

Title: Increased Psychological Distress during COVID-19 and Quarantine in Ireland: A national survey.

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Abstract

Background: The emergence of a novel severe acute respiratory syndrome, coronavirus pneumonia (COVID-19), resulted in a global pandemic. The psychological impact of an epidemic is multifaceted, acute, and is known to have longer term ill effects. The most documented symptoms relating to psychological distress in relation to a pandemic are low mood, irritability, anxiety, and elevated general distress.

Methods: This study employed a cross-sectional online survey-based design, to assess the psychological impact of COVID-19 on members of the Irish public. The survey was administered during the quarantine period of COVID-19 in Ireland, and participants were invited to complete the DASS-21 retrospectively (prior to quarantine), and during the quarantine period, as well as measures of illness perceptions, wellbeing, and a bespoke measure (the Effects of COVID Questionnaire, ECQ) which assessed perceptions of COVID-related stresses associated with personal concerns, caring for children, caring for aging parents, as well as gratitude arising from the COVID-19 crisis.

Results: N=847 members of the Irish public completed the survey. Entry into COVID-19 quarantine was associated with significant increases in mean levels of symptoms of depression, anxiety and stress. During the quarantine period rates of clinically significant symptoms of depression, stress, anxiety and were 46.3%, 32.5%, 34%, respectively. The ECQ reliably assessed a range of COVID-19 related stresses, and had large and significant correlations with the DASS-21.

Conclusions: The COVID-19 quarantine period was associated with experiencing a range of COVID-19-related stresses and to significant increases in symptoms of depression, anxiety and stress in an Irish cohort. The Irish general public require increased access to mental health services to meet this increase in COVID-19-related psychological problems.

Keywords: Psychological distress; Public; COVID-19; mental health; Ireland

Introduction

December 2019 saw the emergence of a novel severe acute respiratory syndrome, coronavirus pneumonia (COVID-19) outbreak in Wuhan (Hubei, China), which subsequently became a global pandemic (Wang, Horby, Hayden, & Gao, 2020). COVID-19 elicits challenging psychological and psychiatric responses due to its sudden and unpredictable nature, creating a sense of uncertainty and vulnerability, while challenging individuals' sense of personal and societal safety (Marazziti, 2020). This may be amplified by the treatment-resistant nature of COVID-19 to common medications, and the delay in contraction to symptom onset (Cheng & Shan, 2020). Patients, health professionals, and the general public face increasing psychological demands and pressure which may in itself lead to challenges with anxiety, fear, depression, and sleep difficulties, all of which need to be considered and targeted in the overall deployment of the disease control measures (Li et al., 2020).

COVID-19 is associated with a significant mental health burden both in the acute phase and the long-term, from people who are exposed to the virus, and those not directly exposed. Anxiety, depression, cognitive impairment, delirium, psychosis, irritability, insomnia, and post-traumatic stress disorder are prevalent following COVID-19 infection (Kotfis et al., 2020; Romano, 2020; Salins, Mani, Gursahani, Simha, & Bhatnagar, 2020; Zambrelli, Canevini, Gambini, & D'Agostino, 2020). One third of the first 153 COVID-19 cases in the UK were diagnosed with new-onset mental health problems including psychosis (43%), cognitive decline (26%) and affective disorder (17%; (Varatharaj et al., 2020).

With a view to reduce infection and control the outbreak of a virus, many countries undertake stepped measures such as social distancing, reduction and cancellation of large public gatherings, self-isolation recommendations, quarantine in a dedicated facility, and mass public quarantine (Public Health England, 2020). While quarantine can be necessary during major infectious disease outbreaks from a population-health perspective, a recent systematic review suggests that quarantine itself is often associated with negative psychological and physical effects (Brooks et al., 2020; Wang et al., 2020). For some, the psychological impact of being in a pandemic is wide-ranging (Brooks et al., 2020), significant, and long lasting (Jeong et al., 2016; Liu et al., 2012), requiring effective and accessible psychological support be put in place as early as possible.

In recent years, much of the research into the psychological sequelae following public quarantine has resulted from similar epidemics (e.g., Severe Acute Respiratory Syndrome (SARS) circa. 2003; Equine influenza circa. 2008; and Swine Flu circa. 2009 [H1N1 Influenza]). Research suggests that quarantine may result in higher prevalence of symptoms

of psychological distress (Mihashi et al., 2009), emotional disturbance (Yoon, Kim, Ko, & Lee, 2016), depression (Hawryluck et al., 2004), stress (DiGiovanni, Conley, Chiu, & Zaborski, 2004), low mood with irritability and insomnia (Lee, Chan, Chau, Kwok, & Kleinman, 2005), post-traumatic stress symptoms (Reynolds et al., 2008), anger (Marjanovic, Greenglass, & Coffey, 2007), and emotional exhaustion (Maunder, Hunter, Vincent, et al., 2003). Low mood (73% of 903) and irritability (57% of 903) are among the most prevalent symptoms of psychological distress reported (Lee et al., 2005). People quarantined because of being in close contact with those who potentially had SARS (Reynolds et al., 2008) reported various negative responses during the quarantine period: over 20% (230 of 1057) reported fear, 18% (187) reported nervousness, 18% (186) reported sadness, and 10% (101) reported guilt. However, not all studies have found evidence of psychological distress following quarantine. For example, Wang et al. (2011) compared undergraduates who had been quarantined, with those not quarantined immediately after the quarantine period, and found no significant difference between the groups in terms of post-traumatic stress symptoms or general mental health problems. Recently, the typical responses to COVID-19 have been reported as: panic, fear to go out, excessive disinfection, disappointment, fear, irritability, aggressive behaviour, and extreme optimism or pessimism (Dong & Bouey, 2020).

Mental health risks associated with COVID-19 have yet to be systematically studied, however, the emerging literature on COVID-19 as well as previous studies on infectious disease outbreaks provide insights into probable risk factors and correlates of mental health challenges and chronic psychological distress (Boyras & Legros, 2020). Better classification and quantification of mental health and psychological needs following COVID-19 will allow for the appropriate consideration of therapeutic frameworks, service-based funding considerations, intervention integration through non-routine modalities, and to consider service models and accessibility for those vulnerable and in need (Vostanis & Bell, 2020).

The primary aim of the study was to investigate the mental health and wellbeing of adults in Ireland during the quarantine period of the COVID-19 crisis, and examine the reliability and validity of a new instrument for assessing stresses and things that people felt grateful for, specifically related to the COVID-19 crisis (the Effects of COVID-19 Questionnaire [ECQ, Berry & Carr, 2020]). The following specific questions were addressed:

- Did mean levels and rates of depression, anxiety, and stress increase significantly during the quarantine period?

- Did mean levels and rates of depression, anxiety, and stress differentially increase significantly for those caring for children or older aging parents during the quarantine period?
- What were the rates of stresses and things that people felt grateful for, specifically related to the COVID-19 crisis (as assessed the ECQ).
- What were the psychometric properties of the ECQ?
- Were the COVID-19-related stresses and gratitude assessed by the ECQ correlated with indices of mental health and well-being?

Method

Participants

A cross-sectional survey-based design was employed to recruit a public sample through the use of media outlets, social media, and professional networking websites in Ireland, during the period of mass public quarantine (effective March 27th, 2020 to June 8th, 2020, as per Irish government authorisation). Inclusion criteria included: being over the age of 18; living in Ireland at the time of quarantine; and participants were required to read an information sheet and provide consent before proceeding to the questionnaire. Participants were excluded if they did not meet the inclusion criteria.

