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Everybody hurts: Self-employment, financial concerns, mental distress, and well-being during COVID-19

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ABSTRACT

Adopting an abductive approach, in this paper we use two studies to examine the relationships between financial worries and well-being amongst the self-employed during the time of the COVID-19 pandemic. In Study 1 of 4806 participants from the Understanding Society’s COVID-19 survey of the UK population, we find that financial worries were associated with higher mental distress for self-employed when facing reduced work hours. In Study 2, in a sample of 1794 participants from the six-country COVID study, we find that higher than expected fall in income mediates the association between self-employment and happiness. The findings have implications for research regarding financial worries, distress, and well-being of the self-employed.

1. Introduction

All forms of employment can create hardships for those who engage in them. For instance, organizational employment can often lead to emotional exhaustion which can increase the level of anxiety that employees experience (McCarthy et al., 2016), and factors such as perceived organizational injustice can have a marked influence on individual well-being outcomes (Greenberg, 2006). However, while organizational employment can offer unique forms of stress and anxiety inherently associated with group work settings (Haslam and Reicher, 2006), and financial anxiety is a common factor across organizational settings (Lim and Sng, 2006), the income risks associated with self-employment are often substantially higher than those faced by their employed counterparts (Carter, 2011). As a result, financial well-being and security are often one of the primary concerns self-employed individuals report as motivating the stress and strain that they experience (Blanchflower, 2004). In this study, we further examine the nomological network of relationships formed between self-employment, financial worries, and mental health and well-being, specifically investigating how these relationships play out during a time of global crisis; namely the COVID-19 pandemic.

The outbreak of the global COVID-19 pandemic has created an unprecedented need for research to understand the far-reaching economic, organizational, and individual consequences that will occur because of this crisis. Although research within organizational settings has investigated how macro-economic factors such as precarious employment conditions can increase stress and decrease well-being for employees in general (Clarke et al., 2007), it is likely that, relative to those who are employed, self-employed will experience unique ramifications as a result of the COVID-19 pandemic. From altering the role of risk propensity in determining who will become self-employed (Nieß and Biemann, 2014), to changing how individuals might perceive their self-efficacy with regards to being able to succeed in self-employment endeavors (Gielnik et al., 2020; Zhao et al., 2005), the effects that the COVID-19 pandemic will have...
on the self-employed could be considerable. To that end, in this paper we employ and abductive approach to examine the following research questions: “What can we learn about the influence that the COVID-19 pandemic might have on the relationships between self-employment, financial worries, and individual health and well-being?”, and “what plausible explanations could justify our findings based upon previous theoretical foundations?”

To assess the potential impact that the COVID-19 pandemic might have on the well-being of the self-employed, we employ a two-study model. In Study 1, we draw on a sample of 4806 participants from the Understanding Society’s COVID-19 survey of the UK population survey to examine how self-employment during the pandemic is related to financial worries, which in turn can increase the levels of mental distress that individuals experience. Our findings indicate that self-employed individuals experience greater financial worries during the pandemic and that this increase in financial worries corresponded with a rise in mental distress for the self-employed. Furthermore, our results also indicate that the decrease in weekly hours worked moderated this mediated relationship, such that self-employment was had an even greater detrimental impact on mental distress, as mediated by financial worries, in situations where there was a higher decrease in weekly hours worked.

Building off of our findings in Study 1, in Study 2 we draw on a sample of 1794 participants from the six-country COVID study by Belot et al. (2020). In this study, we provide additional nuance to the results of Study 1, and instead of examining how the self-employed might experience higher levels of general financial worries during the pandemic, we investigate how self-employment relates to one specific form of financial worries, namely the expected fall in income as a result of the pandemic. Moreover, by employing individual happiness as our ultimate dependent variable in Study 2, we offer further insight into how the pandemic conditions can not only increase negative effects on the well-being of the self-employed (i.e. increase mental distress) but also how the pandemic can also decrease positive effects on the well-being of those who are self-employed (i.e. decrease happiness).

In completing our study, we make several important contributions. First, we extend upon the growing conversations regarding the relationship between self-employment and individual well-being (Binder, 2017; Nikolaev et al., 2020). Specifically, we incorporate the highly salient context of the recent COVID-19 outbreak to further expand our understanding of the unique relationship between self-employment and well-being during times of global crisis. Second, we build upon previous research regarding the unique effects that environmental shocks can have on those who are self-employed (Dalton et al., 2019). To that end, we further broaden our knowledge of how to worry about one’s financial situation is both common in self-employment, as well as potentially detrimental to the well-being of the self-employed (Binder, 2017), and provide insight into how the recent outbreak of COVID-19 has further exacerbated these relationships. Finally, we further our understanding of the potential mechanisms underlying the relationship between self-employment and well-being. Precisely, our results indicate that perceived factors related to financial security (i.e. financial worries and expected fall in income as a result of the COVID-19 crisis) can mediate the association between self-employment and mental health and well-being, thereby presenting evidence of two possible mechanisms for the relationship between self-employment and well-being.

