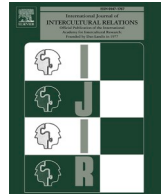




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Acculturation in lockdown: The effects of heritage and settlement COVID-19 concern and support on well-being

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ABSTRACT

During the first wave of the COVID-19 pandemic, global lockdowns were enforced due to rising cases and fatalities. While citizens were concerned about the spread of cases in their country, migrants found themselves concerned and ruminating about the COVID pandemic in both their settlement and heritage countries. This study investigated whether 1st to 3rd generation migrants' heritage and settlement acculturation predicted the extent of their concern about the consequences of the pandemic for heritage (heritage COVID-19 concern) and settlement culture (settlement COVID-19 concern). Additionally, the stress "buffering" and "main-effect" hypotheses of the social support were tested for the relationships between COVID-19 concern, remote support, and well-being (measured using flourishing and loneliness scales). A sample of 299 participants in the United Kingdom were recruited to complete three waves of a short-interval longitudinal survey (April to June 2020). This was then linked to data on the cumulative COVID-19 cases and deaths in heritage countries to account for differences between countries. Multi-level path analysis was used to analyse the data. Heritage and settlement acculturation predicted heritage and settlement COVID-19 concern, respectively. Each measure of acculturation also predicted the extent of remote support participants engaged in with people who shared those cultures. Settlement COVID-19 concern, but not heritage COVID-19 concern, predicted flourishing and loneliness. The buffering hypothesis was only supported by the negative association between settlement COVID-19 concern and flourishing waning as settlement remote support increased.

To suppress the spread of COVID-19, many countries imposed lock-downs. Governments ordered people to stay at home, preventing them from contact with others ([The Health Protection, 2020](#)), which deprived people during the pandemic of face-to-face social support with families and friends. Thus, while people were experiencing health and financial stressors, they also had to adjust to receiving social support remotely (e.g., phone and internet services). This study set out to examine the well-being of people with a migrant background during the UK's first lockdown in 2020. We investigate how well-being is associated with people's remote social support and concerns about the pandemic. The current study also examines how this remote support and COVID-19 concern are

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associated with the impact of COVID-19 and people's acculturation orientation. Key constructs and their associated hypotheses will now be introduced.

Acculturation

Acculturation is the process of change in identities, beliefs and behaviours after prolonged contact between different cultural groups (Berry, 1997; Ward & Geeraert, 2016). Migrants often acculturate towards their settlement culture and the heritage cultures that they, their parents or grandparents were born in (Cuellar et al., 1995). As such, our sample consists of people who live in the UK and either moved to the UK themselves or have parents or grandparents who moved to the UK (i.e. 1st – 3rd generation migrants).

Models proposed to explain the impact of acculturative experiences on stress, behaviour and psychological health (Berry, 1997; Doucerain, 2018; Safdar et al., 2003; Schmitz & Schmitz, 2022; Ward & Geeraert, 2016) can be used when considering how 1st – 3rd generation migrants experience of the COVID-19 pandemic may have been influenced by their engagement with multiple cultures. Those models include several aspects of the sociocultural environment that may influence individuals' outcomes, such as their social support networks, cultural context, and coping strategies. However, those models would need to be adapted to include stressors that are relevant to the COVID-19 pandemic, rather than generic stressors related to acculturation.

COVID-19 concern

COVID-19 related worries or fears have been linked with poor psychological health outcomes in a number of studies (Samuels et al., 2021; Sebrí et al., 2021; Szkody et al., 2021). For people with a migrant background, the levels of stressors they experience in relation to the impact and uncertainties of the pandemic may be dependent on both the situation in their settlement country and the country of their family's heritage. In this paper, the term "settlement COVID-19 concern" refers to individual's concerns about the potential impact of the pandemic on the people and the economy of the country they were living in. Similarly, the term "heritage COVID-19 concern" refers to the same concerns but associated with the country they or their ancestors moved from, rather than where they are currently living. As waves of the pandemic surged at different times for different countries, some may start to fear for the safety and livelihood of their family and friends in one country in one month and then experience it all over again for another country the next month. The extent that heritage COVID-19 concern is experienced may be positively predicted by the accumulative number of COVID-19 cases in one's heritage country per capita (COVID-19 cases per 10,000 people [CPTK]; Hypothesis 1a) or heritage country deaths per capita (COVID-19 deaths per 100,000 people [DPHK]; Hypothesis 1b).⁴ Furthermore, settlement COVID-19 concern could also be predicted by both COVID-19 cases and deaths per capita in one's heritage country (CPTK: Hypothesis 1c; DPHK: Hypothesis 1d).

