}=129.35, p < 0.001$). Higher levels of distress was predicted by financial instability (odds ratio [OR]: 1.76, 95% confidence interval [CI]: 1.03–3.03, $\chi^2_{(1)} = 4.20, p = 0.040$) and lower resiliency (OR: 0.83, 95% CI: 0.79–0.86, $\chi^2_{(1)} = 77.26, p < 0.001$). The second regression added social distance participation. The overall model remained statistically significant, ($\chi^2_{(5)}=131.78, p < 0.001$). Financial instability (OR: 1.90, 95% CI: 1.09–3.31, $\chi^2_{(1)} = 5.10, p = 0.024$) predicted greater chance of distress, and increased resiliency predicted lower chance of distress (OR: 0.83, 95% CI: 0.79–0.86, $\chi^2_{(1)} = 76.44, p < 0.001$). The third regression added global physical health, and the overall model was statistically significant ($\chi^2_{(6)}=189.13, p < 0.001$). Again, resiliency was significant, such that increased resiliency was associated with lower odds of being distressed (OR: 0.87, 95% CI: 0.83–0.91, $\chi^2_{(1)} = 38.66, p < 0.001$) as compared to an individual with lower resiliency. Global physical health was statistically significant, such that a one unit/SD increase in global physical health was associated with lower odds (OR: 0.85, 95% CI: 0.82–0.89, $\chi^2_{(1)}=47.16, p < 0.001$) of being distressed compared to an individual with worse global physical health. After including global physical health, socioeconomic status became nonsignificant.

Loneliness

Table 6 reports three multiple logistic regressions conducted in a stepwise fashion, and the first regression tested whether race and ethnicity, socioeconomic status, resiliency, and new activity engagement predicted lonely versus nonlonely status. The overall model was statistically significant, ($\chi^2_{(4)}=65.87, p < 0.001$). Significant predictors included socioeconomic status (OR: 2.17, 95% CI: 1.33–3.54, $\chi^2_{(1)} = 9.60, p = 0.002$) and resiliency (OR: 0.90, 95% CI: 0.87–0.93, $\chi^2_{(1)} = 40.09, p < 0.001$). The second regression added

TABLE 6. Loneliness Step-Wise Logistic Regression

Variables	Model 1			Model 2			Model 3											
	DF	OR	95% CI ^a	Wald χ^2	p-value ²	DF	OR	95% CI ^a	Wald χ^2	p-value ²	DF	OR	95% CI ^a	Wald χ^2	p-value ²			
White Persons	1	0.84	0.51	1.39	0.46	0.50	1	0.84	0.51	1.40	0.44	0.51	1	0.83	0.50	1.38	0.52	0.47
Financial Instability	1	2.17	1.33	3.54	9.60	<0.01	1	2.20	1.34	3.61	9.64	<0.01	1	1.75	1.05	2.93	4.57	0.03
Conner Davidson Resilience Scale	1	0.90	0.87	0.93	40.09	<0.01	1	0.90	0.87	0.93	39.90	<0.01	1	0.93	0.90	0.96	18.08	<0.01
New Activity Engagement	1	0.85	0.50	1.44	0.36	0.55	1	0.85	0.50	1.44	0.36	0.55	1	0.90	0.53	1.55	0.14	0.71
Social Distance Participation							1	0.82	0.24	2.84	0.10	0.75	1	0.86	0.24	3.03	0.06	0.81
Global Physical Health							1	0.82	0.24	2.84	0.10	0.75	1	0.94	0.90	0.97	14.54	<0.01

^a 95% Wald Confidence Interval.

social distance participation, and the overall model was significant, ($\chi^2_{(5)} = 65.96$, $p < 0.001$). This model revealed that financially instability had higher odds of being lonely (OR: 2.20, 95% CI: 1.34–3.61, $\chi^2_{(1)} = 9.64$, $p = 0.002$) compared to someone financially stable, and increased resiliency was associated with lower odds of being lonely (OR: 0.90, 95% CI: 0.87–0.93, $\chi^2_{(1)} = 39.85$, $p < 0.001$). The third model included global physical health, and the final model was significant ($\chi^2_{(6)} = 80.99$, $p < 0.001$). Socioeconomic status, resiliency, and global physical health were statistically significant predictors. Financial instability predicted higher odds of being lonely (OR: 1.75, 95% CI: 1.05–2.93, $\chi^2_{(1)} = 4.57$, $p = 0.033$) and increased resiliency predicted lower odds of being lonely (OR: 0.93, 95% CI: 0.90–0.96, $\chi^2_{(1)} = 18.08$, $p < 0.001$). Finally, increased global physical health was associated with lower odds of being lonely (OR: 0.94, 95% CI: 0.90–0.97, $\chi^2_{(1)} = 14.54$, $p < 0.001$).