Materials

All information provided was self-report and completed online through the use of *Qualtrics*. Demographic information regarding gender, age, marital status, household and family composition, and years of education were collected.

The following scales were used: the Depression, Anxiety, and Stress Scale (DASS-21, Lovibond & Lovibond, 1995), the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS, Tennant et al., 2007), the Brief Illness Perception Questionnaire (BIPQ, Broadbent, Petrie, Main, & Weinman, 2006), and the ECQ (Berry & Carr 2020).

The DASS-21, which yields scores for Depression, Anxiety, and Stress was the primary measure for this study. Each scale contains 7 items. The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive

to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive, and impatient. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items per scale, and the DASS-21 subscale total is then multiplied by 2 to give the final score for categorisation into 'Normal, Mild, Moderate, Severe, Extremely Severe'.

The WEMWBS is a 14-item measure which focuses on the positive aspects of mental health and well-being including optimism, autonomy, agency, curiosity, clarity of thought, positive relationships, positive affect confidence, and having the energy to spare. (Tennant et al., 2007). High scores indicate greater well-being.

The BIPQ assesses the cognitive and emotional representations of illness. For this survey, we included the 'Cognitive Perceptions' subscale adapted for COVID-19 which asks about the: effect of COVID-19 on life (item 1); perceived duration of COVID-19 (item 2); control over COVID-19 (item 3); beliefs about the effectiveness of treatment for COVID-19 (item 4); and experience of COVID-19 symptoms (item 5). We further employed a single item to capture understanding of COVID-19 (Item 7), Items 1-5 are summed to give a total score for the 'Cognitive Perceptions' scale. High BIPQ scores reflect negative perceptions of COVID-19.

The ECQ is a bespoke 34-item tool which measures perceptions of COVID-related stresses as well as gratitude arising from the COVID-19 crisis. Items 1 – 25 are about COVID-19 related stresses. Items 26-34 are about things participants felt grateful for arising from the COVID-19 crisis. For COVID-19-related stresses, participants are asked 'In the past month, how much stress have you experienced as a result of the following things?' For COVID-19-related gratitude, participants were asked 'In the past month, how much has your experience of the COVID 19 crisis led you to feel grateful for the following things? For all items, there are 5 response options: none, a little, some, quite a lot, and a great deal. The ECQ contains four a priori scales: Personal Stress (items 1-13), Parenting Stress (items 14-21), Older Aging Parent Stress (items 22-25) and Gratitude (items 26-34). Items in the Personal Stress scale cover financial hardship, difficulty getting supplies, loss of social contact, loss of routine, family conflict, conflicting media information about COVID-19, witnessing or worrying about COVID-19-related illness, hospitalization, death, and long-term effects for oneself and one's family. Items in the Parenting Stress scale (which are only relevant to respondents with children) cover school closure, preventing children having social contact with extended family and friends, helping children observe social distancing, handwashing, and cough etiquette, and worrying about their health due to the presence an

underlying condition that makes them vulnerable COVID-19-related adverse outcomes. Items in the Older Aging Parent Stress scale (which are only relevant to respondents with aging parents) cover worrying about the impact of COVID-19 on older aging parents, especially loneliness, difficulty getting supplies, risk of illness, and risk of not receiving adequate medical care. Items in the Gratitude scale cover things that the COVID-19 crises has made one feel grateful for including personal and family health, relationships, employment, social, sports and cultural events, community, schools, children's friendships, children's involvement in activities, and aging parents health and safety. The ECQ is included in supplemental materials.

Procedure

This study was approved by the host institution's research ethics committee (HS-E-20-66-Burke). Study information was disseminated through the use of a national online media outlet, informing readers of the nature of the study, and inviting interested participants to take part. Social media, and other online platforms were also engaged to support recruitment. Interested participants then followed a link to access study information sheet, consent, and questions via *Qualtrics*. Once consent was obtained, participants provided demographic information, and completed the outcome measures. Participants were informed of that a participation raffle would take place, and they could opt in to be entered into the draw to win one of 3 €50 vouchers. Participants were made aware that they may withdraw from the study at any time during data collection by simply exiting the browser window.

Statistical Analysis and ECQ validation

For continuous variables, comparisons were undertaken using MANOVA, ANOVA's and t-tests. For categorical variables chi square tests were used for comparisons. Bonferroni corrections where multiple comparisons were made. Pearson product moment correlation coefficients were used to determine relationships between variables. Internal consistency reliability of ECQ scales was assessed with Cronbach's alpha. Exploratory factor analysis was used to assess the factor structure of the ECQ. K-means clustering was used as a non-hierarchical method to quantify the responses on the ECQ subscales, with an a priori cluster set to 5, to create a categorical stratification of the DASS-21 (Normal, Mild, Moderate, Severe, Extremely Severe). IBM Statistical Package for the Social Sciences (SPSS) 26.0 was used for analyses.

Results

A total of $N=847$ surveys were completed by members of the Irish public. As reported in Table 1, participants were mostly female (83%), and age ranged from 18 to 76 years. The household income, education status, and relationship status can be seen in Table 1, as well as a full demographic breakdown for participants who were: (1) people who had older aging parents (OAPs; $n=433$); (2) parents of children under 18 years of age (Parents; $n=269$, of whom, $n=33$ had a child but did not have older aging parents); and (3) participants who had neither children nor an older aging parent (Neither; $n=145$) at the time of completing the survey. Within each cohort $>50\%$ of the respondents continued to work during the COVID-19 pandemic.

[Table 1 here]

Did mean levels of depression anxiety and stress increase significantly during the quarantine period?

Mean DASS-21 Depression, Anxiety, and Stress scores for the whole sample are given in the first panel of results in Table 2. When comparing the pre-quarantine outcomes to those reported during the quarantine period, there was a significant increase in mean levels of Depression (pre-quarantine $M = 7.46$, quarantine $M = 10.54$, $t = 10.50$, $p < .001$), Anxiety (pre-quarantine $M = 5.39$, quarantine $M = 6.02$, $t = 3.39$, $p = .001$), and Stress (pre-quarantine $M = 11.99$, quarantine $M = 12.86$, $t = 2.82$, $p = .005$).

Did mean levels of depression anxiety and stress differentially increase significantly for those caring for children or older aging parents during the quarantine period?

Mean DASS-21 Depression, Anxiety, and Stress scores for parents caring for children, adults caring for older aging parents, and those caring for neither type of dependant are given in the last three panels of results in Table 2. A Groups X Time MANOVA, with three groups (parent to a child, older aging parent, and neither) and two time periods (pre-quarantine, and quarantine) yielded a significant Groups X Time interaction ($p = .006$). Post-hoc analyses show increases in Depression, Anxiety and Stress from pre-quarantine to quarantine were significantly associated with having older aging parents. Post-hoc analyses with Bonferroni adjustment showed participants with older aging parents were found to have significantly elevated Anxiety pre-quarantine ($p = .024$), and significantly elevated Anxiety ($p = .038$) and Depression ($p = .002$) during the quarantine period, with the largest difference relative to parents with children.

[Table 2 here]

Did rates of Depression, Anxiety and Stress increase significantly during the quarantine period?

Rates of mild, moderate, severe, and very severe symptoms on DASS-21 scales for the whole sample are given in the first panel of results in Table 3. When cases in mild, moderate, severe, and very severe categories were combined and compared to those in the normal category, there were increases in rates of symptoms on all three DASS-21 scales from pre-quarantine to the quarantine period. The rate of Depression increased from 30 to 46.3% ($X^2(1, N = 847) = 67.92, p < .0001$). The rate of Anxiety increased from 30.7 to 32.5% ($X^2(1, N = 847) = 121.71, p < .0001$). The rate of Stress increased from 27.7 to 34% Stress ($X^2(2, N = 847) = 4.99, p = .025$).

