



Validation of the Worries Emerging from the Covid-19 Pandemic (WECP) Scale

Prof David A. Comerford, Olivia Olivarius, Prof David Bell, Dr Elaine Douglas



Validation of the Worries Emerging from the Covid-19 Pandemic (WECP) Scale

David A. Comerford¹, Olivia Olivarius, David Bell and Elaine Douglas

University of Stirling

Abstract:

Background and Objectives: Covid-19 has caused substantial disruption to how we live, work and socialise and has evoked concerns and worries regarding many aspects of life. As the UK was easing Covid-19 restrictions in the period March – May 2021, we devised and validated a Worries Emerging from the Covid-19 Pandemic scale (the WECP scale).

Research Design and Methods: We devised 100 items that factor analyses over two rounds of data collection on UK residents reduced to a 14-item scale. The resultant WECP scale captures the following dimensions: worries about the future course of the virus; worries about readjusting to society; feelings of isolation; worries about the continuation or reintroduction of restrictions; worries for family and friends; financial worries and worries regarding the safety and efficacy of Covid vaccines.

Results: Scores on our WECP scale are independently predicted by three scales from the peer-reviewed literature: one that captures fear concerning the disease itself, one that captures broader worries around the pandemic and one that measures resilience. WECP scores are lower among older respondents (age 70+) than among younger respondents (age 40-49) and this is largely explained by financial worries and worries regarding the efficacy and risks of the Covid-19 vaccines.

¹ Corresponding author: david.comerford@stir.ac.uk, 01786467317. Economics division, University of Stirling, FK9 4LA.

Discussion: The WECP scale provides a uniquely insightful measure of the worries experienced by the older UK population as we emerge from the Covid-19 pandemic. It can help identify which groups have been left feeling vulnerable by the pandemic and on which dimensions those groups would profit from support.

Keywords: Covid-19; fear; worries; resilience; pandemic; scale validation

Funding: This research is supported by the Economic and Social Research Council (ESRC), as part of UK Research and Innovation's rapid response to Covid-19. Grant number: ES/V01711X/1.

Acknowledgements: The authors are grateful to Alison Dawson, Cath Pemble, Lesley McGregor, Louise McCabe and Tamara Brown for helpful discussions and feedback during the course of scale development. The authors are also grateful to our project co-researchers for their participation in the Think Aloud sessions described below.

Validation of the Worries Emerging from the Covid-19 Pandemic (WECP) Scale

The Covid-19 pandemic and the restrictions it has necessitated have changed many aspects of our day-to-day life: from what we wear on our faces to whom we see and how we spend our time. These changes have been experienced differently by different individuals, for both circumstantial reasons (e.g. living arrangements) and for reasons of temperament (e.g. trait-level resilience).

Now that some countries are reaching the critical threshold of vaccine coverage that admits an easing of restrictions, it is especially important to understand the worries and vulnerabilities that the pandemic has triggered. The current research presents a newly developed scale that is intended to capture individual differences in worries and resilience as we emerge from the Covid-19 pandemic. The scale was developed as part of a study of the Scottish population aged 47 and over (Hagis.scot, 2021). That project seeks to understand how the Covid pandemic has impacted the social connectedness, health, health behaviours, spending and labour market behaviours of older people living in Scotland.

It quickly became apparent that existing scales that measure Covid-19 stress, anxiety, fear etc. were too limited in scope for our purposes. Many were designed as clinical tool (e.g. to identify individuals who were experiencing the pandemic as a mental health crisis). Those that were intended for use in the general population tended to focus on worries related to health and contamination. For our study, we required a scale that would measure concerns not merely in the domain of health but in response to the pandemic more generally.

The scale that resulted comprises the following dimensions: worries about the future course of the virus; worries about readjusting to society; feelings of isolation; worries about the continuation or reintroduction of restrictions; worries for family and friends; financial worries

and worries regarding the safety and efficacy of Covid vaccines. The scale was validated in a sample of UK residents aged 40 and over.

We began our project with a hundred potential scale items that were intended to capture the worries and concerns induced by the pandemic. Factor analyses reduced these down to the 14-item scale presented here.

This paper describes the process of scale development and reports the results of our validation exercises. It documents the steps that we went through to come up with our initial items. It quantifies the measures that caused us to select for retention certain items and to reject others as redundant. It presents feedback from the qualitative sessions in which we had members of our participant co-researcher group “think aloud” their responses to our candidate items. It quantifies how our scale occupies a distinct position in the literature. Scores on our WECP scale are predicted by scores on validated scales of fear in relation to Covid-19, but additionally and uniquely by scores on a validated resilience scale. It closes by documenting that the age pattern in scores on our scale are sensibly related to the differential impacts of the pandemic on different age groups.