2. Research model

While there is considerable evidence highlighting the potential benefits that self-employment can have in terms of reduced stress and strain (Stephan, 2018; Stephan and Roesler, 2010), which of course can increase well-being, recent evidence has also indicated that those who are self-employed could also experience negative ramifications from a health and well-being perspective that are likely at least in part associated with being self-employed (Patel and Wolfe, 2020; Patel et al., 2019; Reid et al., 2018). Given the unprecedented conditions that have been brought about as a result of the ongoing COVID-19 pandemic, we believe that this is an ideal time to examine the nuances of how self-employment relates to individual stress and well-being during a time of crisis. To that end, we utilize an abductive approach, and employ two studies to examine how self-employment could relate to specific aspects of well-being, as mediated by factors related to financial worries.

For several reasons, we take a two-study approach. In the first study, we focus on the pre-COVID-19 wave and during the early COVID-19 wave. Study 1 allows for controls for pre-COVID-19 factors, seldom available in a variety of during-COVID-19 cross-sectional surveys. Perhaps most importantly, this approach allows for controls for pre-COVID-19 well-being levels. In Study 2, our goal is replication across countries, albeit with cross-sectional, during COVID-19 data from China, South Korea, Japan, Italy, the UK, and the four largest states in the US (California, Florida, New York, and Texas). With the two study framework we aim to draw more generalizable inferences. With a significant variation in non-pharmaceutical interventions and their efficacies across countries, a before-after (Study 1) and multi-country cross-sectional associations (Study 2) hopefully add more confidence in the generalizability of the inferences.

3. Materials and method

3.1. Sample

We draw on Understanding Society’s COVID-19 survey of the UK population (University of Essex Institute for Social and Economic Research, 2020). The survey was conducted in April 2020 and was made publicly available on May 29, 2020. The survey is a special wave of the ongoing Understanding Society’s UK Household Longitudinal Study (UKHLS). We draw on Wave 1 of the survey that started on May 28th, 2020, and merged it with previous waves of Understanding Society. The COVID-19 survey is provided under UK Data Archive Citation File for Study 8644, and the prior waves of Understanding Society are provided under UK Data Archive Citation File for Study 6614 (we use the individual level file: d_indresp.dta).

For wave 1 of the COVID-19 survey previous participants in Understanding Society were asked to complete a short web survey; for
those without internet access, a trained professional contacted participants to complete the survey. The participants were asked to report on the effect of the pandemic. A total of 17,450 respondents (41.2% response) rate participated in the survey. Though the study focused on monthly waves, we focus on the first wave as it allows for the assessment of COVID-19 at its peak and with relaxation on lockdowns starting late May 2020 in the UK the first wave of Understanding Society’s COVID-19 survey provides a meaningful context for studying the effects of COVID-19 on individuals.

Combining the Understanding Society’s COVID-19 survey with the pre-COVID-19 Understanding Society waves data provides added advantages. To draw robust inferences we control for pre-COVID-19 conditions reported in the previous of Understanding Society: earnings of the individual, financial worries, whether self-employed and subjective well-being. Controls for these pre-COVID-19 variables are critical to drawing more conservative estimates as reporting on the effects of COVID-19 could be highly idiosyncratic. After the case-wise deletion our sample includes 4806 participants, and to adjust for survey design and unequal non-response rates, we use the weighting variable co_beta_adindlaw provided in Understanding Society’s COVID-19 survey for all our analysis.

3.2. Measures

**Dependent variable – COVID-19 mental distress (GHQ).** Subjective well-being is measured using the General Health Questionnaire (GHQ), a validated non-clinical scale (Aalto et al., 2012; Goldberg and Williams, 1988). The scale includes 12 questions, and the data collectors converted valid answers to a single scale by recoding to 0 to 3 instead of 1–4, and then summing, giving a scale running from 0 (the least distressed) to 36 (the most distressed). The values based on a summated scale range from 0 to 36, indicating higher values for worsening mental distress (Goldberg and Williams, 1988).

**Mediator variable – COVID-19 subjective financial worries.** The subjective financial worries are based on the question in the Understanding Society’s COVID-19 survey. The question asked “How well would you say you yourself are managing financially these days? Would you say you are …?”: 1-Living comfortably; 2-doing alright; 3-just getting by; 4-finding it quite difficult; 5-finding it very difficult. Higher values indicate higher levels of concerns during COVID-19.

**Predictor variable – self-employed.** If the respondent indicated they are self-employed in Understanding Society’s COVID-19 survey the variable is coded as 1, if they indicate employed the variable is coded as 0.

**Moderator variable for the decline in work – Change in weekly hours.** The change in weekly hours variable, as a proxy for the decline in work, is the difference between the weekly hours worked during COVID-19 minus the number of hours worked before COVID-19. The pre-COVID-19 h were measured using the scale “During January and February 2020, how many hours did you usually work per week? Please include all jobs and self-employment activities. If you didn’t work any hours in your job(s), please enter zero.” The during COVID-19 h were measured as “How many hours did you work, as an employee or self-employed, last week? Please include all jobs and self-employment activities. If you didn’t work any hours in your job(s), please enter zero.” Lower values indicate a greater loss in the number of hours.

**Control variables.** We control for a variety of control variables, including age, sex (1-male; 2-female), whether the participant identifies with a religion (1 = yes; 2 = no), lives with a partner (1 = yes; 2 = no), and the household composition by the number of people in age groups 0–4; 5–15; 16–18; and 19–69. We also control for whether the respondent reported to be a smoker (1 = yes; 2 = no).

