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Predictors of COVID-19 anxiety in UK university students

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ABSTRACT

The current research aimed to evaluate UK student mental health during the first 4 months of the COVID-19 pandemic. Specifically, we were interested in exploring factors that contribute to students' anxiety levels about COVID-19. Demographics, mental health symptomatology and well-being-related variables were tested as predictors of COVID-19 anxiety. A cross-sectional online survey was completed by 1,164 UK university students (71.8% females). Measures included self-reported data on stress, social phobia, anxiety, depression, psychotic-like experiences, hopefulness, group membership, social identity, belonging, loneliness, COVID-19 related variables and demographics. The majority of participants were between 18 and 24 years old (92.2%), White British (57.9%) and in the first or second year of their course study (63.12%). A series of multiple linear regressions revealed that being female, experiencing more stress and anxiety, and greater worry about COVID-19 and its effects on social relationships were significant in explaining students' pandemic-related anxiety. Students' level of pandemic-related anxiety was independent of ethnicity, socioeconomic background and pre-existing mental health problems. Worrying about the future was the most common pandemic-related stressor, but it was not a significant predictor of COVID-19 anxiety. Our findings are in line with previous findings that females and students experiencing more stress have been disproportionately affected by the COVID-19 pandemic. Our findings could inform the delivery of targeted stress-management interventions that might prove beneficial for student wellbeing.

Introduction

The spread of the SARS-CoV-2 (COVID-19) was officially declared a pandemic on the 11th of March 2020. By then there were 118,000 cases in 114 countries, and 4,291 deaths globally (WHO, 2020). In the UK, movement restrictions were imposed on the 23rd of March 2020 as part of a national lockdown intended to mitigate virus transmission. By that time, more than 12,000 cases and 400 deaths due to the virus were reported in the UK (GOV.UK 2021). For many, the lockdown was a period of social isolation that had detrimental effects on mental health. For example, in the UK, during the first four to 6 weeks of the lockdown, depression, stress and anxiety among working adults were significantly worse than was typical for the general population (Jia et al. 2020). Younger adults were disproportionately affected, as their mental health significantly deteriorated during to the pandemic (Banks and Xu 2020).

Early adulthood is a key risk period for the onset of mental health problems (Kim-Cohen et al. 2003; Kessler et al. 2005) and, even before the pandemic, there was evidence that mental health problems amongst students in particular were rising (Broglia, Millings, and Barkham 2018). Undergraduate students anxiety and depression levels have increased across the globe in response to the pandemic from Saudi Arabia (Elsharkawy and Abdelaziz 2020) and Turkey (Cam, Ustuner Top, and Kuzlu Ayyildiz 2021) to China (Feng, Zhang, and Ho 2021) and the US (Rogers, Ha, and Ockey 2021). Excessive worry about COVID-19 has also been linked to insomnia (Scotta, Cortez, and Miranda 2020), whilst depressive symptomatology during the pandemic has been linked to lower academic engagement (Kecojevic et al. 2020). These findings are rather unsurprising as universities were affected by the global pandemic and ensuing lockdown; by March 2020 teaching in many UK universities had been disrupted and social and academic aspects of students' lives had undergone substantial change.

The aim of the current study was to explore the role of current mental health symptomology, psychosocial and demographic variables as well as COVID-19 related concerns as risk factors for increased anxiety about COVID-19 in undergraduate students during the first few months of the pandemic in the UK. Below, we review literature on the effects of stress, depression, generalised anxiety, psychotic experiences, loneliness, hope, social identity, belonging, group membership, pre-existing mental health problems, socioeconomic status (SES), gender and sexual orientation on student well-being during the pandemic.

There is a lack of published data regarding the current mental health and wellbeing of undergraduate students in the UK during the pandemic. Students' stress levels and sedentary behaviour (Savage et al. 2020) as well as depression (Evans et al. 2021) increased during the lockdown, though the modest sample sizes (214 and 254, respectively) limit the generalisability of the results. Evans et al. (2021) found a third of their sample reached the threshold for clinically depressed, compared to 15% at baseline. Brazilian (Fernandez et al. 2021) and Israeli (Savitsky et al. 2020) students showed especially elevated scores in moderate and severe generalised anxiety compared to before the pandemic. Psychotic experiences among Slovakian students during the pandemic have also been investigated with higher frequencies occurring at earlier stages of the pandemic than a few months later (Hajdúk et al. 2020).

Loneliness has been identified as a significant predictor of mental distress in UK students (McIntyre et al. 2018). Increased feelings of loneliness have been associated with COVID-19 anxiety in a sample of Turkish college students, acting as a mediator between COVID-19 anxiety and negative repetitive thinking about COVID-19 (Arslan, Yıldırım, and Aytaç 2020). Conversely, higher levels of hopefulness are associated with lower COVID-19 anxiety and act as a protective factor against the negative effects of COVID-19 anxiety on students' subjective wellbeing (Genç and Arslan 2021). Despite their direct associations with students' wellbeing, the effects of loneliness and hope have not yet been investigated among UK students during the pandemic.

Another psychosocial trait that might have implications for COVID-19 anxiety in UK students is social identification. Identifying as a member of a social group has been found to be beneficial for individuals' mental health and buffer the negative effects of a life transition on wellbeing (Iyer et al. 2009). Moreover, Vignoles et al. (2021) demonstrated that social identification was a negative predictor of mental health, depression and anxiety during the first months of the lockdown in a UK community sample. Given the beneficial effects of social identity on well-being, it is important to explore whether social identity is a predictor of UK students' COVID-19 anxiety during the pandemic. Closely aligned with social identity is the sense of belonging, which is regarded a product of strong social identification that facilitates social support and is in turn protective towards positive mental health (Haslam et al. 2016). The feeling of group belonging is significantly associated with students' stress and depression levels (Stebleton, Soria, and Huesman 2014) and adolescent mental health and wellbeing indicators (Arslan, Allena, & Ryan, 2020). Group membership has also been shown to be beneficial for wellbeing during the pandemic (Alcover et al. 2020). Thus, it

is possible that, like social identity, a higher sense of belonging and group membership might be protective agents for UK students' COVID-19 anxiety.