In-group biases, such as in-group favouritism and empathy bias, indicate that individuals are more likely to be concerned about the welfare of people who share their social identities (Cao et al., 2015; Levine et al., 2005; Miranda et al., 2014). Thus, individuals who identify more strongly with their in-groups will be more concerned about how the COVID-19 pandemic may impact those groups. As such, we hypothesize that 1st – 3rd generation migrants who have greater heritage acculturation are more likely to experience greater heritage COVID-19 concern (Hypothesis 2a) and those with greater settlement acculturation will be more likely to have greater settlement COVID-19 concern (Hypothesis 2b).

Social support

Social support can be experienced through any actual or expected interactions that provide informational (e.g., instructions), emotional (e.g., encouragement), or instrumental (e.g., household chores) support (Gariépy et al., 2016; House et al., 1988). In acculturating samples, remote online social support has been associated with frequency of remote contact with people who share participants' heritage or settlement country (Cemalcilar et al., 2005; Hofhuis et al., 2019; L. Li & Peng, 2019). In these studies, contact with a cultural group (e.g., the heritage culture) has been associated with acculturation towards that culture (e.g., heritage acculturation), but not with acculturation towards other cultures (e.g., settlement acculturation). Consequently, we expect heritage acculturation to positively predict heritage remote support – support from people who share their heritage culture (Hypothesis 3a) and settlement acculturation to positively predict settlement remote support (Hypothesis 3b).

Previous research has shown that following natural disasters social support increases as friends, families, and communities band together to support each other (Bokszczanin, 2012). During the COVID-19 pandemic people may have been more likely to provide and receive informational and social support from countries where the impact was most severe. Additionally, previous research has shown that remote social support increased during stay-at-home orders (Brown & Greenfield, 2021). This would suggest that migrants whose heritage countries have experienced the highest prevalence of COVID-19 cases and deaths would likely experience more social support either through heritage remote support (CPTK: Hypothesis 4a; DPHK: Hypothesis 4b) or settlement remote support (CPTK: Hypothesis 4c; DPHK: Hypothesis 4d).

⁴ Due to this study being conducted in a single settlement country (the UK) during the first wave of the COVID-19 pandemic in the UK, the effects of the accumulative cases of COVID-19 and related deaths in the UK could not be separated from the effects of time. As such, no hypotheses have been proposed in relation to COVID-19 cases and related deaths in the UK.

Well-being

Social support has been associated with improved mental health in youth (Rueger et al., 2016), lower levels of burnout at work (Woodhead et al., 2016), and prefrontal cortical thickness in aging individuals (Sherman et al., 2016). The role of social support in well-being has also been demonstrated among acculturating populations (Sirin et al., 2013; Sullivan, 2010). Although well-being is regularly found to be associated with social support from settlement culture contacts, there have been mixed findings for the associations between those variables and social support from heritage culture contacts (Falavarjani et al., 2020; Geeraert et al., 2014; L. Li & Peng, 2019; van der Laken et al., 2019). It is unclear, however, why some studies have found heritage and settlement sources of social support have different associations with psychological variables. Whereas heritage contacts can provide emotional support, settlement support may be more likely to influence how individuals navigate the sociocultural context of their settlement culture. Alternatively, the differences may occur because face-to-face support is more effective than remote support (Lewandowski et al., 2011) and social support from settlement culture contacts may be more likely to be face-to-face than heritage culture social support. The first lockdown of the COVID-19 pandemic in the UK presented an opportunity to unpick that association because almost all opportunities for face-to-face support were prohibited (The Health Protection, 2020) and so any social support from most settlement and heritage contacts was forced to become remote. In the US, the use of remote communication was found to increase during lock-downs, and increased use was associated with better well-being (Brown & Greenfield, 2021). Other studies have found that increased social support has been positively associated with mental health during the COVID-19 pandemic (Liu et al., 2020).