Next, we control for a series of confounds based on the pre-COVID-19 Understanding Society wave. As these measures were reported before COVID-19 the controlling for these confounds allows for control for individual heterogeneity in reporting. We control for Pre-COVID-19 log of total monthly personal income gross; Pre-COVID subjective financial worries (1-living comfortably to 5-finding it very difficult); Pre-COVID-19 General health: very good (ref. excellent); Pre-COVID-19 General health: good; Pre-COVID-19 General health: fair; Pre-COVID-19 General health: poor; Pre-COVID-19 employment (0-employee; 1-self-employed); and Pre-COVID-19 mental distress (GHQ).

We also control morbidity conditions reported during the Understanding Society’s COVID-19 survey. It is an index of the sum of 1 = yes; 0 = no indicators health conditions. Finally, we control for the location of the participant North East; North West; Yorkshire and the Humber; East Midlands; West Midlands; East of England; London; South East; South West; Wales; Scotland; and Northern Ireland.

4. Results

Table 1 provides the details on the descriptive of the sample. Individuals reporting higher levels of COVID-19 mental distress (GHQ) had positive association with COVID-19 Subjective Financial worries ($r = 0.29$, $p < 0.05$). Though mental distress was not associated

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2 asking the respondent “The next questions are about how you have been feeling over the last few weeks. Have you recently been able to concentrate on whatever you’re doing? (1. Better than usual; 2. Same as usual; 3. Less than usual; and 4. Much less than usual).” The 12-items the individuals reported well-being on were: concentration; loss of sleep; playing a useful role; capable of making decisions; constantly under strain; enjoyment of what you are doing; ability to face problems; unhappy or depressed; losing confidence; believe worthless; and general happiness.

3 Asthma; Arthritis; Congestive heart failure; Coronary heart disease; Angina Heart attack or myocardial infarction; Stroke; Emphysema; Chronic bronchitis; COPD (Chronic Obstructive Pulmonary Disease); Hypothyroidism or an under-active thyroid; Any kind of liver condition; Cancer or malignancy; Diabetes; Epilepsy; High blood pressure/hypertension; An emotional, nervous or psychiatric problem; Multiple Sclerosis; Chronic kidney disease; Conditions affecting the brain and nerves; Are very overweight (having a BMI of 40 or above); and other long-standing/chronic condition.
| Variable                                      | N    | Mean  | Std   | min  | max  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    |
|----------------------------------------------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 1. COVID-19 mental distress (GHQ)            | 4806 | 12.284 | 5.7662 | 0    | 36   | 1    |     |     |     |     |     |     |     |
| 2. COVID-19 Subjective Financial worries     | 4806 | 1.9594 | 0.8577 | 1    | 5    | 0.2969* |     |     |     |     |     |     |     |
| 3. Change in hours worked                    | 4806 | -9.8052 | 16.5011 | -84  | 59   | -0.0256 | -0.2235* |     |     |     |     |     |     |
| 4. Self-employed                             | 4806 | 0.1234 | 0.3289 | 0    | 1    | 0.0039 | 0.1513* | -0.1770* |     |     |     |     |     |
| 5. Change in hours worked x Self-employed    | 4806 | -2.1704 | 8.6647 | -65  | 56   | -0.0435* | -0.2384* | 0.4092* | -0.6677* |     |     |     |     |
| 6. Age                                       | 4806 | 48.1954 | 9.9337 | 22   | 65   | -0.1171* | -0.0158 | -0.026 | 0.1465* | -0.0927* |     |     |     |
| 7. Sex                                       | 4806 | 1.5782 | 0.4939 | 1    | 2    | 0.1552* | -0.0026 | 0.0808* | -0.0972* | 0.1015* | -0.0536* |     |     |
| 8. Whether belongs to a religion (1 = yes; 2 = no) | 4806 | 1.5439 | 0.4981 | 1    | 2    | -0.005 | 0.0088 | -0.0374* | 0.0019 | -0.0281 | -0.1290* | -0.0850* |     |
| 9. Whether living with partner (1 = yes; 2 = no) | 4806 | 1.1991 | 0.3994 | 1    | 2    | 0.0820* | 0.1336* | -0.0312* | -0.0191 | 0.011 | -0.0001 | 0.0935* | 0.0267 |
| 10. Household composition - Aged 0-4 (0, 1, 2+)| 4806 | 0.1332 | 0.3990 | 0    | 2    | 0.0655* | 0.0109 | 0.0177 | -0.0507* | 0.0378* | -0.3337* | -0.0127 | 0.0261 |
| 11. Household composition - Aged 5-15 (0, 1, 2+) | 4806 | 0.5008 | 0.8152 | 0    | 3    | 0.0408* | 0.0847* | 0.0292* | -0.0295* | 0.0148 | -0.2765* | -0.0382* | -0.0319* |
| 12. Household composition - Aged 16-18 (0, 1, 2+) | 4806 | 0.1413 | 0.3814 | 0    | 2    | -0.0566* | 0.0188 | 0.0082 | 0.0037 | -0.0104 | 0.0320* | 0.0082 | -0.0066* |
| 13. Household composition - Aged 19-69 (0, 1, 2+) | 4806 | 1.3208 | 0.9054 | 0    | 5    | -0.0267 | 0.0047 | -0.0159 | 0.0145 | -0.0044 | 0.0199 | -0.005 | -0.0889* |
| 14. Smoker (1 = yes; 2 = no)                 | 4806 | 1.9151 | 0.2788 | 1    | 2    | -0.0067 | -0.0875* | 0.0340* | 0.0076 | -0.002 | 0.0164 | 0.0195 | -0.0676* |
| 15. Pre-COVID-19 log of total monthly personal income gross | 4806 | 7.5333 | 0.7469 | 0    | 9.7265 | -0.0913* | -0.1715* | 0.1279* | -0.0544* | 0.0783* | 0.2294* | -0.2596* | -0.0328* |
| 16. Pre-COVID subjective financial situation (1-living comfortably to 5-finding it very difficult) | 4806 | 2.0909 | 0.9205 | 1    | 5    | 0.1394* | 0.4354* | -0.0665* | -0.0123 | -0.0304* | -0.0053 | 0.0372* | -0.0148 |
| 17. Pre-COVID-19 General health: very good (ref. excellent) | 4806 | 0.4236 | 0.4942 | 0    | 1    | -0.0348* | -0.0351* | -0.0057 | -0.0118 | 0.0309* | -0.0331* | 0.01 | 0.0310* |
| 18. Pre-COVID-19 General health: good        | 4806 | 0.2692 | 0.4436 | 0    | 1    | 0.0475* | 0.0894* | -0.0295* | 0.0005 | -0.0241 | 0.0639* | -0.0183 | -0.0102 |
| 19. Pre-COVID-19 General health: fair        | 4806 | 0.0743 | 0.2623 | 0    | 1    | 0.0892* | 0.0865* | 0.0019 | -0.0194 | 0.0008 | 0.0544* | 0.017 | -0.0258 |
| 20. Pre-COVID-19 General health: poor        | 4806 | 0.0125 | 0.1110 | 0    | 1    | 0.0682* | 0.0731* | -0.0151 | -0.0023 | 0.0065 | 0.0174 | -0.0026 | 0.0089 |
| 21. Pre-COVID-19 employment (0-employee; 1-self-employed) | 4806 | 0.0957 | 0.2942 | 0    | 1    | -0.0048 | 0.1152* | -0.1466* | 0.6285* | -0.4555* | 0.1409* | -0.0859* | 0.0153 |
| 22. Pre-COVID-19 mental distress (GHQ)        | 4806 | 10.6296 | 5.0180 | 0    | 36   | 0.2755* | 0.1701* | -0.0349* | -0.0275 | -0.0035 | 0.0014 | 0.0770* | -0.0096 |
| 23. Reported morbidity during COVID-19 wave 1 survey | 4806 | 0.6209 | 0.9084 | 0    | 6    | 0.1006* | 0.0946* | -0.0434* | -0.0078 | -0.0137 | 0.2270* | 0.0216 | -0.0653* |