Location in Literature

We began by consulting the literature for scales related to Covid fear, worry, stress etc. Already, by the time we came to this topic in January of 2021, there had been a substantial number of such scales published. Generally, we found that existing scales fell into two categories, either of which was too specific for our purposes. The first category comprises scales used to identify dysfunctional responses to Covid-19 and includes the Coronaphobia Scale (Arpaci, 2021), the Coronavirus Anxiety Scale (Lee et al., 2020), Multidimensional Assessment of COVID-19 Related Fears (Schimmenti et al. 2020), the Fear of Covid-19 scale (Ahorsu et al. 2020), the Fear of Coronavirus Questionnaire (Mertens 2020) and the COVID

Stress Scale (Taylor et al 2020). The second category of scale was concerned with responses to the Covid-19 pandemic as it relates to health. In this category are the Covid-19 Perceived Risk Scale (Yildirim & Guler, 2020) and the Covid-19 Own Risk Appraisal Scale (Jaspal et al 2020).

One scale that emerged later in the scale development process that came closer to our domains of interest was the New Fear of Coronavirus Scale (Mertens 2021). Alongside health fears, it included items capturing more general concerns (sample items: “I am worried that the economy will collapse because of COVID-19”; “I am worried that the healthcare system will be overloaded because of COVID-19”; “I am worried that society will break down because of COVID-19”). Notwithstanding this increase in the scope of inquiry, the New Fear of Coronavirus Scale focussed on fear of catastrophe whereas our subject of interest was worries around more day-to-day matters.

As well as consulting scales specific to Covid-19, we consulted scales related to other illnesses, notably cancers. This literature was instructive because it highlighted that concerns around illness extended to domains beyond health. Specifically, it showed that people worried about the costs of managing an illness, both in financial terms and in terms of the activities and opportunities that would be lost to them (e.g. Custers et al., 2014; Vrinten et al 2015; Simard and Savard, 2009).

Finally, we were keen to explore scales that aimed to measure fear, worry and coping more generally. This exploration caused us to focus on the following scales: Intolerance of Uncertainty Scale (Carleton, 2007), Locus of Control (Lumpkin, 1985), Short Health Anxiety Inventory (Salkovskis et al., 2002) and the Brief Resilience Scale (Smith et al., 2008).

Ultimately, the scale presented here (see appendix for final items) is validated for measuring the worry experienced by a specific population – older residents of the UK. In this sense, our

work is similar in character to work examining coping among older population groups in response to the Covid-19 pandemic e.g. Fu et al. (2021) and Fuller and Huseth-Zosel (2021).

Research Design and Methods:

Initial Item Development

In addition to reviewing the literature and scales described above, we also consulted longitudinal studies that had Covid-specific modules e.g. COVID life from Scotland, and TILDA from Ireland. The authors then discussed the range of dimensions and suggested scale items. To minimize respondent burden, we chose to frame all of our items as statements so that we could use the same 5-point intensity of agreement scale throughout.

Wherever possible we took item wordings directly from existing scales and surveys (e.g. the item “My actions will influence whether or not I will get COVID-19” was taken directly from the Covid Life survey). If that was not possible (e.g. because the initial scale did not employ the agree / disagree scale) then we adapted the item wording from the validated scales to fit our scale. For instance, the Concerns About Recurrence Scale asks “If you were diagnosed with cancer, would you worry that it would keep you from fulfilling important roles?” (measured on the 4-point scale *not at all* to *extremely*). We adapted this to “I am worried that if I were diagnosed with Covid-19 it would keep me from fulfilling important roles”.

We then shared the scale description and the draft items (ca. 100) with the larger project team, which comprises researchers working in psychology, human resource management, economics, ageing and dementia. We held a group discussion with all project members in which we invited suggestions of any concerns that not covered by our items. This consultation identified vaccine attitudes as an important additional dimension for enquiry. It also resulted in some changes to item wording that cut down on assumptions and

redundancies e.g. “I continue to feel at risk from Covid-19” was replaced with “I feel at risk from Covid-19”.

Response scale

As alluded to above, our response scale elicited intensity of agreement with the statements.

We adopted a 5-point Likert scale but were undecided on which verbal labels to attach to the scale points. Our candidate scales were a strongly disagree / strongly agree scale and an agree not at all / absolutely agree scale².