In addition to specific current mental health and psychosocial traits, adults with *pre-existing* mental health problems seem to be more susceptible to further deterioration after a disaster (Goldmann and Galea 2014). Therefore, it is not surprising that during the pandemic their condition is likely to worsen (Murphy et al. 2021). For example, individuals with pre-existing (past year) anxiety-related mental health conditions in the USA and Canada experience more COVID-19-related stress compared to those with no mental health disorder (Asmundson et al. 2020).

Certain demographic factors are of importance too when it comes to COVID-19-related stress. For example, differences in the way college students have been psychologically impacted by the pandemic have been observed in US college students as it was found that females and LGBTQI+ students have been unequally stressed by the pandemic compared to their counterparts (Hoyt et al. 2021). Previous research has found that lower socioeconomic status (SES) is associated with higher rates of distress, mental health problems, and struggles after a traumatic event (Baum, Garofalo, and Yali 1999). More recent data from Hong Kong suggest that high SES is associated with greater wellbeing among students in the beginning of the pandemic (Amoah et al. 2021).

Thus, students' wellbeing has been severely impacted by the pandemic with recent evidence suggesting that there is a plethora of variables contributing to this. To address the impact of mental health, psychosocial and demographic variables on students' COVID-19-related anxiety we collected data from >1000 students at a UK university on anxiety, depression, psychotic symptoms, social phobia, stress, belonging, group membership, hope, loneliness, social identity, and demographic variables. We also created items reflecting common worries regarding COVID-19 and a single item to quantify COVID-19 anxiety. We categorised variables into four clusters and regressed the single COVID-19 anxiety item on each of these clusters. Then we regressed the COVID-19 anxiety item onto significant variables in a final model.

Method

Participant characteristics

A total of 1,164 students completed the survey, with the majority (93.3%, $n = 1085$) studying towards an undergraduate degree course at the institution within which the research was being conducted. Most participants were aged 18–24 years (92.2%, $n = 962$), identified as female (71.8%, $n = 752$), and more than half described their ethnicity as White British (57.9%, $n = 606$). The majority were UK citizens (76.3%, $n = 798$) with English as their first language (78.5%, $n = 821$). More than half reported living at university away from home (67.4%, $n = 784$) and in total 720 reported having a mental health problem with or without a professional diagnosis (65.5%). Full participant demographic and academic characteristics are displayed in Supplementary Material 1.

Procedure

Data were collected through an UK online survey administered as part of a broader longitudinal investigation into student mental health during transitions to and within the university. The survey was piloted and took between 20 and 30 minutes to complete. Following the UK government's implementation of the first nationwide 'lockdown' in response to the global pandemic on 23 March 2020, additional survey questions were added to assess students' concerns and anxiety around COVID-19. Data for the present study were collected between 4th April and 31 July 2020. At the point at which recruitment began, there were 57,111 reported cases of COVID-19 in the UK and 7,753 deaths, rising to 305,131 reported cases and 41,358 deaths on the day on which recruitment ceased (https://coronavirus.data.gov.uk/details/cases). Throughout the recruitment period, UK universities were operating undergraduate degree courses online according to government guidelines.

The survey was advertised using social media platforms to students of any academic discipline and registered with any UK university, and directly to students registered at the institution within which the research was being conducted through an online newsletter. Participants were offered the opportunity to enter a prize draw with the chance of winning £100 or £5. The study received ethical approval from the Science and Technology Cross School Research Ethics Committee of the University of Sussex (ER/OC206/1). Written informed consent was obtained from all participants.

Materials

COVID-19 measures

Since there were not any existing measures assessing COVID-19 related information, we created items assessing participants' COVID-19 anxiety, their experience of COVID-19, and their concerns about COVID-19 (Table 1; Supplementary Material 2).

COVID-19 anxiety. A single question was created to assess COVID-19 anxiety. Participants were asked to indicate on a scale of 0 = *not at all anxious* to 100 = *extremely anxious* their overall level of anxiety in relation to the COVID-19 pandemic.

COVID-19 characteristics. Two items asking respondents about their experiences in relation to COVID-19 were created. Participants indicated whether they knew anybody who had contracted COVID-19 and whether the pandemic had resulted in any changes to who they were living with.

COVID-19 concerns. Participants were asked to select their concerns from a list of 12 items reflecting an array of daily life domains (see Supplementary Material 2). Example items included *Being unwell myself with COVID-19*, and *Financial worries*. We conducted an exploratory factor analysis of the 12 items, identifying three factors: disease concerns; relational concerns; and vocational/lifestyle concerns. A scree plot indicated a break at three factors. A four-factor solution achieved superior fit indices but resulted in a negative residual variance and had low face and factorial validity: the fourth factor was a factor comprising only two cross-loading indicators. Therefore, a three-factor solution was accepted; χ^2 = 230.66 (33), $p < .00001$, CFI = 0.92, TFI = 0.85, RMSEA = 0.07, SRMR = 0.06.

Table 1. *N* (%) for COVID-19 anxiety and concerns.

COVID-19 measures	N (%)
COVID-19 concerns	
Being unwell my self	429 (39.3)
My family being unwell	866 (79.4)
My friend being unwell	532 (48.8)
My partner being unwell	287 (26.3)
My relationship with my family	363 (33.3)
My relationship with my friends	452 (41.4)
My relationship with my partner	252 (23.1)
My study/education	841 (77.1)
The future	882 (80.8)
Financial worries	687 (63.0)
My job employment	600 (55.0)
Living situations	517 (47.4)
Other	47 (4.3)
COVID-19 concern domains	
Disease Concerns	914 (83.8)
Relational Concerns	614 (56.3)
Vocational/Lifestyle Concerns	1035 (93.7)
Total Sum of Domains	5.81(2.91)
Overall COVID-19 anxiety	55.85(25.18)

Table 2. Descriptive statistics and reliability of scales.

Variable	Mean (SD)	Min, Max	Cronbach's α
Perceived Stress	8.46 (3.19)	0, 16	.77
Social Phobia	8.02 (6.39)	0, 24	.89
Generalised Anxiety	9.77 (5.83)	0, 21	.90
Depression	11.90 (6.60)	0, 27	.88
Psychotic Experiences	0.50 (0.40)	0, 2.93	.86
Hope- Academic	44.49 (10.80)	8, 64	.89
Hope- Social	40.75 (13.04)	8, 64	.92
Group membership before university	16.69 (6.19)	4, 28	.89
Maintenance of old group membership at university	17.21 (5.88)	4, 28	.85
New group membership at university	16.61 (6.51)	4, 28	.91
Social identification	4.56 (1.54)	4, 28	N/A
Belonging	14.71 (4.06)	3, 21	.85
Loneliness	12.97 (5.26)	0, 24	.86

Current mental health measures

Cronbach's α showed good reliability within our data for all the validated scales listed below (Table 2).