(continued on next page)
| Table 1 (continued) | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 13 Household composition |  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| - Aged 19–69 (0, 1, 2+) | -0.3281* | -0.0175 | -0.0559* | 0.0971* | 1 |
| 14 Smoker (1 = yes; 2 = no) | -0.0818* | 0.0231 | 0.0223 | 0.0071 | 0.0238 | 1 |
| 15 Pre-COVID-19 log of total monthly personal income gross | -0.0999* | 0.0035 | 0.0566* | 0.0214 | -0.0378* | 0.0525* | 1 |
| 16 Pre-COVID subjective financial situation (1-living comfortably to 5-finding it very difficult) | 0.1302* | -0.0432* | 0.0766* | 0.0144 | 0.0067 | -0.1159* | -0.2084* | 1 |
| 17 Pre-COVID-19 General health: very good (ref. excellent) | -0.0268 | 0.0389* | 0.0446* | -0.0029 | -0.0178 | 0.0164 | 0.0488* | -0.0568* | 1 |
| 18 Pre-COVID-19 General health: good | 0.0380* | -0.0451* | -0.0536* | -0.0195 | 0.0206 | -0.0575* | -0.0603* | 0.0960* | -0.5204* | 1 |
| 19 Pre-COVID-19 General health: fair | 0.0455* | -0.023 | -0.0271 | -0.0113 | -0.0136 | -0.0361* | -0.0386* | 0.1255* | -0.2429* | -0.1719* | 1 |
| 20 Pre-COVID-19 General health: poor | 0.0378* | -0.0281 | -0.0300* | -0.0122 | -0.0129 | -0.0397* | -0.0203 | 0.0805* | -0.0964* | -0.0682* | -0.0319* | 1 |
| 21 Pre-COVID-19 employment (0-employee; 1-self-employed) | -0.0152 | -0.0412* | 0.0047 | 0.0056 | -0.0075 | -0.0024 | -0.1285* | 0.0216 | -0.0127 | -0.0061 | -0.0059 | 0.0016 | 1 |
| 22 Pre-COVID-19 mental distress (GHQ) | 0.0529* | 0.0134 | 0.0047 | -0.0381* | -0.0178 | -0.0323* | -0.0481* | 0.2510* | -0.0676* | 0.0856* | 0.1745* | 0.1581* | -0.019 | 1 |
| 23 Reported morbidity during COVID-19 wave | 0.0813* | -0.1013* | -0.1125* | -0.0256 | -0.0234 | -0.0022 | -0.0057 | 0.1149* | -0.0960* | 0.1258* | 0.2152* | 0.1026* | -0.0028 | 0.1250* |