Loneliness is a psychological response to having unrealised expectations of one’s social relationships (Wang et al., 2018; Zhang & Dong, 2022) which has been significantly associated with social support during the COVID-19 pandemic (Grey et al., 2020). If all forms of social support can be used to meet one’s expectations of social relationships, we would expect loneliness to be predicted by heritage remote support (Hypothesis 5a), settlement remote support (Hypothesis 5b), and face-to-face support (Hypothesis 5c).

However, as loneliness has conceptual overlap with social support (Wang et al., 2018) it is useful to additionally measure other more distinct forms of well-being. Flourishing is a measure of positive well-being, which incorporates feelings of purpose and enthusiasm (Diener et al., 2009), as opposed to the negative well-being measured by loneliness. Positive and negative forms of well-being have been argued to be distinct constructs that can be separately influenced by antecedents such as social support (du Plooy et al., 2019). Flourishing has previously been associated with social support in migrant samples (du Plooy et al., 2019; Yanardağ et al., 2022; Yildirim et al., 2024). We hypothesise that flourishing will be predicted by all three measures of social support (heritage remote support: Hypothesis 5d; settlement remote support: Hypothesis 5e; face-to-face support: Hypothesis 5f)

When an individual experiences a situation for which their physical and psychological resources are inadequate, their psychological well-being can deteriorate (Lazarus & Folkman, 1984; Yılmaz Koğar & Koğar, 2024). Individuals with high settlement or heritage COVID-19 concern will likely view the national health and economic impacts of COVID-19 as situations that they have inadequate resources to resolve. Therefore, heritage COVID-19 concern is expected to positively predict loneliness (Hypothesis 6a) and negatively predict flourishing (Hypothesis 6b). Similarly, settlement COVID-19 concern should positively predict loneliness (Hypothesis 6c) and negatively predict flourishing (Hypothesis 6d).

Main effect or stress-buffering

Two mechanisms have been proposed to account for the positive impact of social support (Cohen & Wills, 1985; Rueger et al., 2016; Taylor et al., 2007), namely a general positive effect, also known as the *main effect*, and a moderating role in which social support acts as a *buffer* in the relation of stress on psychological health.

The *main-effect hypothesis* predicts that social support enables individuals to experience more frequent positive affect (positive emotions) and encourages better health decisions (Chin et al., 2023; Cohen & Wills, 1985). In the context of remote support, the

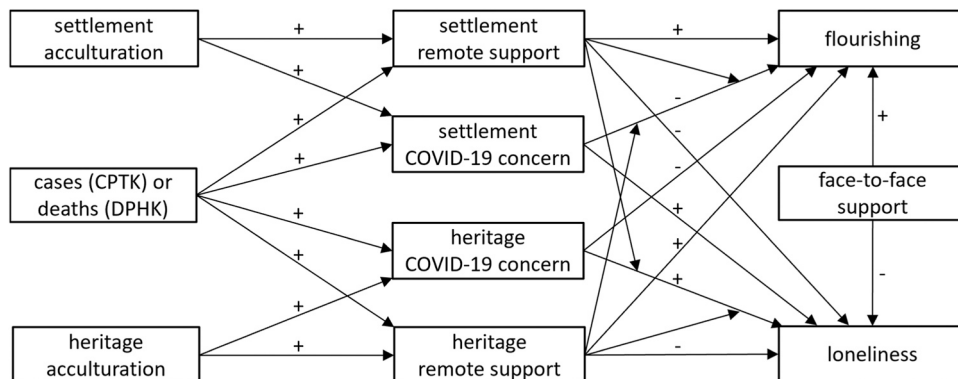


Fig. 1. Hypothesised Relationships between Variables at the Individual Level. Note. CPTK = COVID-19 cases per 10,000 people in the heritage country. DPHK = COVID-19 related deaths per 100,000 people in the heritage country. For simplicity, CPTK and DPHK are displayed here sharing structural relationships, but they have separate hypotheses and have been modelled as different variables.

main-effect hypothesis would be supported in our study if Hypotheses 5a, 5b, 5d, and 5e were supported.