Where the prior literature tended to employ a disagree / agree scale we feared that this might reduce discriminability across respondents on items that asked about polarising topics e.g. the item "the Covid-19 vaccine is beneficial". In our first round of data collection, we tested the properties of each scale by randomly assigning participants to answer either by the "not at all agree" to "absolutely agree" scale or by the scale labelled "strongly disagree" to "strongly agree".

Data collection – Round 1

Participants

Our data were collected using the Prolific.co web recruitment platform, on which would-be respondents can view a description of the survey and select into participation. Though Prolific.co delivers a convenience sample of self-selected participants, it allowed us recruit specific age groups and nationalities. Also, Prolific.co has been demonstrated to yield satisfactory data quality (Palan and Schitter, 2018). In order to be eligible to view our recruitment materials, respondents had to be over 18 and have IP addresses based within the

² The precise wordings of the scale were: “*Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree*” and “*Do not agree at all, Mostly agree, Somewhat agree, Mostly agree, Absolutely agree*”.

UK (Scotland, England, Northern Ireland and Wales). The study was advertised as “academic research on attitudes, expectations and perceptions with regard to the Covid pandemic” and included a warning that the survey would cover topics of illness and death. Potential respondents could view further details on the survey front page, which elicited their informed consent. Data collection began on Friday 12th March and ran to Monday 15th March 2021. Our data collection process recruited 262 respondents, of whom 241 completed all survey items. Descriptive statistics of respondent characteristics are presented in Table 1.

Procedures

After an informed consent page, respondents were asked a series of yes / no questions regarding their own experience of Covid-19: had they been diagnosed with Covid? Had they been hospitalised with Covid? Had a friend or family member been diagnosed with Covid? Had they been vaccinated against Covid? Did they intend getting vaccinated against Covid?

Over the screens that followed respondents were asked the extent to which they agreed with 100 candidate items. It was randomly assigned whether responses were elicited on the disagree strongly / agree strongly scale or on the agree not at all / absolutely agree scale. The full list of candidate items is reported in the online supplement.

Ethics

The study was approved by the General University Ethics Panel at the University of Stirling under ethics application “Impact of COVID Fear 0485” on Thursday March 11th. All research was performed in accordance with the relevant regulations and informed consent was obtained from all participants.

Results

The response scale manipulation (strongly disagree to strongly agree vs. agree not at all to absolutely agree) made no difference to responses. We had preregistered that scale type

would impact responses to the item “the benefits of the vaccine outweigh any risks”. A Kolmogorov-Smirnov test for equality of distribution functions on this item finds an exact p -value of 0.780. Given this null result, the data is pooled across this manipulation in the analysis that follow.

We conducted factor analysis using STATA 15.1. We verified the appropriateness of our data for factor analysis using three tests: the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (i.e. sufficient sample size), Bartlett’s test for sufficient correlation and the Determinant score for multicollinearity. All three tests showed our data to be appropriate (KMO score = .84; Bartlett’s test $p < .001$ and Determinant test $< .001$).

An initial factor analysis revealed 16 factors to have an Eigenvalue exceeding 1. These 16 factors cumulatively explained 82% of the variance in our data. To rule out spurious correlation, we then applied a parallel analysis (using 1,000 repetitions). The parallel analysis showed ten of our factors to be robust. These 10 factors cumulatively explain 72% of the variance in our data. To discern which scale items uniquely load on to each factor, we next applied a Promax rotation. Having identified candidate factors and items in the manner described above, we next dropped from the dataset all other items. We reran the factor analysis on this stripped-down set of items in exactly the same manner as described above. This analysis returned eight candidate factors. Seven overlapped with the first seven initially identified. The eighth factor did not lend itself to an obvious interpretation. It was explained by two seemingly unrelated items – RW10, “I am confident the pandemic will be over by the end of 2021” and GWS10, “I have had positive life experiences with loved ones during the Covid-19 pandemic”. These two items also loaded on to two of the seven factors that had been robustly identified. We concluded that Factor 8 was unlikely to provide unique

and meaningful predictive power and so focussed on the first seven factors.

Summary

Factor analysis of the first round of data collection led us to the following dimensions:

Concerns around risk to personal health; concern regarding lockdown and restrictions; concern for loved ones; concerns about readjusting to society; financial concerns; vaccine attitudes; social connectedness; perceived control of life; and long-term concerns.

Iteration after 1st Round of Data Collection

We next invited our project team partners to review the items that related to these factors.

This process led to some further changes in wording to clarify meaning e.g. we replaced the term “loved ones” with the term “family and friends”.