CONCLUSION

The principal findings of this study are consistent with earlier reports about psychological distress in older adults shortly after the pandemic began. After 3 months of social distancing policies, approximately one quarter of US dwelling older adults endorsed psychological distress in the form of depression, general anxiety or health related anxiety, and those with poorer physical health, lower SES and lower resiliency were at greatest risk for psychological distress.^{4,41} Our results suggest that special attention be given to those who are in poorer physical health and those with fewer financial resources. Strategies to help at-risk older adults should aim to increase physical and social activity, and social and instrumental support, similar to those interventions found to be effective for distress among older adults during non-pandemic times.⁴²⁻⁴⁴

Our results are consistent with current research into healthy aging. Several lifespan developmental studies have found that mild mental health symptoms in older adults during times of stress are explained by increased age-related adaptive emotion regulation.⁴⁵ Further, it is well established that social participation and connection is associated with better physical health.⁴⁶ As one example, a recent study suggested that social isolation and loneliness in older

adults might be mitigated with age-friendly technology to improve access to social connection for older adults,¹⁵ which would respect potential health concerns created from COVID-19 risk. Interestingly, the predictive utility of global physical health superseded that of socioeconomic status for emotional distress. Consistent with previous national survey studies, those from low socioeconomic backgrounds have increased risk for health conditions^{47,48} and individuals with declining health or underlying health conditions are at risk for increased emotional distress due to the consequences of COVID-19. Specifically, older adults with underlying health conditions might be worried about seeking medical care due to the fear of contracting COVID-19.⁴⁹

One unanticipated finding from our survey was the lack of differences in distress, loneliness and activity between people of color and White persons. We had hypothesized that people of color would be particularly vulnerable to the negative consequences of the pandemic, given that systemic inequities put them at risk for higher rates of infection and death.^{10,11} We suspect that this lack of difference may be due to the fact that our sample of people of color was relatively small. Another explanation is that people of color have unique coping strategies and resilience to cope with ongoing stress that our brief measure of resiliency did not capture. Future studies should explore which coping strategies older adults of color are using in the context of COVID-19.³⁸

Our findings should be reviewed with the following caveats in mind. First, this study is cross-sectional survey and only represents participants' experiences at one timepoint during the pandemic. Moreover, the cross-sectional nature of this observational study precludes any inferences of causality between variables. Second, this is a remote survey that required participants have access to the internet, which impacts the generalizability of our findings to older adults who do not have access to, or use, computer technologies.^{50–52} Future research should include local samples of older adults surveyed using traditional means to compare findings from internet-based surveys. Third, we were interested in briefly exploring emotional distress among traditionally underrepresented groups, that is, persons from low-income backgrounds and persons of color. We used self-reported demographic data as proxies for systemic discrimination due to socioeconomic status and race and

ethnicity. To fully address this limitation, we acknowledge that low socioeconomic status and identifying as a person of color are not risk factors for negative mental health outcomes, but structural discrimination is.

Despite the aforementioned limitations, our data is still useful in documenting the extent of emotional distress and self-reported loneliness in older adults after prolonged exposure to social distancing policies under pandemic conditions. This study points to the need to create outreach efforts to older adults with less financial, psychological, and physical health resources and include methods for increasing social connection and physical activity and facilitating resilience.

AUTHOR CONTRIBUTIONS

Nichole Sams – Supported manuscript by drafting the work and revising for critically important intellectual content. Final approval of the version to be published. Accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. **Dylan M. Fisher, B.S.** – Supported manuscript by drafting the work and revising for critically important intellectual content. Final approval of the version to be published. Accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. **Felicia Mata-Greve, Ph.D.** – Drafting the work and revising critically for important intellectual content. Final approval of the version to be published. **Morgan Johnson, M.S.** – Analysis, or interpretation of data for the work and revising for critically for important intellectual content. **Michael D. Pullmann, Ph.D.** – Analysis and interpretation of data for the work and revising critically for important intellectual content. **Patrick J. Raue, Ph.D.** – Drafting the work or revising it critically for important intellectual content. **Brenna N. Renn, Ph.D.** – Drafting the work or revising it critically for important intellectual content. **Jaden Duffy, B.S.** – Assisting in integral data collection and input related to the work. **Doyanne Darnell, Ph.D.** – Drafting the work or revising it critically for important intellectual content. **Isabell Griffith Fillipo, B.A.** – Assisting in integral

data collection and input related to the work. **Ryan Allred, B.A.** – Assisting in integral data collection and input related to the work. **Kathy Huynh** - Assisting in integral data collection and input related to the work. **Emily Friedman, MID, CPE,** - Actively designed data capture tools. **Patricia A. Areán, Ph.D.** – Supported manuscript by drafting the work and revising for critically important intellectual content. Final approval of the version to be published. Accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

The authors report no conflicts with any product mentioned or concept discussed in this article.