Note. The location dummies included but not reported for brevity.
*p < 0.05 or below (two-tailed).
### Table 2
Study 1–path analysis estimates.

| Path 1: Change in hours worked × Self-employed → COVID-19 Subjective Financial worries | Path 2: Change in hours worked × Self-employed + Subjective Financial worries → COVID-19 mental distress (GHQ) |
|---|---|
| **Robust coefficient** | **s.e.** | **z** | **P>|z|** | **95% Confidence Interval** | **Robust coefficient** | **s.e.** | **z** | **P>|z|** | **95% Confidence Interval** |
| **COVID-19 Subjective Financial worries** | **Change in hours worked** | | | | | | | | | |
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with change in hours (\( r = -0.03, p > 0.10 \)) or self-employed (\( r = 0.00, p > 0.10 \)), its correlation with the interaction term was negative and significant (\( r = -0.04, p < 0.05 \)).

In Table 2, we present the estimates of the path analysis model and Table 3 presents the resulting moderated mediation effects. The negative mediation effect is interpreted as follows. For path 1 (Path 1: Self-employed \( \rightarrow \) COVID-19 Subjective Financial worries), a negative coefficient implies that more hours lost are associated with more financial worries. For the change, hours worked higher values indicate fewer hours lost, which would imply lower financial worries. And, for path 2 (Path 2: Change in hours worked \( \times \) Self-employed \( \rightarrow \) Subjective Financial worries \( \rightarrow \) COVID-19 mental distress (GHQ)) a positive coefficient for financial worries indicates higher distress. Therefore, the negative coefficient in path 1 and a positive coefficient in path 2 indicates a higher increase in mental distress.

In Table 3, though self-employment was positively related to COVID-19 financial worries, the effect was positive but not significant (0.13, 95% CI = [-0.03, 0.28]). Furthermore, financial worries during COVID-19 were positively associated with mental distress (1.89, 95% CI = [1.63, 2.16]). The mediation effect of financial worry between self-employed and mental distress was not supported (0.25, Sobel-test statistic = 1.61). The moderated-mediation effect proposed was supported (Table 3; \(-0.03, 95\% \text{ C.I.} = [-0.04, -0.02]\)). Overall, although self-employed did not differ from employed in mental distress, and financial worries increased mental distress in general, however, financial worries did not increase mental distress for self-employed more so than for employed, however, reduced work did spell greater mental distress for self-employed than for employed.

5. Materials and method

5.1. Sample

The data is based on the six-country COVID (China, South Korea, Japan, Italy, the UK, and the four largest states in the US (California, Florida, New York, and Texas) study by Belot et al. (2020) and available at https://osf.io/aubkc/. The data description borrows heavily from Belot et al. (2020). The survey focuses on demographics, income, work situation, COVID-19 behaviors, and health characteristics from 1000 individuals from each country were targeted for data collection and the choice of countries. The online survey was conducted by market research companies between April 15 and April 23 using Qualtrics via emails sent to the on-line panels of participants. The participants completed informed consent and the ethics approval was received by Belot et al. (2020) from the University of Exeter. After the casewise deletion, our sample includes 1794 respondents.

We drop individuals over 65 and individuals who temporarily or permanently lost jobs. The reporting of the lost job is based on “Have you lost your job or has your activity (as self-employed) been stopped as a consequence of the Covid-19 pandemic?” 1 = yes, permanently; 2 = yes, temporarily, and 3 = No). Our final includes 1794 individuals from five countries.

5.2. Measures

**Dependent variable – reported happiness.** The scale item asks the respondent “How happy do you feel these days? 1 = Extremely unhappy; 2 = Moderately unhappy; 3 = Slightly unhappy; 4 = Neither happy nor unhappy; 5 = Slightly happy; 6 = Moderately happy; and 7 = Extremely happy. Similar single item well-being measures have been used in previous studies.

**Mediator variable - log of expected fall in own income.** The variable is winsorized at 2.5% on each tail. The question asks the respondent “How much do you expect - Your gross labor income to fall in the next six months?” The report is an estimated number in the local currency, with 0 entered if no fall is expected in income.

**Predictor variable - self-employed.** We code for self-employment (1 = self-employed; 0 = Employed full-time) as our predictor variable.

**Control variables.** We include a range of control variables. We control for the available categorical variable of age (between 18 and 25 years; 26 and 35 years; 36 and 45 years; 46 and 55 years; and 56 and 65 years), gender (1-female; 2-male), and income quintile. The income quintile variable asked the respondent to “In what range is the gross annual income of your household?”: 1 = First quintile; 2 = Second quintile; 3 = Third quintile; 4 = Fourth quintile; and 5 = Fifth quintile. We also include controls for whether the respondent has a house mortgage Have a house mortgage (0 = No; 1 = Yes) and Log of lost household income (winsorized at 2.5% on each tail). The lost household income measure is based on the question “How much did your gross household income fall in the first trimester of 2020? (provide estimate in your local currency)”, and reported in estimated number in the local currency, and 0 if there is no experienced fall in household income. We control for the location of resident, semi-urban/residential (reference category: Urban), or the country-side, and the type of residence (house, apartment, condominium, trailer, shelter, OfficeTel [for South Korea respondents], and other. We control
Table 4

Study 2—descriptives.