We also referred back to the evolving literature to adapt wordings from previously validated scales. It was at this point that we became aware of Mertens et al. (2021) and the “New Coronavirus Fear Scale”, which suggested additional items for inclusion. Specifically, an item in the Mertens et al. scale reads “I am worried that the coronavirus will mutate into a deadlier strain or never disappear from the population”. We tested two items derived from this “I am worried that the Covid-19 virus will mutate into a deadlier strain” and “I am worried that the Covid-19 virus will never disappear from the population”. The 27 items were then pre-tested by six participant co-researchers on our project in Think Aloud sessions (Eccles and Aarsal 2017). The Think Aloud process has respondents complete the survey in the presence of a researcher and speak their thoughts as they formulate their responses to the survey items. Our goal was to ensure the items were understood to capture the concepts of interest and to test that item wordings were clear and unambiguous e.g. we had been concerned that respondents might struggle to answer the item “I worry about the

security of my family and friends” but this turned out not to be an issue for respondents. The Think Aloud sessions demonstrated that respondents could meaningfully and appropriately interpret the items.

Data collection – Round 2

We then went to the field for our second round of data collection. Our goals here were to:

1. Identify robust factors using exploratory factor analysis.
2. Choose the items that best map onto those factors.
3. Validate these factors and items using confirmatory factor analysis on an independent sample.
4. Test for convergent validity with previously validated scales on Covid fear (Ahorsu et al., 2020) and anxiety relating to the pandemic (Mertens et al., 2021).
5. Test for divergent validity by establishing that resilience predicts scores on our scale over and above scores on previously validated scales on Covid fear (Ahorsu et al., 2020) and anxiety relating to the pandemic (Mertens et al., 2021).

Participants

Our data were again collected using the Prolific.co web recruitment platform over the period May 4th – 7th. For this round of data collection we were keen to recruit a sample that is more similar to the demographics of our project’s target population (people aged 47 and older living in Scotland) than had been the case in the first round of data collection. In order to be eligible to view our recruitment materials, respondents had to be over 40³ and have IP addresses based within the UK (Scotland, England, Northern Ireland and Wales). The study

³ When we saw that data was coming in quickly, we increased the age requirement to 50 because our Scottish survey would be collecting data from respondents aged 50 and upwards.

was advertised exactly as the first round of data collection had been. The characteristics of our sample are reported in Table 2.

Procedures

After an informed consent page, respondents were asked the same series of yes / no questions regarding their own experience of Covid-19 as they had been for the initial round of data collection. Over the four screens that followed, respondents were asked the extent to which they agreed / disagreed with our candidate items using the 5-point strongly disagree to strongly agree response scale.

There then followed in the following order the Covid Fear Scale (Ahorsu, 2019), the Brief Resilience Scale (Smith, 2008) and the New Coronavirus Fear Scale (Mertens et al., 2021).

We predict scores on our scale to be positively predicted by scores on the two fear scales and to be negatively predicted by scores on the resilience scale.

Analysis

We first split the data into an exploratory group (which would be used to determine factors and the items that best loaded onto those factors) and a confirmatory group (which would be used to assess whether the factors and items identified in the exploratory group replicate out of sample). We did this by assigning a random number to each observation and then splitting at the median.

Our exploratory factor analysis was conducted on 263 respondents. We employed precisely the same procedures as in the first round of data collection. Ultimately, our exploratory factor analysis yielded 5 factors. To determine which items warranted inclusion in the final scale, we constructed a list of potential items for each factor. In decreasing order of factor loading, we listed items that loaded uniquely onto each factor. We selected for inclusion the top two

items per factor. We then reviewed our list for items that read as though they were measuring a distinct construct relative to the two items already selected for inclusion. This process recommended additional items for inclusion in Factors 1 and 2. For Factor 1 the top two items in terms of factor loadings both addressed the respondent's past and current feelings of isolation and social distance. The next two highest ranked items in terms of factor loading addressed concerns regarding *future* lockdowns and quarantines. Given that the UK had at various times introduced localised lockdowns and travel restrictions (Brooks, 2021), we deemed these items to have potential to provide independent predictive power and so selected them for inclusion in our scale. Similarly with Factor 2, the highest ranked items both addressed concerns around the future course of the virus whereas the next highest ranked items both addressed concerns around readjusting to society. Table 3 reports the fourteen items selected for inclusion and their factor loadings.

We then analysed the properties of these 14 items in the confirmatory group ($n = 264$). There was one difference in results across the exploratory analysis and the confirmatory analysis. Two items that had loaded uniquely onto a single factor in the exploratory analysis additionally loaded onto a second factor in the confirmatory analysis. The items in question are PCW3 & PCW4 on the virus mutating and never disappearing.