This study was supported by funds from the National Institute of Mental Health P50MH115837 and T32MH020021.

SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found in the online version at <https://doi.org/10.1016/j.jagp.2021.03.005>.

References

1. Virtual press conference on COVID-19-11 march 2020. World Health Organization, 2020. Available at <https://www.who.int/docs/default-source/coronaviruse/transcripts/who-audio-emergencies-coronavirus-press-conference-full-and-final>
2. New ICD-10-CM code for the 2019 novel coronavirus (COVID-19). Centers for Disease Control and Prevention; 2020. Available at: https://www.cdc.gov/nchs/data/icd/Announcement-New-ICD-code-for-coronavirus-3-18-2020.pdf?fbclid=IwAR1W4E21-xZbEjdSG-RFwVZmuM72GGhiE2QIRyur_CPS-t-p14uAa8gzhRXw.
3. Cornwell EY, Waite LJ: Social disconnectedness, perceived isolation, and health among older adults. *J Health Soc Behav* 2009; 50:31–48, <https://doi.org/10.1177%2F002214650905000103>
4. van Tilburg TG, Steinmetz S, Stolte E, et al: Loneliness and mental health during the COVID-19 pandemic: a study among Dutch older adults. *J Gerontol B Psychol Sci Soc Sci* 2020, doi: <https://doi.org/10.1093/geronb/gbaa111>
5. Benke C, Autenrieth LK, Asselmann E, et al: Stay-at-home orders due to the COVID-19 pandemic are associated with elevated depression and anxiety in younger, but not older adults: results from a nationwide community sample of adults from Germany. *Psychol Med* 2020; 1–2, doi: <https://doi.org/10.1017/s0033291720003438>.
6. Ettman CK, Abdalla SM, Cohen GH, et al: Prevalence of depression symptoms in US adults before and during the COVID-19 pandemic. *JAMA Netw Open* 2020; 3:e2019686, doi: 10.1001/jamanetworkopen.2020.19686
7. Hamm ME, Brown PJ, Karp JF, et al: Experiences of american older adults with pre-existing depression during the beginnings of the COVID-19 pandemic: a multicity, mixed-methods study. *Am J Geriatr Psychiatry* 2020; 28:924–932;doi:10.1016/j.jagp.2020.06.013
8. Phases of disaster. SAMHSA; 2000. Available at: <https://www.samhsa.gov/dtac/recovering-disasters/phases-disaster>.
9. Sheffler JL, Joiner TE, Sachs-Ericsson NJ: The Interpersonal and Psychological Impacts of COVID-19 on risk for late-life suicide. *Gerontologist* 2020, doi: <https://doi.org/10.1093/geront/gnaa103>
10. Auger KA, Shah SS, Richardson T, et al: Association between statewide school closure and COVID-19 incidence and mortality in the US. *JAMA* 2020; 324:859–870, doi: 10.1001/jama.2020.14348
11. Czeisler MÉ, Lane RI, Petrosky E, et al: Mental health, substance use, and suicidal ideation during the COVID-19 pandemic—United States, June 24–30, 2020. *Morbidity and Mortality Weekly Report* 2020; 69:1049
12. Fullana MA, Hidalgo-Mazzei D, Vieta E, et al: Coping behaviors associated with decreased anxiety and depressive symptoms during the COVID-19 pandemic and lockdown. *J Affect Disord* 2020; 275:80–81, doi: <https://doi.org/10.1016/j.jad.2020.06.027>
13. Tyrrell CJ, Williams KN: The paradox of social distancing: Implications for older adults in the context of COVID-19. *Psychology of Women Quarterly* 2020; 12(S1):S214–s216, doi: <https://doi.org/10.1037/tra0000845>
14. Holt-Lunstad J, Smith TB, Baker M, et al: Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Personality and Social Psychology Review* 2015; 10:227–237, doi: <https://doi.org/10.1177/1745691614568352>
15. Kotwal AA, Holt-Lunstad J, Newmark RL, et al: Social isolation and loneliness among San Francisco bay area older adults during the COVID-19 shelter-in-place orders. *J Am Geriatr Soc* 2021; 69:20–29;doi:10.1111/jgs.16865
16. Peer E, Brandimarte L, Samat S, et al: Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *J Exp Soc Psychol* 2017; 70:153–163, doi: <https://doi.org/10.1016/j.jesp.2017.01.006>
17. Palan S, Schitter C: Prolific.ac—A subject pool for online experiments. *J Behav Exp Finance* 2018; 17:22–27, doi: <https://doi.org/10.1016/j.jbef.2017.12.004>
18. Data Profiles: American Community Survey. 2016 <https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2016/>
19. Part 1: Cybersecurity Overview. Solutions reservoir. Available at: <http://solutionsreservoir.com/resources/introduction-to-cybersecurity/part-1-cybersecurity-overview>.
20. Prolific's participant pool – the present and the future. Prolific; 2018. Available at: <https://blog.prolific.co/prolifics-participant-pool-its-present-and-its-future/>.
21. Oppenheimer DM, Meyvis T, Davidenko N: Instructional manipulation checks: detecting satisficing to increase statistical power. *J Exp Soc Psychol* 2009; 45:867–872, doi: <https://doi.org/10.1016/j.jesp.2009.03.009>
22. Kroenke K, Spitzer RL, Williams JB: The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 2001; 16:606–613, doi: <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
23. Spitzer RL, Kroenke K, Williams JB, et al: A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*