Anxiety. Assessed using the Generalised Anxiety Disorder (GAD-7) questionnaire (Spitzer, Kroenke, & Williams, 2006), a seven-item self-report scale evaluating the frequency with which respondents have experienced the primary symptoms of GAD over the past 2 weeks (*i.e.* feeling nervous, anxious, or on edge, and worrying too much about different things). Items are rated on a 4-point Likert scale ranging from 0 = *not at all* to 3 = *nearly every day*. Scores range from 0 to 21, higher scores indicating more severe symptomatology. An eighth item asks participants to rate how difficult anxiety has made carrying out tasks at work and at home and getting along with others (0 = *not at all difficult* to 3 = *extremely difficult*). GAD-7 does not necessarily function well as a clinical diagnostic tool for GAD but can detect anxiety symptoms associated with a broad range of anxiety disorders including GAD, panic, social anxiety and post-traumatic stress disorders.

Depression. The Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, and Williams 2001) was administered to assess depression. It is a 9-item self-report measure designed to assess depression severity. Participants rate on a four-point Likert scale (0 = *not at all* to 3 = *nearly every day*) how often they felt sad, down, hopeless, depressed, and bad about themselves over the past 2 weeks. PHQ-9 scores of 5, 10, 15, and 20 represent mild, moderate, moderately severe, and severe depression, respectively (Kroenke et al. 2010).

Psychotic-like experiences. Proneness to psychotic-like experiences (PLEs) was assessed using the Community Assessment of Psychic Experiences-Positive Scale (Capra et al. 2017). The CAPE-P15 consists of 15 items evaluating the frequency of PLEs and associated distress in three domains: persecutory ideation, bizarre experiences, and perceptual abnormalities. The scale is based on an earlier 20-item version of the CAPE-P that has good internal validity and reliability for detecting early psychosis-like positive symptomatology in undergraduate student samples (Capra et al. 2017). Participants rated on a four-point Likert scale how often they had experienced PLEs over the past 3 months (0 = *never* to 3 = *nearly always*). Weighted scores for individuals were produced by dividing the total score by the number of items completed, and a cut-off of ≥1.47 was employed to detect students reporting PLEs. This cut-off provides 77% sensitivity and specificity of 58% (Bukenaite et al. 2017).

Social phobia. Participants completed the Social Phobia Scale (Peters et al. 2012), a six-item self-report scale assessing anxiety associated with the performance of various tasks whilst being

scrutinised by others (e.g. working, eating, drinking, writing, using public toilets). Whilst the SPS originally consisted of 20-items, the six-item version administered for the present study has demonstrated good reliability. Participants respond using a five-point Likert scale, ranging from 0 = *not at all characteristic or true of me* to 4 = *extremely characteristic or true of me*.

Stress.   Stress was measured using the Perceived Stress Scale (Cohen and Williamson 1988). The PSS-10 is a widely used instrument for measuring the extent to which life situations are perceived as stressful. The ten-item self-report scale asks participants to rate how unpredictable, uncontrollable, and overloaded they find their lives to be on a 5-point Likert scale (0 **=** *never* to 4 = *very often*). For the present study, four items drawn from the PSS-10 were administered: *Within the past 2 weeks, have you felt you were unable to control the important things in your life*; *Within the past 2 weeks, have you felt you were confident about your ability to handle your personal problems* (reverse scored); *Within the past 2 weeks, have you felt that things are going your way* (reverse scored); and *Within the past 2 weeks, have you felt that difficulties were piling up so high that you could not overcome them*.

Psychosocial measures
Cronbach's α showed good reliability within our data for all the validated scales listed below (Table 2).

Belonging.   The sense of belonging at university was assessed using three items adapted from Walton and Cohen (2007). Participants rated the extent to which they agreed with each item using a 7-point Likert scale (1 = *Strongly disagree* to 7 = *Definitely*). The items were as follows: *In general, I really feel like I belong at university*; *In general, I feel people at university accept me*; and *In general, people at university like me*.

Group membership.   The Exeter Identity Transition Scales (EXITS; Haslam et al. 2008) was used to assess group membership. Participants completed items evaluating changes in identity and group affiliations over time using a 7-point Likert scale (1 = *strongly disagree* to 7 = *definitely agree*). EXITS has been used to explore group membership and life satisfaction in older adults after stroke (Haslam et al. 2008). For the present study, three adapted subscales of four items assessed participants': membership in multiple groups before university; the extent to which students maintained their old group memberships after joining university; and experiences of belonging to new groups whilst at university.

Hope.   Hope was measured using the Domain Specific Hope Scale (Sympson 1999). The DSHS evaluates individuals' levels of hope in several daily life domains, including social and romantic relationships, relationships with family, work, and academic life. Participants are asked to read a series of statements about hope and rate how these reflect their current status on an 8-point Likert scale (1 = *definitely false* to 8 = *definitely true*). Total scores are calculated through the addition of ratings in each domain. For the present study, the eight items reflecting hope in academic life and eight statements reflecting hope in social relationships were administered.

Loneliness.   The UCLA Loneliness Scale (Russell, Peplau, and Cutrona 1980) assesses how much a person feels lonely, cut-off, or separated from others, by evaluating the discrepancy between the social interactions participants report engaging in compared to those they would *like* to engage in. The UCL-8 contains eight items, including two that are reverse-scored (I *am an outgoing person* and I *can find companionship when I want it*. Each item is associated with a four-level frequency score, with answer choices of 0 = *never*, 1 = *rarely*, 2 = *sometimes*, and 3 = *always*. Total scores range from 0 to 24, with higher scores indicating more feelings of loneliness.

Social identity. Social identification with university was assessed using one item, adapted from Postmes, Haslam, and Jans (2013). Participants responded to the statement *I identify with my university* on a seven-point Likert scale (1 = *Strongly disagree* to 7 = *Strongly agree*).