In the exploratory analysis, these had loaded only on to Factor 2, where they were the highest and second-highest loading items. In the confirmatory analysis, they additionally loaded onto the factor that picked up concerns for family and friends. We retain these items in our final scale because they capture an important concern that is not captured by the remaining items. Our items delivered factors that were satisfactory in terms of Cronbach's Alpha (all > 0.78).

Results:

We generated WECP scores for each respondent by adding their response scores from each item. We reverse coded the two vaccine items so that higher scores on an item consistently indicate higher worry. Scores on our WECP scale could range across respondents from 14 (lowest worry) to 66 (highest worry). The mean score in our data was 42 and data tended to cluster close to this score - the interquartile range runs from 36 to 47. Scores were normally distributed (joint test for skewness and kurtosis, $p = .135$).

We then tested in a multivariate regression how respondents' scores on other scales predicted scores on our scale. In line with our hypothesis, an OLS regression showed respondents' scores on the New Coronavirus Fear scale and the Fear of Covid-19 Scale to positively and independently predict scores on our WECP scale and that scores on the brief resilience scale negatively and independently predict scores on our scale (Table 4).

Of course, we would expect the WECP scale to correlate closely with Mertens et al.'s New Fear of the Coronavirus scale simply because the WECP contains two items that paraphrase the item in the Mertens et al. scale on the virus persisting and mutating. We can test whether this is the sole determinant of the positive correlation across scales by recalculating a score for each respondent excluding those two items from our scale and running a regression of that new score. When we do so, we observe that there remains a highly significant relationship between scores on the two scales ($t = 11.59, p < .001$). This result reassures that the strong correlation between the WECP scale and the Mertens scale derives from the fact that both scales are capturing related concerns.

Who Is Especially Worried Emerging from the Covid-19 Pandemic and What Worries Them?

The ultimate goals of our WECP scale are to:

1. Identify groups who are experiencing worries related to Covid-19 and the pandemic as society opens up, and
2. Identify the sources of worry for these groups.

On the first question, scores on our WECP scale declined with age. Those 70 or older returned a mean score of 38 whereas those in their 40s returned a mean score of 42. A univariate regression shows a significant decline in scores with age ($t = 3.37, p = .001$). Females report substantially higher scores on the WECP scale than males (female: 42 vs. male: 38; $t = 5.65, p < .001$). Further analyses show that these two results interact as depicted in Figure 1. Males and females in their forties show roughly equivalent scores ($t = 0.49, p = .629$). With age, however, males show a substantial drop in worries whereas females do not show as large a decline. An OLS regression controlling for age and whether the participant is female confirms a significant interaction between age and gender in predicting WECP scores ($t = 2.09, p = .037$).

Dimensions That Explain Differences In Worry Across Groups

Because our scale is a composite of five factors, it is possible to drill down into the scale's subcomponents to explain which specific worries are most prominent among which groups. The factor "Worries for family and friends" achieved the highest scores in our sample (mean item rating: 3.7 / 5), followed by "Long-Term worries" (3.3 / 5). Worries regarding the vaccine's risks and effectiveness scored lowest (1.5 / 5), though unsurprisingly vaccine worries were far higher among those few respondents who reported that they would refuse a vaccine ($n = 27, 4.0 / 5$).

Females report greater worries than males regarding family and friends ($t = 4.18, p < .001$) and regarding the long-term ($t = 3.89, p < .001$). Although the factor analysis showed it to be one coherent dimension of concern, the wording of the items that inform the long-term

worries factor suggests two independent worries: one on the future course of the virus and the other on how daunted the respondent feels about readjusting to society. Regardless, all the items in this factor were strongly predicted by being female ($t = 4.33, p < .001$ for the items on readjustment; $t = 3.52, p < .001$ for the items on the future course of the virus).

We can also explore which factors explain why younger age groups report greater WECP scores than older age groups. An OLS regression shows the age coefficient on vaccine concerns to be significantly negative ($t = 2.36, p = .019$), suggesting that older respondents were less worried about the vaccine than younger respondents. Additionally, younger male respondents showed higher worries about readjusting to society than do older males ($t = 2.55, p = .012$). Though age correlates strongly and negatively with financial concerns ($t = 4.47, p < .001$), its explanatory power is entirely driven by the fact that older respondents are more likely to be retired. When we include an indicator variable for being retired in our regression of financial concerns, that indicator variable is a negative and powerful predictor ($t = 4.80, p < .001$) and age ceases to be statistically significant ($t = 1.04, p = .297$). These data suggest that the Covid-19 pandemic imposed fewer financial worries on retired respondents than on other groups. Relatedly, respondents who are employed reported higher scores than other respondents on the two items that capture worries about future lockdowns and quarantines ($t = 2.32, p = .021$).