[Table 3 here]

Did rates of Depression, Anxiety and Stress differentially increase significantly for those caring for children or older aging parents during the quarantine period?

Rates of mild, moderate, severe, and very severe symptoms on DASS-21 scales for parents caring for children, adults caring for older aging parents, and those caring for neither type of dependant are given in the last three panels of results in Table 3. To determine if there was an association between being a parent to a child, caring for an older aging parent, or having neither sort of dependent, on the one hand and symptom rates before and during quarantine on the other 3×2 , Group \times Time, chi square test were conducted on frequencies of symptoms outside the normal range in the three groups on both occasions.

There were significant Group by Time associations for both Depression and Anxiety from pre-quarantine to the quarantine period for parents caring for children, adults caring for older aging parents, and those caring for neither type of dependant ($p < .001$), but not specifically for Stress. As reported through a detailed breakdown of the percentage of caseness and severity in Table 3, this reflects increased severity of symptoms over time as a result of entering the quarantine period.

What were the rates of COVID-19-related stresses, and feelings of gratitude?

Rates of COVID-19-related stresses, and feelings of gratitude, based on responses to ECQ items are given in Table 4. For each item, percentages are given for those who answered ‘quite a lot’ or ‘a great deal’. Percentages are based on number of participants for whom the items were relevant. Items 1-13 and 26-30 were relevant to all 847 participants. Items 14-21, and 31-33 were relevant to 268 parents of children. Items 22-25 and 34 were relevant to 433 people with older, aging parents.

From Table 4 it may be seen that for COVID-19-related personal stresses relevant to **all participants**, the top 3 were: 1) not being able to meet with extended family and friends (Item 3: 69.9%); 2) worrying about the effects of COVID-19 on themselves or their family, now or in the future (Item 13: 47.5%); 3) Loss of their own or family routine i.e., sleeping patterns, meal times, and/or work/school/recreational schedules (Item 5: 39.9%).

The top 3 COVID-19-related stresses for **parents of children** were: 1) helping to keep their child a safe distance from extended family, and preventing them from visiting extended family i.e., grandparents (Item 16: 11.9%); 2) their child’s school closing (Item 14: 9.9%); helping their child avoid crowded places and activities they like (Item 17: 8.5%).

The top 3 COVID-19-related stresses for people with **older, aging parents** were: 1) Worrying that their aging parents would become infected with COVID-19 (Item 24: 44.7%); 2) worrying that aging parents will not receive adequate medical care if they become infected with COVID-19 (Item 25: 36.9%); and worrying that their aging parents will become lonely during the COVID-19 crisis (Item 22: 34.1%).

The top 3 COVID-19-related **feelings of gratitude** were personal and familial health (Item 26: 85.4%), relationships with extended family and friends (Item 27: 81.7%), and their job (Item 28: 61.9%). Participants with aging parents were most grateful for their aging parents’ health and safety (Item 34; 67.9%). Participants with children were most grateful with their child’s relationship with their friends (Item 32: 21.7%).

[Table 4 here]

What were the psychometric properties of the ECQ?

Each a priori ECQ scale had satisfactory internal consistency reliability: Personal Stress, items 1-13, $\alpha = 0.79$; Parenting Stress, items 14-21, $\alpha = 0.90$; Older Parent Stress, items 22-25 $\alpha = 0.80$; and Gratitude, items 26-34, $\alpha = 0.72$.

An exploratory factor analysis of ECQ items yielded factors that corresponded to a priori subscales with one exception. Items in the Personal Stress subscale loaded on two separate factors which assessed ‘Routines and Resources’ (items 2, 3, 5, 6, 7, and 13; $\alpha = .61$); and ‘Worry and Well-being’ (items 8-12; $\alpha = .87$). Because the alpha value for the

13-item Personal distress scale was satisfactory (0.79), this scale rather than the two subfactors was used in the main analysis.

A 5-band severity classification was devised based on the categorisation of the DASS-21, which the ECQ was compared to. Within the ECQ subscales, the following ranges were derived through k-means clustering for **Personal Distress**: Normal 0-12; Mild 13-19; Moderate 20-26; Severe 27-33; Extremely Severe >34; **Older Aging Parents**: Normal 0-4; Mild 5-7; Moderate 8-11; Severe 12-15; Extremely Severe >16; **Parents to children**: Normal 0-8; Mild 9-15; Moderate 16-21; Severe 22-29; Extremely Severe >30.

Were the COVID-19 related stresses and gratitude assessed by the ECQ correlated with indices of mental health and well-being?

Table 5 shows correlations between the ECQ and other scales. The ECQ Personal Stress, Parenting Stress, and Older Parent Stress scales had significant ($p < .001$) correlations with DASS-21 Depression, Anxiety and Stress scales completed to reflect distress during quarantine, the WEMWBS well-being scale, and the BIPQ Perception of COVID-19 and Emotional Impact of COVID-19 scales. All correlations were in the expected direction. High levels of COVID-19 related stresses assessed with the ECQ were associated with greater Depression, Anxiety, and Stress assessed with the DASS-21; lower levels of well-being assessed with the WEMWBS; and greater negative perceptions of, and emotional reactions to COVID-19 assessed with the BIPQ. The ECQ Gratitude scale had non-significant correlations with the DASS-21 Depression, Anxiety and Stress scales when stratified by group. The ECQ Gratitude scale correlated positively and significantly with the WEMWBS for people with older aging parents, and individuals with neither older aging parents nor children. There was a positive, non-significant correlation for parents of children. There were also positive and significant correlations between the ECQ Gratitude measure and the BIPQ Perception of COVID-19 for all group stratifications. The Emotional Impact of COVID-19, as measured by the BIPQ, correlated positively and significantly with the ECQ gratitude scale for parents and people with older parents. The BIPQ Knowledge about COVID-19 had a significant correlation with the ECQ Gratitude scale for parents of children.

[Table 5 here]

Discussion

This study utilised a cross-sectional online survey-based approach to investigate Stress, Anxiety, Depression, and psychological well-being with members of the Irish public, recruited through national media and social media outlets. We investigated changes in psychological distress during the COVID-19 pandemic comparing psychological outcomes

before and during the quarantine period in Ireland with a sample of individuals ranging age from 18 to 76 years. We addressed a series of five questions posed at the end of the introduction. With regard to the first question concerning mean levels and rates of depression, anxiety, and stress, we found that both mean levels of all three variables and rates of clinically significant depression, anxiety, and stress symptoms increased significantly during the quarantine period. The greatest increase in case severity occurred for depression. With regard to the second question concerning mean reports of depression, anxiety, and stress in subgroups of the sample, we found that increases in depression, anxiety and stress from pre-quarantine to quarantine were not significantly affected by having responsibility for caring for a child or older, aging parents. With regard to the third question concerning rates of stresses and things that people felt grateful for, specifically related to the COVID-19 crisis. The most frequently identified stressors by the whole sample related to social isolation, personal and familial well-being, and loss of routines such as sleeping patterns and recreational schedules. For those caring for children the most frequently identified stressors related to keeping their child safe, keeping their child away from crowded areas, and their child's school closing. For those with older, aging parents, the most frequently identified stress was them contracting COVID-19. There was also concern over the availability of medical treatment for their parent should they need it, followed by stress that their older aging parent may become lonely during the pandemic. The most frequently identified thing that people indicated the COVID-19 crisis made them grateful for was their own personal and familial health, close relationships, and their current employment.