Demographic and academic variables

A full list of the demographic and academic variables participants reported is provided in Supplementary Material 1.

Socioeconomic background (IMD). We asked participants for their home postcodes and then we used those to retrieve the corresponding Index of Multiple Deprivation (IMD) for each postcode as provided in gov.uk. IMD results were provided in deciles from 1 to 10 with decile 1 signifying the most-deprived areas to 10 signifying the least-deprived areas. Finally, we grouped the IMDs in three groups; high IMD (decile 1–3), middle IMD (decile 4–7) and low IMD (decile 8–10).

Differing Likert scales and anchoring

We used previously validated measures for the constructs of interest (see above) and, therefore, retained the original Likert response scales for each individual set of items, which differ from one another. By varying the response scales within a single questionnaire battery we aimed to ensure that respondents did not feel compelled to be consistent and, consequently, select either the same or a nearby response category, irrespective of fit; also known as anchoring (Lyu and Bolt 2022). Anchoring should diminish when the item content or response-scale changes substantially, in which case the respondent is forced to adopt a different orientation in responding to the item (Gehlbach and Barge 2012). Thus, our use of different Likert scales may have reduced anchoring and led participants to answer more accurately.

Data analysis

All analyses were conducted using IBM SPSS 26. Correlation showed that all three factors of COVID-19 concerns were significantly associated ($p < .001$). All predictors were checked for collinearity using Pearson's bivariate correlations (Supplementary Material 3). Then a series of forced entry multiple-regression analyses were conducted incorporating COVID-19 concerns, demographic, mental health, and psychosocial variables as predictors of COVID-19 anxiety in four separate models, respectively. Significant predictors from the analyses were subsequently entered into a final regression model, to examine which variables would continue to predict COVID-19 anxiety. We followed this analytic strategy to avoid complex models that include large number of predictors and possible multi-collinearity issues. Differences were observed when analyses were run with missing data deleted pairwise compared to listwise (Supplementary Material 4, 5). Where necessary, a t-test was used to confirm the significance of predictors in the final model.

Results

COVID-19 characteristics, concerns, and anxiety

In total, 47.9% (*n* = 499) of participants reported that they knew somebody who had contracted COVID-19 whilst 34.2% (*n* = 356) did not know anybody who had caught COVID-19, 17.7% (*n* = 184) were unsure and 0.2% (*n* = 2) chose the option 'prefer not to say'. As a result of the COVID-19 pandemic, 51.6% (*n* = 539) of participants reported that their living situation had changed. Mean scores for overall COVID-19 anxiety, and COVID-19 concern domains are displayed in Table 1.

Table 3. Multiple-regression results for the COVID-19 related variables model. Missing data were deleted pairwise.

COVID-19 anxiety	B	95% CI for B		SE B	β	R^2	Adj. R^2
		LL	UL			.093	.088
Model Constant	32.861	24.578	41.144	4.220			
Disease concerns	6.067**	1.575	10.559	2.289	.089		
Relational concerns	12.487***	9.103	15.871	1.724	.246		
Vocational/lifestyle concerns	9.527*	2.011	17.043	3.829	.083		
COVID-19 Connection	1.327	−2.047	4.702	1.719	.026		
Living Situation	2.093	−1.255	5.441	1.706	.042		

* $p < .05$. ** $p < .01$. *** $p < .001$

Mental health and psychosocial factors

Means, standard deviations, minimum and maximum values and Cronbach's α for all main study variables are shown in Table 2. Correlations for measures of mental health and psychosocial factors are shown in Supplementary Material 3.

Predictors of COVID-19 anxiety

Four different multiple-regression models using COVID-19 as an outcome measure were implemented. The first model used COVID-19 related variables as predictors (Table 3). In this model, COVID-19 disease concerns, relational concerns, vocational/lifestyle concerns were significant predictors of COVID-19 anxiety, whereas COVID-19 connection and living situation were not.

In the second multiple-regression model, demographic variables were used as predictors (Table 4). In this case, only gender was a significant predictor of COVID-19 anxiety, whilst index of multiple deprivation (IMD), ethnicity, sexuality, year of study and pre-existing mental health difficulties were not. Participants identifying as female were more likely to experience higher levels of COVID-19 anxiety than their male counterparts.

Table 4. Multiple-regression results for the demographic variables model. Missing data were deleted pairwise.

COVID-19 anxiety	B	95% CI for B		SE B	β	R^2	Adj. R^2
		LL	UL			.051	.033
Model Constant	53.628	42.512	64.744	5.655			
Gender (Female)	10.491***	5.045	15.937	2.771	.182		
IMD (High)	.635	−6.558	7.829	3.660	.009		
IMD (Middle)	−3.819	−9.036	1.397	2.654	−.075		
Ethnicity (White British)	−3.168	−8.840	2.504	2.886	−.062		
Ethnicity (White Other)	−2.386	−9.983	5.211	3.865	−.034		
Year of study (Foundation or 1st)	−2.866	−7.717	1.986	2.468	−.056		
Sexuality (heterosexual)	−4.548	−9.793	.696	2.668	−.082		
Mental health problem at the age of <18	2.748	−5.601	11.096	4.247	.032		

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 5. Multiple-regression results for the current mental health variables model. Missing data were deleted pairwise.

COVID-19 anxiety	B	95% CI for B		SE B	β	R^2	Adj. R^2
		LL	UL			.194	.190
Model Constant	32.604	28.682	36.526	1.999			
Perceived Stress (PSS)	1.117***	.490	1.745	.320	.142		
Social Phobia (SPS)	.012	−.244	.269	.131	.003		
Generalised Anxiety (GAD)	1.526***	1.143	1.908	.195	.353		
Depression (PHQ)	−.170	−.517	.178	.177	−.044		
Psychotic Experiences (CAPE P15)	1.621	−2.183	5.425	1.939	.027		

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 6. Multiple-regression results for the current mental health variables model. Missing data were deleted pairwise.