| Variable                                      | N  | mean | sd   | min | Max | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
|-----------------------------------------------|----|------|------|-----|-----|----|----|----|----|----|----|----|----|----|
| Happiness these days (1—extremely unhappy to 7—extremely happy) | 1794 | 4.042 | 1.4277 | 1   | 7   | 1  |    |    |    |    |    |    |    |    |
| Log of expected fall in own income (winsorized 2.5% at each tail) | 1794 | 3.6325 | 5.1332 | 0   | 15.4250 | -0.1491* | 1  |    |    |    |    |    |    |    |
| Self-employed                                | 1794 | 0.1076 | 0.3099 | 0   | 1   | -0.0267 | 0.0871* | 1  |    |    |    |    |    |    |    |
| Between 26 and 35 years (ref. Between 18 and 25 years) | 1794 | 0.2497 | 0.4330 | 0   | 1   | 0.0442 | -0.0443 | -0.1006* | 1  |    |    |    |    |    |    |
| Between 36 and 45 years                      | 1794 | 0.2598 | 0.4386 | 0   | 1   | -0.0105 | 0.0167 | -0.0252 | -0.3418* | 1  |    |    |    |    |    |
| Between 46 and 55 years                      | 1794 | 0.2363 | 0.4250 | 0   | 1   | -0.0487* | -0.0097 | 0.0059 | -0.3210* | -0.3295* | 1  |    |    |    |
| Between 56 and 65 years                      | 1794 | 0.1555 | 0.3625 | 0   | 1   | -0.0203 | 0.0316 | 0.1538* | -0.2476* | -0.2542* | -0.2387* | 1  |    |    |
| Female (1—female; 2—male)                    | 1794 | 1.5663 | 0.4957 | 1   | 2   | -0.0583* | 0.0702* | 0.0679* | -0.0798* | 0.031 | 0.0103 | 0.1117* | 1  |    |
| Income group (quintiles)                     | 1794 | 3.6003 | 1.2112 | 1   | 5   | 0.0317 | -0.0135 | -0.1736* | 0.032 | 0.0674* | 0.0254 | -0.0692* | 0.0326 | 1  |
| Have house mortgage (0 = No; 1 = Yes)        | 1794 | 0.3205 | 0.4668 | 0   | 1   | 0.0005 | 0.0465* | -0.0650* | 0.0122 | 0.0317 | 0.0172 | -0.0673* | 0.0346 | 0.1616* | 1  |
| Log of lost household income (winsorized 2.5% at each tail) | 1794 | 3.7829 | 4.9118 | 0   | 14.5087 | -0.0910* | 0.5230* | 0.0728* | -0.0089 | 0.0112 | -0.0263 | -0.0159 | 0.02  | 0.0165 |    |
| Semi-urban/residential (ref. Urban)          | 1794 | 0.3205 | 0.4668 | 0   | 1   | -0.0045 | -0.0273 | -0.0419 | -0.0209 | -0.0800* | 0.0903* | 0.025 | -0.0449 | -0.0189 |    |
| Countryside                                  | 1794 | 0.1237 | 0.3294 | 0   | 1   | -0.0289 | 0.0701* | 0.0443 | -0.0565* | -0.0142 | 0.0332 | 0.0536* | 0.0044 | -0.1150* | 1  |
| Apartment (ref. House)                       | 1794 | 0.2887 | 0.4533 | 0   | 1   | 0.0156 | 0.0341 | -0.0386 | 0.0388 | -0.0128 | 0.0075 | -0.0562* | -0.0158 | -0.0376  |    |
| 3 = Condominium                              | 1794 | 0.2302 | 0.4211 | 0   | 1   | -0.0339 | -0.0184 | -0.0018 | -0.031 | 0.0294 | -0.0144 | -0.0337 | -0.0318 | 0.0416 |    |
| 4 = Trailer                                  | 1794 | 0.0039 | 0.0624 | 0   | 1   | 0.0107 | 0.015  | 0.036  | 0.0259 | -0.0371 | -0.0138 | 0.0225 | 0.0187 | -0.0384 |    |
| 5 = Shelter                                  | 1794 | 0.0006 | 0.0236 | 0   | 1   | -0.0338 | -0.0167 | 0.0680* | 0.0409 | -0.014 | -0.0131 | -0.0101 | 0.0207 | -0.0507* |    |
| 6 = OfficeTel                                 | 1794 | 0.0145 | 0.1195 | 0   | 1   | -0.0069 | 0.0212 | -0.0421 | 0.0809* | 0.0026 | -0.0455 | -0.0263 | 0.012  | -0.0486* |    |
| 7 = Other (please specify)                   | 1794 | 0.0184 | 0.1344 | 0   | 1   | -0.0418 | 0.0674* | 0.0328 | -0.0119 | -0.0054 | 0.0605* | -0.0244 | 0.011  | -0.0610* |    |

Note: *p < 0.05 or below (two-tailed).
### Table 5
Study 2 OLS estimates.