The fourth question concerned the psychometric properties of the ECQ. We found that the 4 a priori subscales had acceptable levels of internal consistency reliability, and that the structure of the ECQ was partially supported by factor analytic results. We also created severity classification bands for the ECQ based on the DASS-21. The final question concerned the association between COVID-19-related stresses and gratitude assessed by the ECQ and indices of mental health and well-being. **We found that three of the four ECQ scales had significant correlations in expected directions with depression, anxiety, stress, and each correlated as expected with mental health well-being and perceptions of COVID-19.**

A limitation of the current study is the profiling of parents, children, and older aging parents. While our public sample allows for stratification into these groups to better understand relative distress, our questionnaire was not designed to specifically investigate specific additional stressors i.e., behaviours that challenge, or caregiving demands. It is well reported in the literature that externalising behaviour in children are among the most

prevalent causes of parental stress across a number of clinical morbidities (Barroso, Mendez, Graziano, & Bagner, 2018), and quarantine, social isolation, school closure, and reduced access to routine coping strategies may result in greater parental stress, however, from this study such a conclusion cannot be drawn. A further limitation is the lack of male participants (16.4%), which future research could aim to recruit specifically. Our study is in line with the existing literature on psychological outcomes in response to both COVID-19, and what we know of the psychological impact of quarantine (Brooks et al., 2020; Dong & Bouey, 2020; Liang et al., 2020; Vostanis & Bell, 2020).

Conclusion

The Irish general public require increased access to mental health services to meet the increase in COVID-19-related psychological problems identified in this study. In particular access to evidence-based psychological interventions are needed which support the development and maintenance of coping mechanisms, in order to improve mental health and psychological well-being. Specifically, this research highlights the need to support people and their families across the lifespan (18-76 years) within our health-care systems, with both traditional and non-traditional intervention strategies, ensuring accessibility is considered. This research suggests that features of depression have significantly increased as a result of the COVID-19 pandemic, further perpetuated by the quarantine and imposed restriction, albeit a necessary step for infection control.

Competing interests

Nil

Ethical approval

Aspects of this study have been granted approval by the host institution's Research Ethics Committee.

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TABLES AND FIGURES

Table 1: Demographics of the total group, and stratified by group membership

			Total Cohort (N=847)	Parent to a child (n=269) *	Older aging parent (n=433)	Neither (n=145)
Gender	Female	%	83.6	83	84.8	80
Age	(Range:18-76)	M±SD	36.07±10.29	41.07±6.95	33.26±8.61	35.19 ±15.49
Household income	0-24	%	9	6	9.7	13.1
	25-49		26	16.4	28.9	35.2
	50-74		24.4	24.9	25.6	20.0
	75-99		19.1	23.8	17.1	16.6
	100-149		15.1	18.6	13.9	12.4
	>150k		6	10.4	4.4	2.8
Education	≤ School	%	22.5	23.2	16.7	24.8
	Degree		38.7	34.9	41.9	36.6
	Masters		32.5	27.9	35	33.8
	Doctorate		5.2	5.6	5.3	4.1
	Post-doc		.8	.4	1.2	.7
Relationship Status	Single	%	7.6	3	8.3	13.1
	Engaged		10.5	5.6	11.8	14.5
	Married		43	76.2	27.7	22.8
	Committed		38.9	13.8	50.1	48.3
Currently Working?	Yes	%	64.4	64.3	68.6	51.7

Note: 'Neither' refers to neither a child nor an older aging parent. *Of which, n=33 only have a child as illustrated in Figure S1

Table 2: DASS-21 Depression, Anxiety and Stress mean scores before and during quarantine

Variable		Total Sample	Parent to a child	Older Aging parent	Neither
N		847	269	433	145
Depression	Pre-Q	7.46 ^a ± 7.78	6.59 ± 6.81	8.12 ± 8.04	7.09 ± 8.54
	Q	10.54 ^b ± 9.46	9.14 ± 8.74	11.41 ± 7.12	10.51 ± 9.89
Anxiety	Pre-Q	5.39 ^a ± 5.87	4.71 ± 5.71	5.82 ± 5.88	5.34 ± 6.04
	Q	6.02 ^b ± 6.86	5.29 ± 6.67	6.63 ± 7.12	5.56 ± 6.26
Stress	Pre-Q	11.99 ^a ± 7.74	11.41 ± 7.40	12.46 ± 8.00	11.62 ± 7.49
	Q	12.86 ^b ± 9.09	11.73 ± 8.63	13.45 ± 9.24	13.20 ± 9.33

Note: DASS = Depression Anxiety and Stress Scale. Pre-Q = Pre-quarantine. Q = During Quarantine. Standard deviations are given after ±. For each variable, means with different superscripts differ significantly at $p < .01$.

Table 3: A summary of the total percentage of the cohort who score within the cut-off categories of the DASS-21 for Stress, Anxiety, and Depression, stratified by group membership.