In the context of the COVID-19 pandemic, the *buffering hypothesis* would predict that the effects of COVID-19 concern on psychological health would be weaker for individuals who receive high levels of social support compared to those with lower levels. During the pandemic, heritage and settlement remote support may have had distinct roles in buffering the negative psychological effects of heritage and settlement COVID-19 concern respectively. When faced with the existential threats, such the COVID-19 pandemic, individuals often affirm their ingroups and provide solidarity for people within that group (Jutzi et al., 2023). As such, remote support from people of a particular national cultural group may have a particularly strong buffering effect on COVID-19 concern about that nation.

To test the buffering hypothesis, we predict higher heritage remote support buffers the relationship between heritage COVID-19 concern and loneliness (Hypothesis 7a) and between heritage COVID-19 concern and flourishing (Hypothesis 7b). We also expect higher settlement remote support to buffer the relationships between settlement COVID-19 concern and loneliness (Hypothesis 7c) and between settlement COVID-19 concern and flourishing (Hypothesis 7d).

The current study

For the current study, we have adapted existing models of acculturative experiences and the buffering hypothesis for the context of 1st to 3rd generation migrants living in the UK during the first wave of the COVID-19 pandemic. During that time, they may have experienced heritage and settlement COVID-19 concern and many people had to rely on remote social support. Fig. 1 summarises the structure and directions of the hypotheses that we have presented throughout the introduction.

As the COVID-19 pandemic was rapidly evolving in the second quarter in 2020, it was of interest to understand how participants' responses to the variables we measured may change over brief intervals. As such, we invited participants to repeat the survey every two days up to three times. As the circumstances were rapidly and unpredictably evolving, we set out no hypotheses for our exploratory analyses of within-subject changes over time and covariances between variables.

Method

Design and participants

A sample of British residents with a migrant background (see Appendix B) participated in the study ($N = 299$; 78 % female; $M_{age} = 33.7$, $SD = 11.3$; 80.27 % 1st generation, 8.36 % 2nd generation, and 11.37 % 3rd generation). Inclusion criteria required participants to have a migrant background and to be resident in the UK at the time of the survey. Data was collected across three surveys with reasonable response rates across surveys ($N_{t1} = 299$; $N_{t2} = 204$, 68 %; $N_{t3} = 168$, 56 %).

Procedure

Ethical approval for the project was attained from the University of Essex' Ethics Committee in April 2020. The data collection took place during a two-month period from the 24th April to 28th June 2020, which corresponded with the first wave of COVID-19 cases and lockdown in the UK.

Surveys were distributed, using Qualtrics, by convenience and snowball sampling through social media. First, participants provided informed consent and contact details, before proceeding with the first survey. Participants were sent an email invite to participate in the second and third survey (at two-day intervals). Where questions were asked about the heritage country, a targeted approach was used by personalising questions so they were specific to each participant's heritage culture and country.

Measures

Demographics and acculturation questions only appeared in the first survey. Scales assessing COVID-19 concern, remote support, loneliness, and flourishing were presented at each time wave.

Demographics

Participants were asked for their gender, age, and heritage culture and answered questions regarding their migrant generation status.

Acculturation

At t_1 only, acculturation was assessed through the 18-item version of the Vancouver Index of Acculturation (Ryder et al., 2000; Testa et al., 2019). The scale assesses participants' acculturation orientation on a range of topics, including cultural practices, traditions, values and social interactions. For each culture, participants were asked to indicate their agreement using a scale from 1 (= strongly disagree) to 7 (= strongly agree) on items such as 'I often participate in traditions of *my heritage culture*' for the heritage culture and 'I often participate in British cultural traditions' for the settlement culture. Both scales had good reliability (α 's > .80).