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Happiness these days | | | | | | | | | | |
| Log of expected fall in own income | -0.123 | 1.443*** | | | | | | | | |
| (0.109) | (0.390) | | | | | | | | | |
| Self-employed | | | | | | | | | | |
| | 0.123 | 1.443*** | | | | | | | | |
| (0.109) | (0.390) | | | | | | | | | |
| Between 26 and 35 years (ref. 18 and 25 years) | | | | | | | | | | |
| | 0.0636 | | | | | | | | | |
| (0.108) | | | | | | | | | | |
| Between 36 and 45 years | | | | | | | | | | |
| | 0.140 | 2.050*** | | | | | | | | |
| (0.139) | (0.497) | | | | | | | | | |
| Between 46 and 55 years | | | | | | | | | | |
| | 0.0781 | | | | | | | | | |
| (0.142) | | | | | | | | | | |
| Between 56 and 65 years | | | | | | | | | | |
| | 0.0338 | | | | | | | | | |
| (0.147) | | | | | | | | | | |
| Gender (1-female; 2-male) | | | | | | | | | | |
| | 0.131 | 0.0521 | | | | | | | | |
| (0.151) | (0.482) | | | | | | | | | |
| Income group (quintiles) | | | | | | | | | | |
| | 0.0308*** | 0.0302*** | | | | | | | | |
| (0.00650) | (0.00652) | | | | | | | | | |
| Have house mortgage (0 = No; 1 = Yes) | | | | | | | | | | |
| | 0.0640 | 1.440*** | | | | | | | | |
| (0.00736) | (0.00869) | | | | | | | | | |
| Log of lost household income (winsorized 2.5% at each tail) | | | | | | | | | | |
| | -0.0856 | -0.1140 | | | | | | | | |
| (0.00652) | (0.00727) | | | | | | | | | |
| Semi-urban/residential (ref. Urban) | | | | | | | | | | |
| | 0.0983 | 0.0569 | | | | | | | | |
| (0.103) | (0.309) | | | | | | | | | |
| Countryside | | | | | | | | | | |
| | 0.0195 | 0.666 | | | | | | | | |
| (0.0558) | (0.259) | | | | | | | | | |

(continued on next page)
### Table 5 (continued)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|           | Happiness these days | Log of expected fall in own income | Happiness these days | Happiness these days | Happiness these days | Log of expected fall in own income | Happiness these days | Happiness these days | Log of expected fall in own income | Happiness these days | Happiness these days | Happiness these days |
| Apartment (ref. House) | | | | | | | | | | | | |
| 3 = Condominium | | | | | | | | | | | | |
| 4 = Trailer | | | | | | | | | | | | |
| 5 = Shelter | | | | | | | | | | | | |
| 6 = OfficeTel | | | | | | | | | | | | |
| 7 = Other (please specify) | | | | | | | | | | | | |
| Industry | included | included | included | included | included | included | included | included | included | included | included | included |
| Profession | included | included | included | included | included | included | included | included | included | included | included | included |
| Country | included | included | included | included | included | included | included | included | included | included | included | included |
| Region | included | included | included | included | included | included | included | included | included | included | included | included |
| Constant | 4.056*** | 3.477*** | 4.193*** | 4.199*** | 4.055*** | 3.408*** | 4.152*** | 4.158*** | 4.343*** | 0.931 | 4.359*** | 4.363*** |
| | (0.0357) | (0.128) | (0.0408) | (0.0420) | (0.0361) | (0.129) | (0.0417) | (0.0431) | (0.237) | (0.732) | (0.235) | (0.236) |
| Observations | 1794 | 1794 | 1794 | 1794 | 1788 | 1788 | 1788 | 1788 | 1788 | 1788 | 1788 | 1788 |
| R-squared | 0.001 | 0.008 | 0.022 | 0.022 | 0.300 | 0.326 | 0.308 | 0.308 | 0.315 | 0.530 | 0.317 | 0.317 |

Note. Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.
for industry dummies; profession dummies (376 dummies); country dummies (China; Italy; Japan; South Korea; UK, and the USA); and region dummies (80 dummies).

6. Results

Table 1 presents the sample descriptives. The reported happiness is negatively associated with expected fall in income ($r = -0.149, p < 0.05$), and self-employment status ($r = -0.027, p > 0.10$). Consistent with the income risk hypothesis, self-employed are more likely to report higher expected fall in own income ($r = 0.087, p < 0.05$).

Table 2 presents the OLS estimates both without controls (models 1–4), with industry, profession, country, and region dummies (models 5–8), and models with controls and dummies (models 9–12). Due to a large number of dummies, the path analysis model was unstable in convergence therefore, we use the traditional two-step mediation approach where in the first step we predict the effect of self-employed on happiness (models 1, 5, and 9). The direct effect is not significant, suggesting that the self-employed may not differ in reported happiness from the employed.

Next, for path 1 we predict the effect of self-employed on the log of expected fall in income (models 2, 6, and 10). The association is positive and significant, indicating that self-employed are more likely to expect a fall in their own income. In the next step, for path 2, we first predict the direct effect of the log of expected fall in income on happiness, in models 4, 7, and 11, we find negative and significant effect indicating that those expecting greater fall in own income report lower happiness. Finally, in models 4, 8, and 12 the effect of self-employed on happiness is not significant, however, the effect of the log of expected fall in income is negative and significant. Overall, with a positive and significant effect of self-employed on expected fall income, and negative and significant effect of expected fall in income on happiness, but no significant direct effect of self-employed on happiness, we infer a full mediation effect ($-0.03 = 1.44*-0.021$) with the Sobel statistic of $-1.99 (p = 0.045)$. Overall, self-employed are more likely to report lower levels of happiness through a higher than expected fall in their own income.