Discussion

These descriptive results from our scale derive from a convenience sample of online participants recruited at a specific moment in time and so it is an open question to what extent we can generalise from the demographic patterns exhibited here. That said, the pattern of results relating to age aligns with what would be expected. In the United Kingdom, currently retired people have relatively high financial security compared to other population groups.

This is largely due to a combination of state provision of pensions and a legacy of defined benefit pensions (Disney, 2016). By contrast, some younger respondents in this sample are likely to have been forced by Covid-19 restrictions to cease working, with consequences for their current income and for their future earnings prospects. It is not surprising then that respondents of working age reported greater worries about the reintroduction of lockdown restrictions and about their financial situation. Separately, the benefits of vaccination are greater for higher risk groups, which includes older people. The risks of vaccination are greater among the young; about a month before these data were collected, it emerged that one of most widely-used vaccines in the UK carried a risk of lethal bloodclots and shortly thereafter the medical regulator recommended that that AstraZeneca vaccine not be given to younger adults (NHS, 2021). In sum, the demographic pattern to the data returned by our scale matches the pattern that we would expect to result from the disruptions wrought by the Covid-19 pandemic and the lockdown restrictions it imposed. The observed results give additional confidence that our WECP scale is a useful measure.

Discussion and Implications

Our goal was to develop a scale that would measure the worries of older people living in Scotland as we emerge from the Covid-19 pandemic. Extensive testing led us to a 14-item WECP scale, which correlates sensibly with three constructs as measured by validated scales: respondent's fear of the disease Covid-19 (Ahorsu et al., 2020); their wider anxieties for society and concerning the future course of the disease (Mertens et al., 2021) and their trait resilience (Smith et al., 2008). Additionally, the age pattern in scale response is sensible given how different age groups were impacted by lockdowns and by vaccine risks and benefits. As such, we conclude that our scale is valid for use in a sample of UK adults aged 40 or over and that it meaningfully captures worries and resilience as we emerge from the

pandemic. We anticipate our scale will be useful to researchers, policy makers and other groups who are interested in identifying and mitigating post-Covid pandemic vulnerabilities.

References:

- Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: development and initial validation. *International Journal of Mental Health and Addiction*, 1-9.
- Arpaci, I. (2021). Relationships between early maladaptive schemas and smartphone addiction: The moderating role of mindfulness. *International Journal of Mental Health and Addiction*, 19(3), 778-792.
- Brooks, L. (2021) Row over Scotland non-essential travel ban to Manchester escalates. Accessed at: <https://www.theguardian.com/world/2021/jun/24/row-over-scotland-non-essential-travel-ban-to-manchester-escalates>. 23rd November 2021.
- Carleton, R. N., Norton, M. P. J., & Asmundson, G. J. (2007). Fearing the unknown: A short version of the Intolerance of Uncertainty Scale. *Journal of Anxiety Disorders*, 21(1), 105-117.
- Custers, J. A., van den Berg, S. W., van Laarhoven, H. W., Bleiker, E. M., Gielissen, M. F., & Prins, J. B. (2014). The cancer worry scale: detecting fear of recurrence in breast cancer survivors. *Cancer Nursing*, 37(1), E44-E50.
- Disney, R. (2016). *Pension reform in the United Kingdom: an economic perspective*. National Institute Economic Review, 237, R6-R12.
- Fu, M., Guo, J., Chen, X., & Zhang, Q. (2021). American older adults in COVID-19 Times: Vulnerability types, aging attitudes and emotional responses. *medRxiv*.
- Fuller, H. R., & Huseth-Zosel, A. (2021). Lessons in resilience: initial coping among older adults during the COVID-19 pandemic. *The Gerontologist*, 61(1), 114-125.
- Hagis.scot (2021)
- Jaspal, R., Fino, E., & Breakwell, G. M. (2020). The COVID-19 Own Risk Appraisal Scale (CORAS): Development and validation in two samples from the United Kingdom. *Journal of Health Psychology*, 1359105320967429.
- Lee, S. A., Mathis, A. A., Jobe, M. C., & Pappalardo, E. A. (2020). Clinically significant fear and anxiety of COVID-19: A psychometric examination of the Coronavirus Anxiety Scale. *Psychiatry research*, 290, 113112.
- Lumpkin, J. R. (1985). Validity of a brief locus of control scale for survey research. *Psychological reports*, 57(2), 655-659.
- Mertens, G., Gerritsen, L., Duijndam, S., Salemink, E., & Engelhard, I. M. (2020). Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. *Journal of Anxiety Disorders*, 74, 102258.
- Mertens, G., Duijndam, S., Smeets, T., & Lodder, P. (2021). The latent and item structure of COVID-19 fear: A comparison of four COVID-19 fear questionnaires using SEM and network analyses. *Journal of Anxiety Disorders*, 81, 102415.