COVID-19 concern

Building upon previous research on perceptions of epidemics (Goodwin et al., 2011; Wise et al., 2020), we developed a national

COVID-19 concern scale for inclusion in all three waves. For each culture, the scale consisted of 4 questions asking participants how often they thought about the potential consequences of COVID-19 (see Appendix A). For instance, participants were asked to indicate the frequency using a scale from 1 (= very rarely) to 7 (= very often) on items such as “found it difficult to concentrate because you are concerned about how COVID-19 is spreading in the UK?”. Both the heritage and settlement COVID-19 concern scales had good reliability in all surveys (all α 's >.80).

Twelve participants reported having no family or friends living in their heritage country. They were not asked the question relating to family or friends, and their score for heritage COVID-19 concern was based on the remaining three questions.

Social support

At each time wave, participants were asked questions about the extent of social support they received from three groups of contacts. People they met face-to-face (face-to-face support), British people they interacted with remotely via phone or digitally (settlement remote support), and heritage culture people who they interacted with remotely (heritage remote support). Questions assessed both qualitative and quantitative aspects of social support and were measured on a scale from 1 (= not at all) to 7 (= a lot).

Four items were based on Demes and Geeraert's (2015) adapted items from the Brief COPE Survey's Emotional and Instrumental support items (Carver, 1997). The other four were adapted from measures previously used in cross-cultural research and research on social media usage (Cemalcilar et al., 2005; Gil de Zúñiga et al., 2012; Ryder et al., 2000). For instance, one item asked “in the last two days how many times have you interacted with them?” in relation to each group. For each survey the scale had excellent reliability for all groups (α 's >.90).

Loneliness

Each wave included the six items of Neto, (1992) “Isolation and Withdraw” factor of The Revised UCLA Loneliness Scale (Russell et al., 1980). Using a scale from 1 (= strongly disagree) to 7 (= strongly agree), participants indicated their agreement to items such as “I feel part of a group of friends”. The scale had good reliability at each time wave (α >.80).

Flourishing

Diener et al. (2009) eight-item flourishing scale was included in each wave to measure participants' perceptions of their psychological resources and strengths. Using a scale from 1 (= strongly disagree) to 7 (= strongly agree), participants indicate their agreement to items such as “people respect me”. The scale had good reliability across waves (α >.80).

COVID-19 data

COVID-19 scores were not measured directly, but either computed or gathered from external databases. For each participant, a measure of “Day” was created based on the number of days between the UK passing 100 COVID-19 cases (on 6th March 2020) and them answering the first survey (Beltekian et al., 2020).

The values for the number of COVID-19 cases and related deaths in each country were retrieved from the Data on COVID-19 (coronavirus) database (Beltekian et al., 2020). For each day that a participant answered one of the three survey waves, we recorded the current population adjusted values for the accumulative number of COVID-19 cases and related deaths in that participant's heritage country and the UK. For modelling purposes, the variables were each constructed with a different denominator. The number of heritage cases was expressed as *Cases Per Ten Thousand* people (CPTK). The number of heritage deaths was expressed as *Deaths Per Hundred Thousand* people (DPHK). Initially, measures for the number of COVID-19 cases and related deaths in the settlement country (the UK) for each day were also computed. However, these were not included in the model due to a lack of variability within the timeframe.

Results

Our theoretical model (shown in Fig. 1) was tested as a multilevel path analysis (Singer & Willett, 2003). The analysis was conducted in Mplus version 8 (Muthén & Muthén, 1998-2017) using robust maximum likelihood estimation. The analysis accounted for the clustering of waves ($N = 671$) within individuals (using the TYPE = TWOLEVEL command), and the clustering of individuals ($N = 299$) within heritage nations ($N = 55$) (using the TYPE = COMPLEX command).⁵ Time was represented as a linear predictor (coded 0, 1, 2) to test whether any of the variables changed across waves. Within-person associations between the variables were also assessed while accounting for individual-level associations. In line with our model (shown in Fig. 1), structural paths were specified between variables at the individual level. Additionally, between-subject covariances were specified for the following pairings: settlement remote support with settlement COVID-19 concern, heritage remote support with heritage COVID-19 concern, face-to-face support with both settlement and heritage COVID-19 concern, loneliness and flourishing. See Appendix C for summary statistics and correlations between the variables included in the model.