7. Discussion

Self-employment is an inherently unpredictable occupation often fraught with unforeseeable difficulties and hardships that can have considerable psychological and emotional consequences for those who decide to pursue such entrepreneurial endeavors (Patzelt and Shepherd, 2011). These intrinsic adverse conditions in turn can be substantially magnified during times of crisis. As a result, self-employed individuals can be more susceptible to worrying about the future of their business, and while several business-related aspects can cause concern, one of the most prominent factors that those who are self-employed experience during times of crisis is financial worry. While crises such as the global COVID-19 pandemic are likely to have adverse effects on perceptions of financial stability for most individuals, the level of financial worry experienced during such events can be considerably higher for those who are self-employed as a result of the inherent volatility and instability associated with self-employment (Clarke et al., 2007; Dalton et al., 2019).

Interestingly, our results did not support this line of reasoning, and we did not find that those who are self-employed had substantially higher levels of financial worries than their employed counterparts. While there are likely numerous reasons as to our lack of findings, one of the most logical is that the sheer magnitude of the effects caused by the ongoing pandemic have disproportionately influenced all individuals participating within the workforce, regardless of the specific industry, occupation, or job type they possess. Unlike other historical “crisis”, such as the dot-com bubble of the early 2000s or even the financial crisis of 2008, the overwhelming and ongoing effects produced by the COVID-19 pandemic are of a size and scale previously unheard of within the management literature.

Furthermore, it is important to understand the relationship between self-employment and financial worry because the financial worries that self-employed individuals experience can in turn have adverse effects on their health and well-being. Financial hardship has been shown to adversely influence well-being for those who are self-employed (Ammink et al., 2016), and even worrying that financial issues might arise can be detrimental to self-employed well-being (Binder, 2017). However, even though self-employed individuals are more likely to experience higher levels of financial concern, evidence indicates that they are also more apt to report being highly satisfied with their lives (Blanchflower, 2004). This suggests that under normal circumstances, the benefits conveyed to individuals often out-weight the potential downside risk that accompanies financial worries. Nevertheless, there could be a distinct “tipping point” at which the psychological benefits of self-employment are overwhelmed by the negative psychological outcomes associated with the burden of financial worries (Schonfeld and Mazzola, 2015).

Indeed, the context of the COVID-19 pandemic could represent a unique scenario that could produce such an effect. Essentially, the negative effects that financial worry can have on individual well-being are potentially further exacerbated by the COVID crisis, which could adversely affect individual mental health and well-being (Arber et al., 2014), and the magnitude of these negative effects could be enough to result in self-employed individuals experiencing higher levels of mental distress. Our results indicate that self-employment was not significantly associated with mental distress, as mediated by financial worry, but that financial worries in general were

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4 Accommodation and Food Services; Administrative and Support Services; Agriculture, Forestry, Fishing and Hunt; Arts, Entertainment, and Recreation; Construction; Educational Services; Finance and Insurance; Government; Health Care and Social Assistance; Information; Management of Companies and Enterprises; Manufacturing; Mining, Quarrying, and Oil and Gas Extr; Other Services (Except Public Administ; Professional, Scientific, and Technical; Real Estate and Rental and Leasing; Retail Trade; Transportation and Warehousing; Utilities; and Wholesale Trade.

5 Based on a long list of professions across 20 industries from ONET.
positively related to individual mental distress. It is possible that the context of the global pandemic incites an almost universal fear as to the financial stability that almost all employed individuals experience, and therefore creates substantial financial worries in those who are self-employed and occupationally employed alike.

Whereas fears of potential future financial hardships for those who are self-employed during the COVID-19 pandemic can have negative effects on well-being and mental distress, the actual decline in work and income as a result of efforts to address the crisis can also play a role in these relationships. This in turn can further intensify the positive relationship between self-employment and mental distress during times of crisis. As a result, it is likely that the positive relationship between self-employment and mental distress, as mediated by financial worries, is further amplified by the actual decline in work that those who are self-employed experience.

While factors such as the potential loss of access to capital and disruptions to customer relationships can result in stress and anxiety, the overall expected loss of income is perhaps one of the largest stressors that self-employed individuals face during crises. Income uncertainty has been identified as one of the most substantial stressors that those who are self-employed face daily (Schonfeld and Mazzola, 2015; Sörensson and Dalborg, 2017). Whereas those who are employed in occupational settings might have various forms of “safety nets” available for them to help buffer the potential for significant losses of income due to mandatory shutdowns (i.e. paid sick leave, paid vacation time, etc.), as noted these are rarely available for self-employed individuals. As such, it is likely that during times of crisis, self-employed individuals will expect their incomes to fall more considerably than will those employed in organizational settings.

Just as general worries regarding financial issues can result in a decrease in well-being, expectations of a substantial loss of income can also have detrimental effects on a self-employed individual’s happiness. While several factors can contribute to the association between income and happiness, the consensus is that individuals with higher incomes will experience higher levels of happiness. Conversely, dramatic loss of income compared to what an individual was previously earning can have a considerably negative influence on happiness (Clark et al., 2006). Combining the potential for self-employment to be positively related to the expected loss of income during times of crisis with the notion that such expectations could be negatively related to well-being, results in the potential for self-employment to be negatively associated with individual happiness as mediated by an expected loss of income.

Author statement

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Declaration of competing interest

None.

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