Variable	DASS-21 Classification	Range	Total cohort (N=847)				Parents of Children (n= 269)*				Older Aging Parents (n=433)				Neither Children nor Older Aging Parent (n= 145)			
			Before ¹	Mean \pm SD ²	During ³	Mean \pm SD ²	Before	Mean \pm SD	During	Mean \pm SD	Before	Mean \pm SD	During	Mean \pm SD	Before	Mean \pm SD	During	Mean \pm SD
			(%)		(%)		(%)		(%)		(%)		(%)		(%)		(%)	
Stress	Normal	0-14	72.3	8.22 \pm 4.21	66	7.62 \pm 4.69	76.4	8.24 \pm 4.34	71.3	7.32 \pm 4.77	69.7	8.27 \pm 4.15	64	7.93 \pm 4.60	72.9	4.01 \pm 2.09	62.3	3.63 \pm 2.38
	Mild	15-18	11.5	16.92 \pm 1.01	12.3	16.90 \pm 1.01	9.7	17.04 \pm 1.01	9.8	16.56 \pm 916	12.6	16.90 \pm 1.00	13.4	16.98 \pm 1.00	11.8	8.41 \pm .507	13.8	8.57 \pm .507
	Moderate	19-25	10.1	21.78 \pm 1.53	10.8	22.04 \pm 1.58	9.3	21.50 \pm 1.21	9.4	22.08 \pm 1.50	10.4	21.86 \pm 1.69	10.9	22.00 \pm 1.59	10.4	11.00 \pm 755	13	11.05 \pm 872
	Severe	26-33	4	28.36 \pm 1.96	7.7	28.38 \pm 2.04	3.5	28.88 \pm 1.45	7.9	28.10 \pm 2.10	4.5	28.10 \pm 2.05	8	28.42 \pm 2.16	3.5	14.20 \pm 1.30	6.5	14.44 \pm 726
	Extremely Severe	\geq 34	2.1	36.94 \pm 3.17	3.1	37.68 \pm 3.24	1.2	39.55 \pm 3.05	1.6	37.00 \pm 3.82	2.8	36.33 \pm 3.28	3.6	38.00 \pm 3.09	1.4	18.50 \pm 707	4.3	17.66 \pm 1.03
Anxiety	Normal	0-7	69.3	2.22 \pm 2.16	67.5	2.26 \pm 2.17	73.8	1.95 \pm 2.19	72.8	1.97 \pm 2.16	66.4	2.14 \pm 2.12	63.9	2.53 \pm 2.17	70	2.04 \pm 2.16	68.3	2.06 \pm 2.13
	Mild	8-9	8.9	8.00 \pm 0.0	8.2	8.00 \pm 0.0	7.4	8.00 \pm 0.0	7	8.00 \pm 0.0	10.9	8.00 \pm 0.0	9.2	8.00 \pm 0.0	5.7	8.00 \pm 0.0	7.2	8.00 \pm 0.0
	Moderate	10-14	14.8	11.45 \pm 1.61	14.8	11.53 \pm 1.54	13.3	11.52 \pm 1.63	11.7	11.66 \pm 1.39	15.4	11.47 \pm 1.63	16.2	11.37 \pm 1.56	15.7	11.27 \pm 1.57	16.5	11.82 \pm 1.69
	Severe	15-19	2.6	16.38 \pm .80	3.7	17.20 \pm .99	2.3	16.00 \pm 0.0	1.9	17.60 \pm .894	2.4	16.60 \pm .996	4.6	17.15 \pm 1.01	3.6	16.40 \pm .894	4.3	17.00 \pm 1.09
	Extremely Severe	\geq 20	4.4	23.27 \pm 3.82	5.8	25.82 \pm 5.48	3.1	24.75 \pm 4.65	6.6	24.11 \pm 4.27	5	23.14 \pm 3.26	6.1	27.20 \pm 5.85	5	22.00 \pm 4.47	3.6	24.80 \pm 6.41
Depression	Normal	0-9	70	3.36 \pm 2.66	53.7	3.64 \pm 2.75	74	3.28 \pm 2.65	60.5	3.41 \pm 2.77	66.1	3.52 \pm 2.65	49.4	3.89 \pm 2.70	74.5	3.10 \pm 2.70	54	3.46 \pm 2.85
	Mild	10-13	11.5	10.88 \pm .99	15.1	11.20 \pm .982	9.5	11.04 \pm 1.01	12.6	11.06 \pm 1.01	13.2	10.75 \pm .977	15.8	11.23 \pm .980	9.9	11.14 \pm 1.02	17.3	11.33 \pm .963
	Moderate	14-20	11.7	16.43 \pm 2.29	17.1	16.43 \pm 2.19	12.6	16.24 \pm 2.22	15.4	16.30 \pm 2.22	12	16.31 \pm 2.37	19.5	16.55 \pm 2.15	9.2	17.38 \pm 2.06	12.9	16.22 \pm 2.36
	Severe	21-27	3.5	24.06 \pm 1.64	7.0	23.78 \pm 1.60	2.3	23.33 \pm 1.63	5.5	23.14 \pm 1.51	4.9	24.19 \pm 1.66	7.1	23.93 \pm 1.64	1.4	25.00 \pm 1.41	9.4	24.15 \pm 1.51
	Extremely Severe	\geq 28	3.3	33.40 \pm 4.76	7.2	33.72 \pm 4.99	1.5	34.50 \pm 5.74	5.9	31.86 \pm 4.03	3.8	32.62 \pm 4.36	8.3	33.94 \pm 5.24	5	34.57 \pm 5.50	6.5	36.00 \pm 4.79

Note: ¹ 'Before' refers to the time period before the government enforced quarantine restrictions; ² The Mean and Standard Deviation of the group performance within the DASS-21 Classification, stratified into Stress, Anxiety, and Depression subscales; ³ 'During' refers to the time period during the quarantine. *Of which, n=33 only have a child as illustrated in Figure 1

Table 4: COVID-19-Related sources of stress and feelings of gratitude.

Item No.	COVID-19-related personal stress for all participants (N=847)	%
	In the past month, how much stress have you experienced as a result of the following things:	'Quite a lot' or 'A great deal'
3	Not being able to meet with your extended family and friends	69.9
13	Worrying about the effects COVID-19 on you or your family, now or in the future	47.5
5	Loss of your own, or your family's daily routine (such as sleeping patterns; meal times; work, school and recreation schedules)	39.9
9	Worrying that you may become infected with COVID-19 and then infect other people	35.8
10	You, or members of your family being hospitalised for COVID-19 illness	26.4
11	Death of a family member or very close friend as a result of COVID-19	23.3
12	Witnessing others in your community suffering because of COVID-19	20.3
7	Getting a lot of conflicting information and misinformation online and in the media about COVID-19	17.9
8	You, or members of your family becoming ill with COVID-19	16.3
1	Financial hardship for you or your family arising from the COVID-19 crisis, due to job loss, or loss of earnings	15.7
2	Having difficulty getting supplies when you need them, including face masks, hand sanitizers, medicines, food, drinks or other essentials	12.6
6	Family conflict arising from the COVID19 crisis, due to arguing, or fighting with other family members more than usual because you are spending more time together at home	9
4	Not being able to go to your church or place of religious worship	4.9
	COVID-19-related stresses for parents to a child (n= 268)	
16	Helping your child keep a safe distance from members of your extended family, or preventing them from visiting with the extended family (for example grandparents)	11.9
14	Your child's school closing	9.9
17	Helping your child avoid crowded places, and activities that they like, such as going to sports or musical events, scouts or guides, clubs, the playground, or to church	8.5
15	Helping your child keep a safe distance from their friends, or preventing them from mixing with their friends	8.1
18	Helping your child to not shake hands, hug, or touch other people	5.2
19	Helping your child to wash or sanitise their hands regularly	4.8
21	Being worried that your child will catch COVID-19 because they have an underlying medical condition such as cancer or asthma, that makes them vulnerable to severe illness if they become infected	3.8
20	Helping your child to remember to cough or sneeze into their elbow	2.8
	COVID-19-related stresses for people with older, aging parents (n= 433)	
24	Worrying that your aging parents will become infected with COVID-19	44.7
25	Worrying that your aging parents will not receive adequate medical care if they become infected with COVID-19	36.9
22	Worrying that your aging parents will become lonely during the COVID-19 crisis	34.1
23	Worrying that you aging parents will not get supplies during the COVID-19 crisis	15.6
	COVID-19- related feelings gratitude	
	In the past month, how much has your experience of the COVID 19 crisis led you to feel grateful for the following things	
26	Your health, and the health of your family (N=847)	85.4
27	Your relationships with your extended family and friends (N=847)	81.7
34	Your aging parents health and safety (n= 433)	67.9
28	Your job (N=847)	61.9
29	Attending social, sports, and cultural events (N=847)	59.7
30	Your community (N=847)	45.6
32	Your child's relationships with their friends (n= 268)	21.7
31	Your child's regular attendance at school (n= 268)	20.7
33	Your child's involvement in activities such as sports, music, scouts, guides, clubs etc (n= 268)	15.9

Table 5: Correlations between ECQ scales and DASS, WEMWBS, and BIPQ scales.