⁵ Our analytic approach accounts for the clustering at the highest-level, using a so-called sandwich estimator (“TYPE = COMPLEX” command in Mplus). This estimator corrects the standard errors for the clustering at the highest level (level 3: heritage cultures). An alternative approach would be to allow group mean centring of the variables. To conduct group mean centring we attempted to run the model as a fully three-level model. The model was not able to converge, presumably due to power limitations.

Within-subject change

Significant within-subject differences were found between time waves for many of the repeated measures (see Table 1). As expected COVID-19 cases (CPTK) and deaths (DPHK) increased over time. Interestingly, scores for remote support and COVID-19 concern for both settlement and heritage cultures reduced over the three surveys, as did scores for face-to-face support. Flourishing also reduced from the first to third survey, but loneliness did not. Within-subject covariation between variables is reported in Appendix D.

Between-subjects analyses

Within the analysis, the relationships between the modelled variables across all participants were investigated. Standardized weights and R^2 values are reported for each analyses.

COVID-19 concern

The variance explained in the analysis was 5 % for settlement COVID-19 concern, a small effect and 21 % for heritage COVID-19 concern, a medium to large effect (see Table 2, left column). Participants with more COVID-19 cases per 10,000 people in their heritage country (CPTK) were significantly more likely to report higher levels of heritage COVID-19 concern ($\beta = .31, p < .05$). However, the effect did not emerge for settlement COVID-19 concern. Nor did the day the survey was taken or COVID-19 deaths (DPHK) predict COVID-19 concern. As expected, participants who showed stronger settlement or heritage acculturation were more likely to have respectively stronger settlement or heritage COVID-19 concern ($\beta = .21, p < .05; \beta = .38, p < .001$). In contrast, participants' level of acculturation with one culture was not associated with their COVID-19 concern about the other country.

Remote support

Next, remote support was examined (Table 2, right column). The variance explained was 25 % for settlement remote support, a large effect, and 10 % for heritage remote support, a medium effect. Participants who answered the surveys earlier were more likely to report greater settlement remote support, but no such effect emerged for heritage remote support. As expected, participants with greater settlement or heritage acculturation were more likely to report greater settlement or heritage remote support respectively ($\beta = -.37, p < .001; \beta = .31, p < .001$). Interestingly, the number of heritage cases (CPTK) was associated with settlement remote support, however this relationship was negative ($\beta = -.17, p = .019$). For face-to-face support, neither time nor any of the COVID-19 or acculturation measures emerged as a significant predictor.

The model also examined covariation between remote support and COVID-19 concern. Settlement remote support covaried with heritage COVID-19 concern ($\beta = 0.32, SE = 0.064, p < .001$) as did heritage remote support and heritage COVID-19 concern ($\beta = 0.52, SE = 0.054, p < .001$). However, neither measure of COVID-19 concern significantly covaried with face-to-face support (settlement: $\beta = 0.04, SE = 0.09, p = .704$; heritage: $\beta = 0.04, SE = 0.07, p = .601$).

Well-being

Additionally, the model specified the regression of well-being (loneliness and flourishing) on time, number of heritage COVID-19 cases (CPTK) and deaths (DPHK), and heritage and settlement measures of COVID-19 concern and social support (see Table 3). The model also specified the interactions between settlement COVID-19 concern and settlement remote support and between heritage COVID-19 concern and heritage remote support. Flourishing and loneliness were modelled to covary, this covariation, unsurprisingly, was negatively ($\beta = -0.50, SE = 0.064, p < .001$). Overall, the model explained 23 % and 21 % of the variance for loneliness and flourishing respectively, which are medium to large effects.

As expected, participants with greater settlement COVID-19 concern reported higher levels of loneliness ($\beta = .24, p < .001$) and

Table 1
COVID-19 Cases and Deaths, Social Support, COVID-19 Concern, and Well-being regressed on Time Wave. Standardised coefficients as measures of effect size are provided.