NHS (2021) MHRA and JCVI announcement regarding AstraZeneca Vaccine and next steps Accessed at: <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2021/04/c1245-mhra-jcvi-announcement-astrazeneca-vaccine-next-steps.pdf>

Palan, S., & Schitter, C. (2018). Prolific. ac—A subject pool for online experiments. *Journal of Behavioral and Experimental Finance*, 17, 22-27.

Salkovskis, P. M., Rimes, K. A., Warwick, H. M. C., & Clark, D. M. (2002). The Health Anxiety Inventory: development and validation of scales for the measurement of health anxiety and hypochondriasis. *Psychological Medicine*, 32(5), 843-853.

Schimmenti, A., Starcevic, V., Giardina, A., Khazaal, Y., & Billieux, J. (2020). Multidimensional assessment of COVID-19-related fears (MAC-RF): a theory-based instrument for the assessment of clinically relevant fears during pandemics. *Frontiers in Psychiatry*, 11, 748.

Simard, S., & Savard, J. (2009). Fear of Cancer Recurrence Inventory: development and initial validation of a multidimensional measure of fear of cancer recurrence. *Supportive Care in Cancer*, 17(3), 241-251.

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International Journal of Behavioral Medicine*, 15(3), 194-200.

Taylor, S., Landry, C. A., Paluszek, M. M., Fergus, T. A., McKay, D., & Asmundson, G. J. (2020). Development and initial validation of the COVID Stress Scales. *Journal of Anxiety Disorders*, 72, 102232.

Vrinten, C., Waller, J., von Wagner, C., & Wardle, J. (2015). Cancer fear: facilitator and deterrent to participation in colorectal cancer screening. *Cancer Epidemiology and Prevention Biomarkers*, 24(2), 400-405.

Yıldırım, M., & Güler, A. (2020). Factor analysis of the COVID-19 perceived risk scale: A preliminary study. *Death Studies*, 1-8.

List of tables and figures:

Table 1: Characteristics of Round 1 respondents (n = 241)

Table 2: Characteristics of Round 2 respondents (n = 527)

Table 3: The Worries Emerging from the Covid-19 Pandemic Scale: Factors and Items

Table 4: Multivariate regression of scale scores on scores from existing scales

Figure 1. Younger Males and Females Report Similar Levels of Worry But Worry Amongst Males Declines with Age

Table 1: Characteristics of Round 1 respondents (n = 241)

Variable	Proportion of sample/ sample mean
Been vaccinated	17.8%
Female	61.7%
Age	30.8 (range: 18 - 83)
Unemployed	12.1%
Retired	1.2%
Had Covid-19	9.6%
<i>Location</i>	
Scotland	10.6%
England	82.8%
Wales	3.2%
Northern Ireland	3.5%

Table 2: Characteristics of Round 2 respondents ($n = 527$)

Variable	Proportion of sample/ sample mean
Been vaccinated	86.2%
Female	67.3%
Age	56.1 (range: 40 - 88)
Unemployed	14.2%
Retired	20.8%
Had Covid-19	4.6%
<i>Location</i>	
Scotland	8.6%
England	84.5%
Wales	3.3%
Northern Ireland	1.7%

Table 3: The Worries Emerging from the Covid-19 Pandemic Scale: Factors and Items