Understanding Psychological Distress and Protective Factors Amongst Older Adults

- Med 2006; 166:1092–1097, doi: <https://doi.org/10.1001/archinte.166.10.1092>
24. Salkovskis PM, Rimes KA, Warwick HM, et al: The Health Anxiety Inventory: development and validation of scales for the measurement of health anxiety and hypochondriasis. *Psychol Med* 2002; 32:843–853, doi: <https://doi.org/10.1017/s0033291702005822>
 25. Phelan E, Williams B, Meeker K, et al: A study of the diagnostic accuracy of the PHQ-9 in primary care elderly. *BMC Fam Pract* 2010; 11:63., doi:<https://dx.doi.org/10.1186%2F1471-2296-11-63>
 26. Keum BT, Miller MJ, Inkelas KK: Testing the factor structure and measurement invariance of the PHQ-9 across racially diverse U.S. college students. *Psychological assessment* 2018; 30:1096–1106, doi:<https://doi.org/10.1037/pas0000550>
 27. Wild B, Eckl A, Herzog W, et al: Assessing generalized anxiety disorder in elderly people using the GAD-7 and GAD-2 scales: results of a validation study. *Am J Geriatr Psychiatry* 2014; 22:1029–1038, doi:<https://doi.org/10.1016/j.jagp.2013.01.076>
 28. Kroenke K, Spitzer RL, Williams JB, et al: The patient health questionnaire somatic, anxiety, and depressive symptom scales: a systematic review. *Gen Hosp Psychiatry* 2010; 32:345–359, doi:<https://doi.org/10.1016/j.genhosppsych.2010.03.006>
 29. Hughes ME, Waite LJ, Hawkey LC, et al: A short scale for measuring loneliness in large surveys: results from two population-based studies. *Res Aging* 2004; 26:655–672;doi:10.1177/0164027504268574
 30. Russell DW: UCLA Loneliness Scale (Version 3): reliability, validity, and factor structure. *J Pers Assess* 1996; 66:20–40, doi: https://doi.org/10.1207/s15327752jpa6601_2
 31. Cella D, Riley W, Stone A, et al: The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *J Clin Epidemiol* 2010; 63:1179–1194, doi: <https://doi.org/10.1016/j.jclinepi.2010.04.011>
 32. Reading Turchioe M, Grossman LV, Baik D, et al: Older adults can successfully monitor symptoms using an inclusively designed mobile application. *J Am Geriatr Soc* 2020; 68:1313–1318, doi:<https://doi.org/10.1111/jgs.16403>
 33. Paz SH, Jones L, Calderón JL, et al: Readability and comprehension of the geriatric depression scale and PROMIS® physical function items in older African Americans and Latinos. *Patient* 2017; 10:117–131, doi:<https://doi.org/10.1007/s40271-016-0191-y>
 34. Hays RD, Bjorner JB, Revicki DA, et al: Development of physical and mental health summary scores from the patient-reported outcomes measurement information system (PROMIS) global items. *Qual Life Res* 2009; 18:873–880, doi:<https://doi.org/10.1007/s11136-009-9496-9>
 35. Campbell-Sills L, Stein MB: Psychometric analysis and refinement of the Connor-Davidson Resilience Scale (CD-RISC): validation of a 10-item measure of resilience. *J Traum Stress* 2007; 20:1019–1028, doi:<https://doi.org/10.1002/jts.20271>
 36. Jeste DV, Savla GN, Thompson WK, et al: Association between older age and more successful aging: critical role of resilience and depression. *Am J Psychiatry* 2013; 170:188–196, doi: <https://doi.org/10.1176/appi.ajp.2012.12030386>