Variable	β	SE	p
Heritage COVID-19			
Cases (CPTK)	.53	.06	<.001
Deaths (DPHK)	.57	.06	<.001
Social Support			
Settlement Remote	-.12	.04	.003
Heritage Remote	-.16	.04	<.001
Face-to-face	-.15	.05	.001
COVID-19 Concern			
Settlement	-.45	.05	<.001
Heritage	-.43	.04	<.001
Loneliness	-.13	.04	.001
Flourishing	-.07	.05	.108

Note. Positive regression coefficients indicate that the variable increased across time waves. CPTK = Number of COVID-19 cases per 10,000 people in heritage country. DPHK = Number of COVID-19 related deaths per 100,000 in heritage country.

Table 2
 COVID-19 Concern and Social Support Regressed on Settlement and Heritage Acculturation and Heritage COVID-19 Cases and Deaths. Standardised coefficients and R^2 as measures of effect size are provided.

Variable	COVID-19 Concern						Remote Support					
	Settlement			Heritage			Settlement			Heritage		
	β	SE	p	β	SE	p	β	SE	p	β	SE	p
Day	.03	.05	.578	-.07	.07	.327	-.22	.07	.001	.06	.07	.362
Heritage COVID-19												
Cases (CPTK)	-.08	.08	.338	.30	.12	.013	-.17	.07	.019	-.04	.12	.745
Deaths (DPHK)	.08	.08	.364	-.04	.14	.769	.11	.06	.083	.03	.13	.798
Acculturation												
Settlement	.20	.08	.017	-.05	.06	.427	.36	.06	<.001	-	-	-
Heritage	-.04	.07	.575	.36	.06	<.001	-	-	-	.30	.06	<.001
Model Statistics												
R^2	.05			.21			.25			.10		
p	.209			.001			<.001			.018		

Note. “-” indicates that a relationship was not modelled. CPTK = Number of heritage COVID-19 cases per 10,000. DPHK = Number of heritage COVID-19 related deaths per 100,000.

Table 3
 Loneliness and Flourishing Regressed on COVID-19 Concern, Social Support and COVID-19 Cases and Deaths. Standardised coefficients and R^2 as measures of effect size are provided.

Variable	Loneliness			Flourishing		
	β	SE	p	β	SE	p
Intercept						
Day	.11	.08	.135	-.04	.09	.663
Heritage COVID-19						
Cases (CPTK)	-.04	.09	.636	.10	.12	.436
Deaths (DPHK)	.02	.08	.799	.05	.16	.769
COVID-19 Concern						
Settlement	.26	.08	.001	-.22	.09	.013
Heritage	.08	.10	.427	-.07	.10	.465
Social Support						
Remote Settlement	-.19	.09	.037	.30	.09	<.001
Remote Heritage	.12	.09	.212	.18	.09	.033
Face-to-face	-.33	.06	<.001	.27	.06	<.001
Social Support x Concern						
Settlement	-.02	.07	.778	.13	.06	.016
Heritage	-.02	.08	.762	-.02	.08	.818
Model Statistics						
R^2	.23			.21		
p	<.001			<.001		

Note. CPTK = Number of heritage COVID-19 cases per 10,000. DPHK = Number of heritage COVID-19 related deaths per 100,000.

lower levels of flourishing ($\beta = -.18, p < .05$). In contrast and inconsistent with hypotheses, heritage COVID-19 concern was not associated with either well-being variable. In terms of social support, flourishing was positively associated with settlement remote support ($\beta = .28, p < .001$), heritage remote support ($\beta = .16, p < .05$), and face-to-face support ($\beta = .27, p < .001$). Loneliness was only significantly predicted by face-to-face support ($\beta = -.33, p < .001$) and settlement remote support ($\beta = -.19, p = .037$). The interaction between settlement remote support and settlement COVID-19 concern significantly predicted participant’s levels of flourishing ($\beta = .13, p < .05$). This interaction was probed using a Johnson-Neyman plot (see Fig. 2). This revealed that the strength of the negative association between settlement COVID-19 concern and flourishing was weaker for participants who had more settlement remote support. In other words, settlement remote support buffered the relationship between settlement COVID-19 concern and flourishing. None of the other interactions between measures of remote support and COVID-19 concern were significant.