Factor	Exploratory Data (<i>n</i> = 263)		Confirmatory data (<i>n</i> = 264)	
Factor 1 – Worries about lockdown	Factor Loading	Cronbach's alpha	Factor Loading	Cronbach's alpha
I worry that I won't be able to cope if Covid-19 restrictions go on much longer (RW1)	.76	0.85	.60	0.81
I am worried about being in quarantine or lockdown for a long time (RW11)	.79		.60	
The pandemic has caused me to feel disconnected from the world around me (GWS14)	.81		.85	
Since the start of the pandemic I feel so distant from people (GWS15)	.87		.85	
Factor 2 – Long-term worries	Factor Loading	Cronbach's alpha	Factor Loading	Cronbach's alpha
I am concerned about how I will adjust when society opens up after the pandemic (FUT17)	0.62	0.79	0.67	0.79
I am daunted at the thought of increased socialising (FUT18)	0.70		0.73	
I am worried that the Covid-19 virus will mutate into a deadlier strain (PCW3)	0.73		0.52 (Shared F4)	
I am worried that the Covid-19 virus will never disappear from the population (PCW4)	0.73		0.48 (shared F4)	
Factor 3 – Financial worries	Factor Loading	Cronbach's alpha	Factor Loading	Cronbach's alpha
I feel financially vulnerable due to the pandemic (FUT13)	0.88	0.88	0.81	0.87
I feel uncertainty around my longer term financial position (FUT10)	0.78		0.68	
Factor 4 – Worries for family and friends	Factor Loading	Cronbach's alpha	Factor Loading	Cronbach's alpha
Since the start of the pandemic, I worry more about the wellbeing of my friends and family (GWO4)	0.83	0.78	0.81	0.79
Since the start of the pandemic, I worry more about the security of my friends and family (GWO3)	0.69		0.64	
Factor 5 – Worries about the safety and efficacy of Covid-19 vaccines	Factor Loading	Cronbach's alpha	Factor Loading	Cronbach's alpha
Covid-19 vaccines are beneficial (INF33)	0.85	0.84	0.80	0.84
I believe the Covid-19 vaccines' benefits outweigh any risks (INF15)	0.85		0.80	

Table 4: Multivariate regression of scale scores on scores from existing scales

	WECP score	<i>t</i> -statistic, <i>p</i> -value
New Fear of Coronavirus	0.422** (0.029)	14.67, >.001
Brief resilience scale	-0.383** (0.054)	7.61, >.001
Fear of Covid-19	0.185** (0.055)	3.36, .001
Constant	24.628** (1.853)	
<i>R</i> ²	0.57	
<i>N</i>	527	

* $p < 0.05$; ** $p < 0.01$

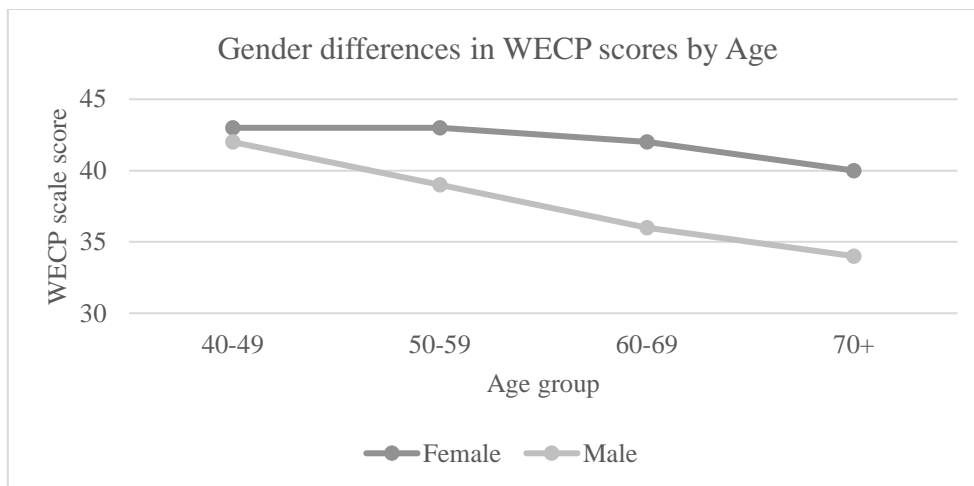


Figure 1. Younger Males and Females Report Similar Levels of Worry But Worry Amongst Males Declines with Age

Appendix: The Worries Emerging from the Covid-19 Pandemic (WEPC) scale

To what extent do you agree with following statements?

Response scale: Strongly disagree = 1; Somewhat disagree = 2; Neither agree nor disagree = 3; Somewhat agree = 4; Strongly agree = 5.

Item	Item wording
1	I worry that I won't be able to cope if Covid-19 restrictions go on much longer
2	I am worried about being in quarantine or lockdown for a long time
3	The pandemic has caused me to feel disconnected from the world around me
4	Since the start of the pandemic I feel so distant from people
5	I am concerned about how I will adjust when society opens up after the pandemic
6	I am daunted at the thought of increased socializing
7	I am worried that the Covid-19 virus will mutate into a deadlier strain
8	I am worried that the Covid-19 virus will never disappear from the population
9	I feel financially vulnerable due to the pandemic
10	I feel uncertainty around my longer term financial position
11	Since the start of the pandemic, I worry more about the wellbeing of my friends and family
12	Since the start of the pandemic, I worry more about the security of my friends and family
13	Covid-19 vaccines are beneficial (reverse coded)
14	I believe the Covid-19 vaccines' benefits outweigh any risks (reverse coded)