 37. Steptoe A, Shankar A, Demakakos P, et al: Social isolation, loneliness, and all-cause mortality in older men and women. *Proc Natl Acad Sci* 2013; 110:5797–5801, doi:<https://doi.org/10.1073/pnas.1219686110>
 38. Hardeman RR, Karbeah J: Examining racism in health services research: a disciplinary self-critique. *Health Serv Res* 2020; 55 (Suppl 2):777–780, doi:<https://doi.org/10.1111/1475-6773.13558>
 39. Benjamini Y, Hochberg Y: Controlling the false discovery rate: a practical and powerful approach to multiple testing. *J Royal Stat Soc Series B (Methodological)* 1995; 57:289–300, doi:<https://doi.org/10.1111/j.2517-6161.1995.tb02031.x>
 40. Davidson JR, KM C. Connor-Davidson Resilience Scale (CD-RISC) Manual. Unpublished 2018.
 41. Anxiety and depression household pulse survey. Centers for Disease Control and Prevention; 2020. Available at: <https://www.cdc.gov/nchs/covid19/pulse/mental-health.htm>.
 42. Van Orden KA, Bower E, Lutz J, et al: Strategies to promote social connections among older adults during 'social distancing' restrictions. *Am J Geriatr Psychiatry* 2020, doi:<https://dx.doi.org/10.1016%2Fj.jagp.2020.05.004>
 43. You S, Van Orden KA, Conner KR: Social connections and suicidal thoughts and behavior. *Psychol Addict Behav* 2011; 25:180–184, doi:<https://dx.doi.org/10.1037%2Fa0020936>
 44. Hall J, Kellett S, Berrios R, et al: Efficacy of cognitive behavioral therapy for generalized anxiety disorder in older adults: systematic review, meta-analysis, and meta-regression. *Am J Geriatr Psychiatry* 2016; 24:1063–1073, doi:<https://doi.org/10.1016/j.jagp.2016.06.006>
 45. Urry HL, Gross JJ: Emotion regulation in older age. *Curr Dir Psychol Sci* 2010; 19:352–357, doi:<https://doi.org/10.1177%2F0963721410388395>
 46. Hale CJ, Hannum JW, Espelage DL: Social support and physical health: the importance of belonging. *J Am Coll Health* 2005; 53:276–284, doi:<https://doi.org/10.3200/jach.53.6.276-284>
 47. Adler NE, Boyce T, Chesney MA, et al: Socioeconomic status and health. The challenge of the gradient. *Am Psychol* 1994; 49:15–24, doi:<https://doi.org/10.1037//0003-066x.49.1.15>
 48. Kivimäki M, Batty GD, Pentti J, et al: Association between socioeconomic status and the development of mental and physical health conditions in adulthood: a multi-cohort study. *Lancet Public Health* 2020; 5:e140–e149, doi:[https://doi.org/10.1016/S2468-2667\(19\)30248-8](https://doi.org/10.1016/S2468-2667(19)30248-8)
 49. Steinman MA, Perry L, Perissinotto CM: Meeting the care needs of older adults isolated at home during the COVID-19 pandemic. *JAMA Intern Med* 2020; 180:819–820, doi:<https://doi.org/10.1001/jamainternmed.2020.1661>
 50. Chmielewski M, Kucker SC: An MTurk crisis? Shifts in data quality and the impact on study results. *Soc Psychol Personal Sci* 2020; 11:464–473, doi:<https://doi.org/10.1177%2F1948550619875149>
 51. Ogletree AM, Katz B: How do older adults recruited using MTurk differ from those in a national probability sample? *Int J Aging Hum Dev* 2020, 0091415020940197 doi:<https://doi.org/10.1177%2F0091415020940197>
 52. Walters K, Christakis DA, Wright DR: Are Mechanical Turk worker samples representative of health status and health behaviors in the U.S.? *PLOS ONE* 2018; 13:e0198835, doi:<https://doi.org/10.1371/journal.pone.0198835>