COVID-19 anxiety	B	95% CI for B		SE B	β	R^2	Adj. R^2
		LL	UL			.063	.056
Model Constant	28.880	15.483	42.278	6.828			
Hope (Academic)	.051	−.105	.207	.079	.022		
Hope (Social)	.180	−.001	.361	.092	.093		
Group Membership before University	.288*	.011	.564	.141	.071		
Maintenance of old group membership at uni	.094	−.175	.362	.137	.022		
New group membership	−.123	−.407	.160	.144	−.032		
Social Identity	.495	−.701	1.692	.610	.030		
Belonging	−.437	−.994	.121	.284	−.070		
Loneliness	1.344***	.952	1.735	.199	.281		

* p < .05. **p < .01. ***p < .001

Table 7. Multiple-regression results for the final combined model.

COVID-19 anxiety	B	95% CI for B		SE B	β	R^2	Adj. R^2
		LL	UL				
Model							
Constant	19.072	10.014	28.129	4.616		.234	.228
Disease concerns	4.049*	.258	7.840	1.932	.059		
Relational concerns	6.931***	3.943	9.919	1.522	.137		
Vocational and lifestyle concerns	3.674	−2.755	10.103	3.276	.032		
Gender (Female)	5.989***	2.756	9.223	1.648	.104		
Perceived stress	.860**	.247	1.474	.312	.109		
Generalised anxiety	1.335***	1.007	1.664	.167	.309		
Group membership before university	.156	−.081	.394	.121	.038		
Loneliness	−.105	−.441	.232	.171	−.022		

* p < .05. **p < .01. ***p < .001

The third multiple-regression model incorporated current mental health variables (Table 5). In this model perceived stress and generalised anxiety emerged as significant predictors of COVID-19 anxiety, whereas social phobia, depression, and psychotic experiences were not.

The fourth model incorporated psychosocial variables as predictors of COVID-19 anxiety (Table 6). In this model, only group membership before university and loneliness were significant predictors of COVID-19 anxiety, whilst hope (both academic and social), maintenance of old group membership, new group membership, social identity and belonging were not significant predictors. Differences were observed when we compared models in which missing data was deleted pairwise (Tables 3–6) with similar models in which missing data was deleted listwise (Supplemental Material 4).

Using the forced entry method, we then regressed COVID-19 anxiety on significant predictors from the four models in a final model that significantly predicted COVID-19 anxiety, F (8, 981) = 37.457, $p < .001$, adj. R^2 = .228 (Table 7). In this final model, disease concerns, relational concerns, female gender, perceived stress, and generalised anxiety were significant predictors of COVID-19 anxiety whereas vocational/lifestyle concerns, group membership before university, and loneliness were not. Generalised anxiety contributed 5% unique variance in explaining COVID-19 anxiety, feeling stressed 1.6%, and being female 1%. Differences were observed when the final model was run with missing data deleted pairwise (Table 7) compared to listwise (Supplemental Material 5). On average, females scored higher on the measure of COVID-19 anxiety (M = 58.54, SD = 23.75) than males (M = 48.19, SD = 27.48). This difference was statistically significant: t(386.84) = −5.34, $p < .001$.

Discussion

Summary of findings

The current research aimed to explore the role of demographic, current mental health, and psycho-social variables as risk factors for increased COVID-19 anxiety in a sample of 1,164 UK university students. We found that students' self-report current mental health symptomatology of stress, anxiety, social phobia, and depression were significantly positively correlated with COVID-19 anxiety, whilst lower levels of belonging, social identity, and group membership were negatively correlated with COVID-19 anxiety. Regression analyses revealed that COVID-19 disease concerns, relational concerns, vocational/lifestyle concerns, perceived stress, generalised anxiety group membership before university and loneliness predicted students COVID-19 anxiety. In the final multivariate regression model, it was shown that disease and relational concerns, being female, stress, and anxiety positively predicted COVID-19 anxiety.

Our data provide evidence that students with stress and anxiety-related mental health symptomatology are more likely to report higher levels of COVID-19 anxiety. Our findings support the notion that female university students are more prone to be psychologically impacted by COVID-19, as demonstrated in a US sample of college students (Browning et al. 2021). Females historically show greater prevalence in anxiety-related disorders (McLean et al. 2011). Two studies among French university students also conclude that females and those experiencing greater levels of stress are more likely to be psychologically affected by the COVID-19 pandemic (Bourion-Bedes et al. 2021; Wethelet et al. 2020). Similar findings have been observed within Polish, Russian and Belarusian students (Debowska, Horeczy, Boduszek, 2020; Gritsenko et al. 2020).

Recent data suggest that students from lower income families experienced greater distress and were disproportionately affected during this pandemic (Rudenstine et al. 2020). However, IMD did not emerge as a significant predictor of COVID-19 anxiety in UK students in either the separate or final model. This could be due to the relatively low variance as for a large number of participants the home town was the area of the University where the study was conducted, which is above average in IMD terms.

Previous studies have measured COVID-19 anxiety with common psychometric tools such as the GAD and the PSS. We created items to capture the different real-life domains functioning as COVID-19 stressors, as opposed to generic measures of stress and anxiety. As a result, we explored differential associations between several COVID-19 related stressors and COVID-19 anxiety, and found that disease-related concerns such as worrying about getting infected or family/friends getting infected, and worrying about social relationships were most anxiety-provoking. This shows that issues with a more personal tone that have to do with health and illness seemed to concern students at the time of the recruitment (at the beginning of the pandemic-April to July 2020). Conversely, academic, financial and worries about the future, which are more external issues, did not seem to produce greater COVID-19 anxiety. Previous research suggests that, globally, academic or future-oriented (Aristovnik et al. 2020) and interpersonal matters are amongst the most common factors to undermine students' mental health during the pandemic (Padrón et al. 2021). Our data showed that worrying about the future was the most common COVID-19 stressor; however, it did not emerge as a significant predictor of COVID-19 anxiety. At the onset of the pandemic, students' primary concerns may be linked to personal issues such as health. As the pandemic progress students may be considering how the pandemic might affect other domains of their life.