Scale	ECQ scales			Gratitude Scale		
	Personal Stress	Parenting Stress	Older Parent Stress	Personal	Parents	Older Parent
N	847	269	433	145	269	433
Quarantine DASS-21 Depression	.39**	.45**	.24**	.01	-.007	.002
Quarantine DASS-21 Anxiety	.46**	.46**	.32**	.03	.089	.06
Quarantine DASS-21 Stress	.48**	.52**	.36**	.04	.104	.07
WEMWBS Well-being	-.34**	-.42**	-.23**	.107**	.054	.085*
BIPQ Perception of COVID-19	.30**	.21**	.22**	.183*	.150*	.240**
BIPQ Emotional impact of COVID-19	.53**	.35**	.41**	.05	.192**	.178**
BIPQ Knowledge about COVID-19	.01	-.02	.03	.031	.161**	.082

Note: ECQ = Effects of COVID-19 Questionnaire. DASS = Depression Anxiety Stress Scale. WEMWBS = Warwick-Edinburgh Mental Wellbeing Scale. BIPQ = Brief Illness Perception Questionnaire. * $p < .05$. ** $p < .001$

Supplemental Materials

Table S1. Effects of COVID-19 questionnaire (ECQ)

The following questions ask about the effect that the COVID-19 or Corona virus is having on you. For each item, click on the answer that applies to you in the PAST MONTH . N/A means the item is not applicable to you.							
In the past month, how much stress have you experienced as a result of the following things							
		N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
1	Financial hardship for you or your family arising from the COVID-19 crisis, due to job loss, or loss of earnings	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
2	Having difficulty getting supplies when you need them, including face masks, hand sanitizers, medicines, food, drinks or other essentials	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
3	Not being able to meet with your extended family and friends	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
4	Not being able to go to your church or place of religious worship	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
5	Loss of your own, or your family's daily routine (such as sleeping patterns; meal times; work, school and recreation schedules)	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
6	Family conflict arising from the COVID19 crisis, due to arguing, or fighting with other family members more than usual because you are spending more time together at home	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
7	Getting a lot of conflicting information and misinformation online and in the media about COVID-19	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
8	You, or members of your family becoming ill with COVID-19	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
9	Worrying that you may become infected with COVID-19 and then infect other people	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
10	You, or members of your family being hospitalised for COVID-19 illness	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
11	Death of a family member or very close friend as a result of COVID-19	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
12	Witnessing others in your community suffering because of COVID-19	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
13	Worrying about the effects COVID-19 on you or your family, now or in the future	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
If you have children							
14	Your child's school closing	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
15	Helping your child keep a safe distance from their friends, or preventing them from mixing with their friends	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
16	Helping your child keep a safe distance from members of your extended family, or preventing them from visiting with the extended family (for example grandparents)	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
17	Helping your child avoid crowded places, and activities that they like, such as going to sports or musical events, scouts or guides, clubs, the playground, or to church	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
18	Helping your child to not shake hands, hug, or touch other people	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
19	Helping your child to wash or sanitise their hands regularly	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
20	Helping your child to remember to cough or sneeze into their elbow	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5
21	Being worried that your child will catch COVID-19 because they have an underlying medical condition	N/A	None	A little	Some	Quite a lot	A great deal
		0	1	2	3	4	5

such as cancer or asthma, that makes them vulnerable to severe illness if they become infected

If you have aging parents

22	Worrying that your aging parents will become lonely during the COVID-19 crisis	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
23	Worrying that you aging parents will not get supplies during the COVID-19 crisis	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
24	Worrying that your aging parents will become infected with COVID-19	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
25	Worrying that your aging parents will not receive adequate medical care if they become infected with COVID-19	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5

In the past month, how much has your experience of the COVID 19 crisis led you to feel grateful for the following things

26	Your health, and the health of your family	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
27	Your relationships with your extended family and friends	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
28	Your job	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
29	Attending social, sports, and cultural events	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
30	Your community	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
31	Your child's regular attendance at school	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
32	Your child's relationships with their friends	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
33	Your child's involvement in activities such as sports, music, scouts, guides, clubs etc	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5
34	Your aging parents health and safety	N/A 0	None 1	A little 2	Some 3	Quite a lot 4	A great deal 5

Note: Items 1-13 COVID-19 personal stress scale. Items 14-21 COVID-19 parenting stress scale. Items 22-25 COVID-19 aging parents stress scale. Items 26-33 COVID-19 gratitude scale. To get a scale score, sum scores of items in the scale and divide this by the number of items which did not have an N/A response.

Table S2: Mean and Standard Deviation of the Psychological Outcome Measures for the total cohort, and the stratified group membership

		Total Cohort (N=847)	Parent to a child (n=269)*	Older aging parent (n=433)	Neither (n=145)
Psychological Outcomes	BIPQ Cognitive	29.94±5.21	29.85±5.31	30.07±5.22	29.76 ±5.05
	DASS Stress	11.99 ±7.74	11.41 ±7.40	12.46 ±8.00	11.62 ±7.49
	DASS Anxiety	5.39 ±5.87	4.71 ±5.71	5.82 ±5.88	5.34 ±6.04
	DASS Depression	7.46± 7.78	6.59 ±6.81	8.12 ±8.04	7.09 ±8.54
	(Quarantine) DASS Stress	12.86 ±9.09	11.73 ±8.63	13.45 ±9.24	13.20 ±9.33
	(Quarantine) DASS Anxiety	6.02 ±6.86	5.29 ±6.67	6.63 ±7.12	5.56 ±6.26
	(Quarantine) DASS Depression	10.54 ±9.46	9.14 ±8.74	11.41 ±7.12	10.51 ±9.89
	WEMWBS	53.98±10.14	54.16±10.06	53.91±9.91	53.86±11.01
	ECQ – Personal	19.41±7.85	20.25±7.74	19.14±7.85	18.63±7.96
	ECQ – Parent	-	10.43±6.74	-	-
	ECQ – OAP	6.47±4.91	7.09±4.61	8.20±4.11	-
	ECQ – Gratitude	18.84±6.42	23.85±6.71	17.44±4.35	13.56±4.72
	BIPQ – Knowledge	7.80±1.76	7.88±1.87	7.75±1.74	7.76±1.59
	BIPQ – Emotional	6.12±2.29	6.03±2.34	6.15±2.24	6.21±2.32

ECQ: Effects of COVID-19 Questionnaire; OAP; Older Aging Parent; WEMWBS: Warwick-Edinburgh Mental Wellbeing Scale; BIPQ: Brief Illness Perception Questionnaire; DASS: Depression Anxiety Stress Scale; **Note:** Quarantine refers to the period of time where participants were invited to complete the DASS-21 during the period of government-imposed restrictions; ‘Neither’ refers to neither a child nor an older aging parent. *Of which, n=33 only have a child as illustrated in Figure 1

Table S3: Correlations for the psychological outcome variables for the Total Group and the stratification of those who had neither a child nor an older aging parent