Strengths, limitations, and directions for future research

The cross-sectional nature of our data does not allow for causal inferences to be made. Thus, it is imperative that future research explores the ongoing impact of the pandemic using long-itudinal designs. However, our findings contribute to the literature in different ways. Firstly, they come to complement and strengthen the notion that being female, suffering from generalised

anxiety, being stressed and worrying about the health and social consequences of the pandemic put individuals at increased risk of COVID-19 anxiety. Undergoing an educational transition period can be stressful, therefore the additional stress of a pandemic can have negative effects on student wellbeing. It would be worthwhile to develop interventions that are targeted to students and address specifically pandemic-related anxiety. Any future stress management interventions for students stressed due to COVID-19 should be designed with caution and consider being targeted to students with extremely high levels of anxiety and stress. Two recent systematic reviews revealed that stress-targeted intervention such as CBT (Amanvermez et al. 2020) and mindfulness (Dawson et al. 2020) are especially beneficial for stressed students as they were successful in improving distress and anxiety symptomatology. Given the pandemic has intensified the digitalisation of courses and services, it would be reasonable to suggest online or *mhealth* stress interventions for students experiencing significant stress. Despite the relative lack of our results' generalisability as the vast majority of the sample were students at the university where the study was conducted, our findings illustrate the toll that stress and anxiety can pose on students' ability to deal with a massive stressor like the pandemic.

Conclusions

Our research showed that general anxiety symptoms and stress, and being female, associated with greater COVID-19 anxiety. Although concerns about the future was the most highly endorsed individual COVID-19-related stressor, disease-related concerns and social relationship-related concerns were predictive of greater COVID-19 related anxiety.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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References

Alcover, C., F. Rodríguez, Y. Pastor, H. Thomas, M. Rey, and J. Del Barrio. 2020. "Group Membership and Social and Personal Identities as Psychosocial Coping Resources to Psychological Consequences of the COVID-19 Confinement." *International Journal of Environmental Research and Public Health* 17 (20): 7413. doi:10.3390/ijerph17207413.

Amanvermez, Y., M. Rahmadiana, E. Karyotaki, L. de Wit, D. D. Ebert, R. C. Kessler, and P. Cuijpers. 2020. "Stress Management Interventions for College Students: A Systematic Review and Meta-analysis." *Clinical Psychology: Science and Practice* e12342. doi:10.1111/cpsp.12342.

Amoah, P., A. Leung, L. Parial, A. Poon, H. Tong, W. Ng, X. Li, et al. 2021. "Digital Health Literacy and Health-Related Well-Being amid the COVID-19 Pandemic: The Role of Socioeconomic Status among University Students in Hong Kong and Macao." *Asia Pacific Journal of Public Health* 33 (5): 613–616. doi:10.1177/10105395211012230.

Aristovnik, A., D. Keržič, D. Ravšelj, N. Tomaževič, and L. Umek. 2020. "Impacts of the COVID-19 Pandemic on Life of Higher Education Students: A Global Perspective." *Sustainability* 12 (20): 8438. doi:10.3390/su12208438.

Arslan, G., K. Allen, and T. Ryan. 2020. "Exploring the Impacts of School Belonging on Youth Wellbeing and Mental Health among Turkish Adolescents." *Child Indicators Research* 13 (5): 1619–1635. doi:10.1007/s12187-020-09721-z.

Arslan, G., M. Yıldırım, and M. Aytaç. 2020. "Subjective Vitality and Loneliness Explain How Coronavirus Anxiety Increases Rumination among College Students." *Death Studies* 1–10. Advance online publication. doi:10.1080/07481187.2020.1824204.

Asmundson, G., M. M. Paluszek, C. A. Landry, G. S. Rachor, D. McKay, and S. Taylor. 2020. "Do pre-existing anxiety-related and Mood Disorders Differentially Impact COVID-19 Stress Responses and Coping?" *Journal of Anxiety Disorders* 74: 102271. doi:10.1016/j.janxdis.2020.102271.

Banks, J., and X. Xu. 2020. "The Mental Health Effects of the First Two Months of Lockdown and Social Distancing during the Covid-19 Pandemic in the UK", *IFS Working Papers, No. W20/16*, Institute for Fiscal Studies (IFS), London, doi:10.1920/wp.ifs.2020.1620.

Baum, A., J. P. Garofalo, and A. M. Yali. 1999. "Socioeconomic Status and Chronic Stress. Does Stress Account for SES Effects on Health?" *Annals of the New York Academy of Sciences* 896 (1): 131–144. doi:10.1111/j.1749-6632.1999.tb08111.x.

Bourion-Bedes, S., C. Tarquinio, M. Batt, P. Tarquinio, R. Lebreuilly, C. Sorsana, K. Legrand, H. Rousseau, and C. Baumann. 2021. "Psychological Impact of the COVID-19 Outbreak on Students in a French Region Severely Affected by the Disease: Results of the PIMS-CoV 19 Study." *Psychiatry Research* 295. doi:10.1016/j.psychres.2020.113559.

Broglia, E., A. Millings, and M. Barkham. 2018. "Challenges to Addressing Student Mental Health in Embedded Counselling Services: A Survey of UK Higher and Further Education Institutions." *British Journal of Guidance & Counselling* 46 (4): 441–455. doi:10.1080/03069885.2017.1370695.

Browning, M., L. R. Larson, I. Sharaievska, A. Rigolon, O. McAnirlin, L. Mullenbach, S. Cloutier, et al. 2021. "Psychological Impacts from COVID-19 among University Students: Risk Factors across Seven States in the United States." *PloS one* 16 (1): e0245327. doi:10.1371/journal.pone.0245327.

Bukenaite, A., J. Stochl, N. Mossaheb, M. R. Schäfer, C. M. Klier, J. Becker, M. Schloegelhofer, et al. 2017. "Usefulness of the CAPE-P15 for Detecting People at ultra-high Risk for Psychosis: Psychometric Properties and cut-off Values." *Schizophrenia Research* 189: 69–74. doi:10.1016/j.schres.2017.02.017.

Cam, H., F. Ustuner Top, and T. Kuzlu Ayyildiz. 2021. "Impact of the COVID-19 Pandemic on Mental Health and health-related Quality of Life among University Students in Turkey." *Current Psychology* 41 (2): 1033–1042. doi:10.1007/s12144-021-01674-y.

Capra, C., D.J. Kavanagh, L. Hides, and J.G. Scott. 2017. "Current CAPE-15: A Measure of Recent psychotic-like Experiences and Associated Distress." *Early Intervention in Psychiatry* 11 (5): 411–417. doi:10.1111/eip.12245.

Cohen, S., and G.M. Williamson. 1988. "Perceived Stress in a Probability Sample of the United States." In *The Social Psychology of Hhealth*, edited by S. Spacapan and S. Oskamp, 31–67. Newbury Park, CA: Sage.