Variables			1	2	3	4	5	6	7	8	9	10	11	12	13	14		
1	ECQ	<i>r</i>	ECQ	-	-	.200*	-.268*	.288**	.285**	.315**	.367**	.368**	.341**	.377**	-.103	.446**	1	ECQ
	Personal	<i>p</i>	Personal	-	-	.027	.003	.002	.002	<.001	<.001	<.001	<.001	<.001	.262	<.001	2	Personal
2	ECQ	<i>r</i>	-	ECQ	-	-	-	-	-	-	-	-	-	-	-	-	2	ECQ Parent
	Parent	<i>p</i>	-	Parent	-	-	-	-	-	-	-	-	-	-	-	-		
3	ECQ OAP	<i>r</i>	.411**	-	ECQ	-	-	-	-	-	-	-	-	-	-	-	3	ECQ OAP
	Distress	<i>p</i>	<.001	-	OAP	-	-	-	-	-	-	-	-	-	-	-		Distress
4	ECQ	<i>r</i>	.247**	-	.312**	ECQ	.239**	.162	-.053	.016	.007	.024	.005	.028	-.017	.044	4	ECQ
	Grateful	<i>p</i>	<.001	-	<.001	Grateful	.008	.076	.567	.861	.940	.794	.959	.757	.857	.634		Grateful
5	WEMWBS	<i>r</i>	-.342**	-	-.144**	.048	WEM-	.080	-.545**	-.391**	-.333**	-.581**	-.453**	-.394**	.128	-.382**	5	WEMWBS
		<i>p</i>	<.001	-	<.001	.181	WBS	.382	<.001	<.001	<.001	<.001	<.001	<.001	.161	<.001		
6	BIPQ	<i>r</i>	.296**	-	.127**	.138**	-.064	BIPQ	-.105	-.125	-.129	.079	.170	.087	.253**	.387**	6	BIPQ
	Cognitive	<i>p</i>	<.001	-	<.001	<.001	.078	Cognitive	.251	.172	.158	.387	.062	.341	.005	<.001		Cognitive
7	DASS	<i>r</i>	.202**	-	.111**	-.044	-.372**	-.002	DASS	.752**	.626**	.678**	.502**	.484**	-.217*	.354**	7	DASS
	Depression	<i>p</i>	<.001	-	.002	.226	<.001	.957	DASS	<.001	<.001	<.001	<.001	<.001	.017	<.001		Depression
8	DASS	<i>r</i>	.254**	-	.142**	.036	-.249**	.049	.691**	DASS	.731**	.461**	.567**	.509**	-.146	.262**	8	DASS
	Stress	<i>p</i>	<.001	-	<.001	.312	<.001	.172	<.001	Stress	<.001	<.001	<.001	<.001	.109	.004		Stress
9	DASS	<i>r</i>	.274**	-	.149**	-.011	-.228**	.023	.590**	.681**	DASS	.424**	.488**	.719**	-.179*	.216*	9	DASS
	Anxiety	<i>p</i>	<.001	-	<.001	.763	<.001	.519	<.001	<.001	Anxiety	<.001	<.001	<.001	.049	.017		Anxiety
10	Quarantine	<i>r</i>	.391**	-	.183**	-.011	-.631**	.125**	.552**	.389**	.379**	DASS	.780**	.650**	-.187*	.525**	10	Quarantine
	Depression	<i>p</i>	<.001	-	<.001	.754	<.001	.001	<.001	<.001	<.001	Depression	<.001	<.001	.040	<.001		Depression
11	Quarantine	<i>r</i>	.476**	-	.244**	.037	-.542**	.158**	.405**	.513**	.420**	.731**	DASS	.727**	-.183*	.507**	11	Quarantine
	Stress	<i>p</i>	<.001	-	<.001	.306	<.001	<.001	<.001	<.001	<.001	<.001	Stress	<.001	.044	<.001		Stress
12	Quarantine	<i>r</i>	.458**	-	.247**	.044	-.417**	.116**	.383**	.410**	.630**	.649**	.717**	DASS	-.140	.410**	12	Quarantine
	Anxiety	<i>p</i>	<.001	-	<.001	.222	<.001	.001	<.001	<.001	<.001	<.001	<.001	Anxiety	.127	<.001		Anxiety
13	Understand	<i>r</i>	.005	-	-.016	.077*	.123**	.283**	-.116**	-.059	-.017	-.105**	-.062	-.011	BIPQ	.029	13	Understand
	COVID	<i>p</i>	.884	-	.667	.032	.001	<.001	.001	.099	.632	.004	.086	.752	COVID	.752		COVID
14	Emotional	<i>r</i>	.531**	-	.220**	.133**	-.457**	.392**	.248**	.294**	.286**	.485**	.501**	.466**	.082*	BIPQ	14	Emotional
	Impact	<i>p</i>	<.001	-	<.001	.002	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	.023	Emotional		Impact

Neither Child nor OAP

Shading: shaded upper segment reflects participants with neither a child nor an aging parent (listwise, n=121); lower quadrant reflects total cohort (listwise n=769). **Abbreviations:** ECQ: Effects of COVID-19 Questionnaire; OAP; Older Aging Parent; WEMWBS: Warwick-Edinburgh Mental Wellbeing Scale; BIPQ: Brief Illness Perception Questionnaire; DASS: Depression Anxiety Stress Scale; r: correlation coefficient; p: significance value; **Note:** Quarantine refers to the period of time where participants were invited to complete the DASS-21 during the period of government-imposed restrictions; * p<.05; **p<.001;

Table S4: Correlations for the psychological outcome variables stratified by those who were parents of children, as well as participants with older aging parents.

Variables			1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Parents of Children [§]	1	ECQ Personal	<i>r</i>	ECQ Personal	-	.600**	.258**	-.365**	.315**	.210**	.256**	.257**	.390**	.488*	.434**	.032	.583**	1	ECQ Personal	
			<i>p</i>		-	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	.524	<.001	2	ECQ Parent	
		2	ECQ Parent	<i>r</i>	.506**	ECQ Parent	-	-	-	-	-	-	-	-	-	-	-	-	2	ECQ Parent
				<i>p</i>	<.001		-	-	-	-	-	-	-	-	-	-	-	-	3	ECQ OAP Distress
		3	ECQ OAP Distress	<i>r</i>	.433**	.308**	ECQ OAP	.261**	-.232**	.217**	.139**	1.58**	.205**	.244**	.359**	.321**	.029	.409**	3	ECQ OAP Distress
				<i>p</i>	<.001	<.001	<.001	<.001	<.001	.005	.002	<.001	<.001	<.001	<.001	.563	<.001		4	ECQ Grateful
		4	ECQ Grateful	<i>r</i>	.285**	.328**	.201**	ECQ Grateful	.075	.244**	-.031	.061	.045	.003	.077	.064	.059	.167**	4	ECQ Grateful
				<i>p</i>	<.001	<.001	.001		.133	<.001	.542	.221	.366	.946	.123	.199	.238	.001	5	WEMWBS
		5	WEMWBS	<i>r</i>	-.346**	-.415**	-.140*	-.039	WEMWBS	-.115*	-.332**	-.232**	-.204**	-.659**	-.594**	-.465**	.134**	-.495**	5	WEMWBS
				<i>p</i>	<.001	<.001	.027	.540		.021	<.001	<.001	<.001	<.001	<.001	.008	<.001		6	BIPQ Cognitive
		6	BIPQ Cognitive	<i>r</i>	.281**	.205**	.149*	.158*	-.044	BIPQ Cognitive	.038	.101*	.086	.147**	.127*	.092	.253**	.376**	6	BIPQ Cognitive
				<i>p</i>	<.001	.001	.019	.012	.490		.452	.044	.085	.003	.011	.065	<.001	<.001	7	DASS Depression
		7	DASS Depression	<i>r</i>	.154*	.196**	.101	-.015	-.346**	-.023	DASS Depression	.698**	.584**	.501**	.367**	.358**	-.090	.218**	7	DASS Depression
				<i>p</i>	.015	.002	.111	.818	<.001	.717		<.001	<.001	<.001	<.001	<.001	.071	<.001	8	DASS Stress
	8	DASS Stress	<i>r</i>	.237**	.250**	.185**	.117	-.210**	.035	.639**	DASS Stress	.681**	.365**	.473**	.364**	-.036	.280**	8	DASS Stress	
			<i>p</i>	<.001	<.001	.003	.066	.001	.581	<.001	<.001	<.001	<.001	<.001	<.001	.468	<.001	9	DASS Anxiety	
	9	DASS Anxiety	<i>r</i>	.286**	.254**	.177**	.077	-.214**	-.019	.573**	.650**	DASS Anxiety	.365**	.383**	.578**	-.006	.265**	9	DASS Anxiety	
			<i>p</i>	<.001	<.001	.005	.227	.001	.767	<.001	<.001	<.001	<.001	<.001	<.001	.913	<.001	10	Quarantine Depression	
	10	Quarantine Depression	<i>r</i>	.442**	.445**	.227**	.109	-.616**	.106	.567**	.384**	.354**	DASS Depression Quarantine	.737**	.686**	-.101*	.495**	10	Quarantine Depression	
			<i>p</i>	<.001	<.001	<.001	.086	<.001	.095	<.001	<.001	<.001	<.001	<.001	<.001	.043	<.001	11	Quarantine Stress	
	11	Quarantine Stress	<i>r</i>	.552**	.520**	.280**	.164**	-.500**	.203**	.415**	.553**	.433**	.683**	DASS Stress Quarantine	.720**	-.099*	.493**	11	Quarantine Stress	
			<i>p</i>	<.001	<.001	<.001	.009	<.001	.001	<.001	<.001	<.001	<.001	<.001	<.001	.048	<.001	12	Quarantine Anxiety	
	12	Quarantine Anxiety	<i>r</i>	.562**	.456**	.274**	.163**	-.349**	.166**	.369**	.438**	.675**	.568**	.704**	DASS Anxiety Quarantine	-.028	.459**	12	Quarantine Anxiety	
			<i>p</i>	<.001	<.001	<.001	.010	<.001	.009	<.001	<.001	<.001	<.001	<.001	.584	<.001		13	Understand COVID	
	13	Understand COVID	<i>r</i>	.005	-.019	-.060	.137*	.107	.335**	-.108	-.056	.042	-.070	.054	.068	BIPQ COVID	.079	13	Understand COVID	
			<i>p</i>	.935	.754	.344	.031	.091	<.001	.088	.378	.506	.268	.397	.283		.117	14	Emotional Impact	
	14	Emotional Impact	<i>r</i>	.504**	.353**	.186**	.211**	-.435**	.414**	.244**	.332**	.355**	.453**	.513**	.507**	.109	BIPQ Emotional	14	Emotional Impact	
			<i>p</i>	<.001	<.001	.003	.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	.086				

Shading: shaded upper segment reflects participants with only an older aging parent i.e., no children (listwise, n=399); lower quadrant reflects parent cohort (listwise n=249). **Abbreviations:** ECQ: Effects of COVID-19 Questionnaire; OAP: Older Aging Parent; WEMWBS: Warwick-Edinburgh Mental Wellbeing Scale; BIPQ: Brief Illness Perception Questionnaire; DASS: Depression Anxiety Stress Scale; r: correlation coefficient; p: significance value; **Note:** Quarantine refers to the period of time where participants were invited to complete the DASS-21 during the period of government-imposed restrictions; * p<.05; **p<.001; §Of which, n=33 only have a child as illustrated in Figure 1

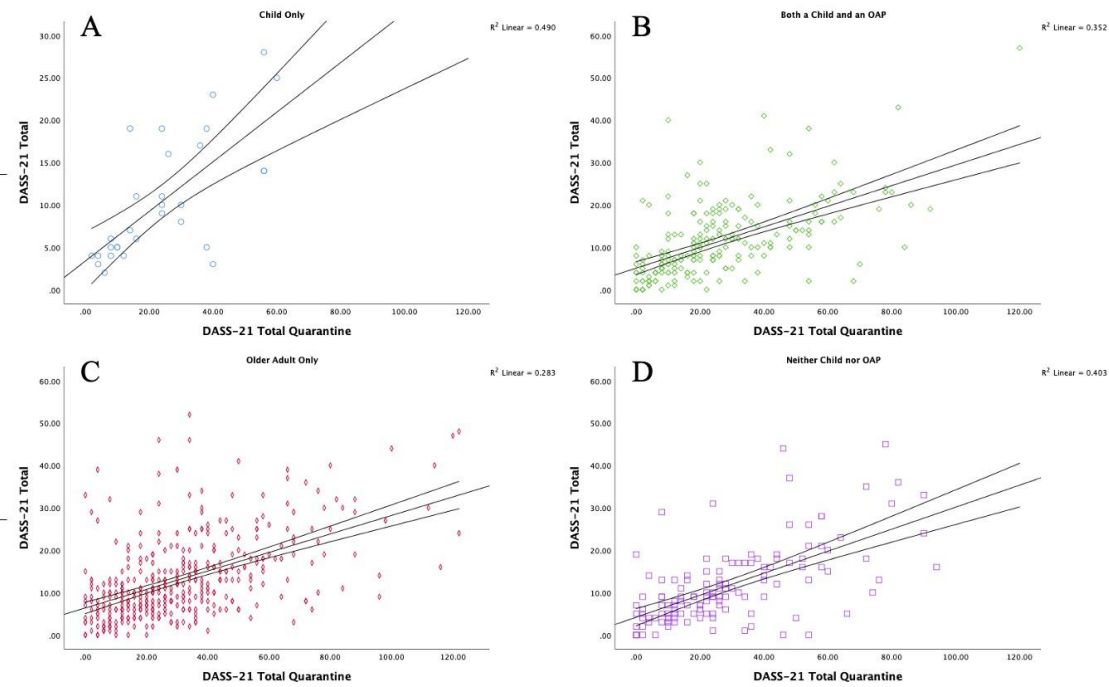
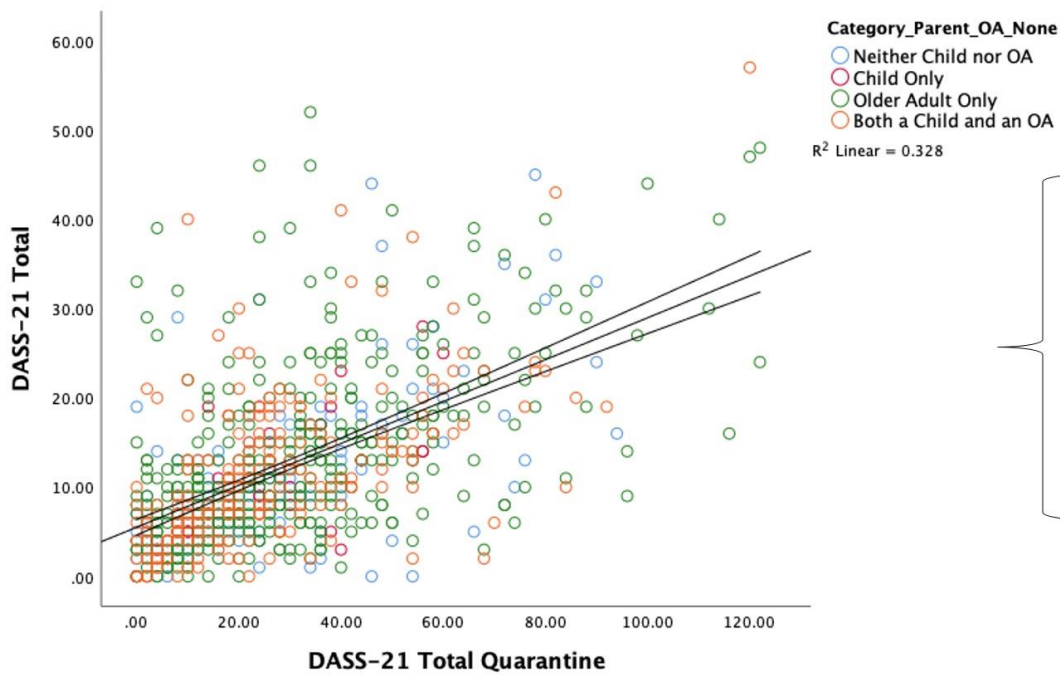


Figure S1: Outcomes on the DASS-21 for the summed score of the Depression, Anxiety, and Stress subscales prior to, and during, the quarantine. Group stratification is illustrated as: *Left: Total cohort with colour demarcation; (A) parents with a child only i.e., no older aging parents; (B) both a child and an older aging parent; (C) older aging parents only; (D) Neither a Child nor an older aging parent.*