Dawson, A. F., W. W. Brown, J. Anderson, B. Datta, J. N. Donald, K. Hong, S. Allan, T. B. Mole, P. B. Jones, and J. Galante. 2020. "Mindfulness-Based Interventions for University Students: A Systematic Review and Meta-Analysis of Randomised Controlled Trials." *Applied Psychology. Health and Well-being* 12 (2): 384–410. doi:10.1111/aphw.12188.

Debowska, A., B. Horeczy, D. Boduszek, and D. Dolinski. 2020. "A Repeated cross-sectional Survey Assessing University Students' Stress, Depression, Anxiety, and Suicidality in the Early Stages of the COVID-19 Pandemic in Poland." *Psychological Medicine* 1–4. doi:10.1017/S003329172000392X.

Elsharkawy, N, and E Abdelaziz. 2020. "Levels of Fear and Uncertainty regarding the Spread of Coronavirus Disease (COVID-19) among University Students." *Perspectives in Psychiatric Care* 57 (3): 1356–1364. doi:10.1111/ppc.12698.

Evans, S., E. Alkan, J. K. Bhangoo, H. Tenenbaum, and T. Ng-Knight. 2021. "Effects of the COVID-19 Lockdown on Mental Health, Wellbeing, Sleep, and Alcohol Use in a UK Student Sample." *Psychiatry Research* 298: 113819. doi:10.1016/j.psychres.2021.113819.

Feng, S., Q. Zhang, and S. Ho. 2021. "Fear and Anxiety about COVID-19 among Local and Overseas Chinese University Students." *Health & Social Care in the Community* 29 (6). doi:10.1111/hsc.13347.

Fernandez, M., I. S. Vieira, N. Silva, T. A. Cardoso, C. H. Bielavski, C. Rakovski, and A. Silva. 2021. "Anxiety Symptoms and Alcohol Abuse during the COVID-19 Pandemic: A cross-sectional Study with Brazilian Dental Undergraduate Students." *Journal of Dental Education* 85 (11): 1739–1748. Advance online publication. doi:10.1002/jdd.12742.

Gehlbach, H., and S. Barge. 2012. "Anchoring and Adjusting in Questionnaire Responses." *Basic and Applied Social Psychology* 34 (5): 417–433. doi:10.1080/01973533.2012.711691.

Genç, E., and G. Arslan. 2021. "Optimism and Dispositional Hope to Promote College Students' Subjective well-being in the Context of the COVID-19 Pandemic." *Journal of Positive School Psychology* 5 (2): 87–96. doi:10.47602/jpsp.v5i2.255.

Goldmann, E., and S. Galea. 2014. "Mental Health Consequences of Disasters." *Annual Review of Public Health* 35: 169–183. doi:10.1146/annurev-publhealth-032013-182435.

GOV.UK. 2021. Accessed 19 October 2021. https://coronavirus.data.gov.uk/details/cases

Gritsenko, V., O. Skugarevsky, V. Konstantinov, N. Khamenka, T. Marinova, A. Reznik, and R. Isralowitz. 2020. "COVID 19 Fear, Stress, Anxiety, and Substance Use among Russian and Belarusian University Students." *International Journal of Mental Health and Addiction* 1–7. Advance online publication. doi:10.1007/s11469-020-00330-z.

Hajdúk, M, D Dančík, J Januška, V Svetský, A Straková, M Turček, B Vašečková, Ľ Forgáčová, A Heretik, and J Pečeňák. 2020. "Psychotic Experiences in Student Population during the COVID-19 Pandemic." *Schizophrenia Research* 222: 520–521. doi:10.1016/j.schres.2020.05.023.

Haslam, C., T. Cruwys, M. Milne, C.-H. Kan, and S. A. Haslam. 2016. "Group Ties Protect Cognitive Health by Promoting Social Identification and Social Support." *Journal of Aging and Health* 28 (2): 244–266. doi:10.1177/0898264315589578.

Haslam, C., A. Holme, S. A. Haslam, A. Iyer, J. Jetten, and W. H. Williams. 2008. "Maintaining Group Memberships: Social Identity Continuity Predicts well-being after Stroke." *Neuropsychological Rehabilitation* 18 (5–6): 671–691. doi:10.1080/09602010701643449.

Hoyt, L., A. Cohen, B. Dull, E. Maker Castro, and N. Yazdani. 2021. ""Constant Stress Has Become the New Normal": Stress and Anxiety Inequalities among U.S. College Students in the Time of COVID-19." *Journal of Adolescent Health* 68 (2): 270–276. doi:10.1016/j.jadohealth.2020.10.030.

Iyer, A., J. Jetten, D. Tsivrikos, T. Postmes, and S.A. Haslam. 2009. "The More (And the More Compatible) the Merrier: Multiple Group Memberships and Identity Compatibility as Predictors of Adjustment after Life Transitions." *British Journal of Social Psychology* 48 (4): 707–733. doi:10.1348/014466608X397628.

Jia, R., K. Ayling, T. Chalder, A. Massey, E. Broadbent, C. Coupland, and K. Vedhara. 2020. "Mental Health in the UK during the COVID-19 Pandemic: Cross-sectional Analyses from a Community Cohort Study." *BMJ Open* 10 (9): e040620. doi:10.1136/bmjopen-2020-040620.

Kecojevic, A., C. Basch, M. Sullivan, and N. Davi. 2020. "The Impact of the COVID-19 Epidemic on Mental Health of Undergraduate Students in New Jersey, cross-sectional Study." *PLOS ONE* 15 (9): e0239696. doi:10.1371/journal.pone.0239696.

Kessler, R., P. Berglund, O. Demler, R. Jin, K. Merikangas, and E. Walters. 2005. "Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National Comorbidity Survey Replication." *Archives of General Psychiatry* 62 (6): 593. doi:10.1001/archpsyc.62.6.593.

Kim-Cohen, J., A. Caspi, T. Moffitt, H. Harrington, B. Milne, and R. Poulton. 2003. "Prior Juvenile Diagnoses in Adults with Mental Disorder." *Archives of General Psychiatry* 60 (7): 709. doi:10.1001/archpsyc.60.7.709.

Kroenke, K., R. Spitzer, J. Williams, and B. Löwe. 2010. "The Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales: A Systematic Review." *General Hospital Psychiatry* 32 (4): 345–359. doi:10.1016/j.genhosppsych.2010.03.006.

Kroenke, K., R. L. Spitzer, and J. B. Williams. 2001. "The PHQ-9: Validity of a Brief Depression Severity Measure." *Journal of General Internal Medicine* 16: 606–613. doi:10.1046/j.1525-1497.2001.016009606.x.

Lyu, W., and D. M. Bolt. 2022. "A Psychometric Model for Respondent-level Anchoring on Self-report Rating Scale Instruments." *British Journal of Mathematical and Statistical Psychology* 75 (1): 116–135. doi:10.1111/bmsp.12251.

McIntyre, J., J. Worsley, R. Corcoran, P. Harrison Woods, and R. Bentall. 2018. "Academic and non-academic Predictors of Student Psychological Distress: The Role of Social Identity and Loneliness." *Journal of Mental Health* 27 (3): 230–239. doi:10.1080/09638237.2018.1437608.

McLean, C. P., A. Asnaani, B. T. Litz, and S. G. Hofmann. 2011. "Gender Differences in Anxiety Disorders: Prevalence, Course of Illness, Comorbidity and Burden of Illness." *Journal of Psychiatric Research* 45 (8): 1027–1035. doi:10.1016/j.jpsychires.2011.03.006.

Murphy, L., K. Markey, O' Donnell, C. Moloney, and O. Doody. 2021. "The Impact of the COVID-19 Pandemic and Its Related Restrictions on People with pre-existent Mental Health Conditions: A Scoping Review." *Archives of Psychiatric Nursing* 35 (4): 375–394. doi:10.1016/j.apnu.2021.05.002.

Padrón, I., I. Fraga, L. Vieitez, C. Montes, and E. Romero. 2021. "A Study on the Psychological Wound of COVID-19 in University Students." *Frontiers in Psychology* 12: 589927. doi:10.3389/fpsyg.2021.589927.

Peters, L., M. Sunderland, G. Andrews, R. M. Rapee, and R. P. Mattick. 2012. "Development of a Short Form Social Interaction Anxiety (SIAS) and Social Phobia Scale (SPS) Using Nonparametric Item Response Theory: The SIAS-6 and the SPS-6." *Psychological Assessment* 24 (1): 66–76. doi:10.1037/a0024544.

Postmes, T., S. A. Haslam, and L. Jans. 2013. "A Single-item Measure of Social Identification: Reliability, Validity, and Utility." *British Journal of Social Psychology* 52 (4): 597–617. doi:10.1111/bjso.12006.

Rogers, A. A., T. Ha, and S. Ockey. 2021. "Adolescents' Perceived Socio-Emotional Impact of COVID-19 and Implications for Mental Health: Results from a U.S.-Based Mixed-Methods Study." *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine* 68 (1): 43–52. doi:10.1016/j.jadohealth.2020.09.039.

Rudenstine, S., K. Mcneal, T.E. Schulder, C. Ettman, M. Hernandez, K. Gvozdieva, and S. Galea. 2020. "Depression and Anxiety during the COVID-19 Pandemic in an Urban, Low-Income Public University Sample." *Journal of Traumatic Stress* 34 (1): 12–22. doi:10.1002/jts.22600.

Russell, D., L. A. Peplau, and C. E. Cutrona. 1980. "The Revised UCLA Loneliness Scale: Concurrent and Discriminant Validity Evidence." *Journal of Personality and Social Psychology* 39 (3): 472–480. doi:10.1037//0022-3514.39.3.472.

Savage, M., R. James, D. Magistro, J. Donaldson, L. Healy, M. Nevill, and P. Hennis. 2020. "Mental Health and Movement Behaviour during the COVID-19 Pandemic in UK University Students: Prospective Cohort Study." *Mental Health and Physical Activity* 19: 100357. doi:10.1016/j.mhpa.2020.100357.

Savitsky, B., Y. Findling, A. Ereli, and T. Hendel. 2020. "Anxiety and Coping Strategies among Nursing Students during the Covid-19 Pandemic." *Nurse Education in Practice* 46: 102809. doi:10.1016/j.nepr.2020.102809.

Scotta, A., M. Cortez, and A. Miranda. 2020. "Insomnia Is Associated with Worry, Cognitive Avoidance and Low Academic Engagement in Argentinian University Students during the COVID-19 Social Isolation." *Psychology, Health & Medicine* 1–16. doi:10.1080/13548506.2020.1869796.

Spitzer, R. L., K. Kroenke, J. B. Williams, and B. Löwe. 2006. "A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7." *Archives of Internal Medicine* 166 (10): 1092–1097. doi:10.1001/archinte.166.10.1092.

Stebleton, M., K. Soria, and R. Huesman. 2014. "First-Generation Students' Sense of Belonging, Mental Health, and Use of Counseling Services at Public Research Universities." *Journal of College Counseling* 17 (1): 6–20. doi:10.1002/j.2161-1882.2014.00044x.

Sympson, S. 1999. "Validation of the Domain Specific Hope Scale: Exploring Hope in Life Domains". Unpublished Doctoral Dissertation. University of Kansas: Lawrence.

Vignoles, V.L., Z. Jaser, F. Taylor, and E. Ntontis. 2021. "Harnessing Shared Identities to Mobilize Resilient Responses to the COVID-19 Pandemic." *Political Psychology* 42 (5): 817–826. doi:10.1111/pops.12726.

Walton, G. M., and G. L. Cohen. 2007. "A Question of Belonging: Race, Social Fit, and Achievement." *Journal of Personality and Social Psychology* 92 (1): 82–96. doi:10.1037/0022-3514.92.1.82.

Wathelet, M., S. Duhem, G. Vaiva, T. Baubet, E. Habran, E. Veerapa, C. Debien, et al. 2020. "Factors Associated with Mental Health Disorders among University Students in France Confined during the COVID-19 Pandemic." *JAMA Network Open* 3: e2025591. doi:10.1001/jamanetworkopen.2020.25591.

World Health Organisation. 2020. "WHO Director-General's Opening Remarks at the Media Briefing on COVID-19 - 11 March 2020". WHO. https://www.who.int/director-general/speeches/detail/who-director-general-s-openinopening-remarks-at-the-edia-briefing-on-covid-19—11-march-2020