Taken together, our final model revealed significant paths between acculturation and COVID-19 cases on the one hand and remote support and COVID-19 concern on the other. In turn, COVID-19 concern and social support were predictors for well-being. The results of each hypothesis are summarised in Table 4 and all significant between-subject relationships between modelled variables are summarized in Fig. 3.

Indirect effects

Within the multilevel path analysis, the indirect relationships between the COVID-19 cases and deaths variables and well-being through remote support variables were also assessed. Although no significant indirect effects were found, the relationship between

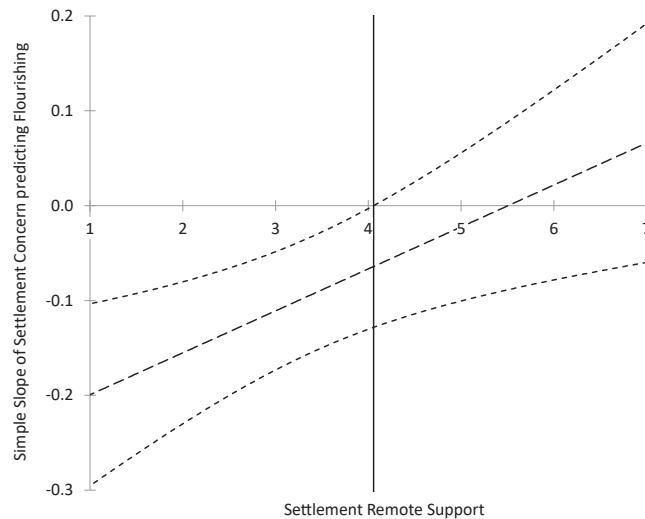


Fig. 2. Johnson – Neyman Plot of the Interaction between Settlement Remote Support and Settlement COVID-19 Concern in Predicting FlourishingNote. Using CAHOST v1.0 (Carden et al., 2017), the graph shows the simple slopes (incl. 95 %-CI) of settlement COVID-19 concern predicting flourishing, at different levels of settlement remote support. As social support increases the strength of the negative association between COVID-19 concern and flourishing reduces. The relationship between COVID-19 concern and flourishing ceases to be significant above a value of 4.05 for settlement remote support (vertical line).

Table 4
Comparison of Hypothesised and Observed Relationships between Variables.

#	Relationship	Hypothesis	Result
1a	CPTK → Heritage COVID-19 concern	+	+
1b	DPHK → Heritage COVID-19 concern	+	ns
1c	CPTK → Settlement COVID-19 concern	+	ns
1d	DPHK → Settlement COVID-19 concern	+	ns
2a	Heritage acculturation → Heritage COVID-19 concern	+	+
2b	Settlement acculturation → Settlement COVID-19 concern	+	+
3a	Heritage acculturation → Heritage remote support	+	+
3b	Settlement acculturation → Settlement remote support	+	+
4a	CPTK → Heritage remote support	+	ns
4b	DPHK → Heritage remote support	+	ns
4c	CPTK → Settlement remote support	+	-
4d	DPHK → Settlement remote support	+	ns
5a	Heritage remote support → Loneliness	-	ns
5b	Settlement remote support → Loneliness	-	-
5c	Face-to-face support → Loneliness	-	-
5d	Heritage remote support → Flourishing	+	+
5e	Settlement remote support → Flourishing	+	+
5 f	Face-to-face support → Flourishing	+	+
6a	Heritage COVID-19 concern → Loneliness	+	ns
6b	Heritage COVID-19 concern → Flourishing	-	ns
6c	Settlement COVID-19 concern → Loneliness	+	+
6d	Settlement COVID-19 concern → Flourishing	-	-
7a	Heritage remote support x Heritage COVID-19 concern → Loneliness	M	ns
7b	Heritage remote support x Heritage COVID-19 concern → Flourishing	M	ns
7c	Settlement remote support x Settlement COVID-19 concern → Loneliness	M	ns
7d	Settlement remote support x Settlement COVID-19 concern → Flourishing	M	+

Note. # = hypothesis number; + = positive relationship; - = negative relationship; M = moderation, ns = not significant

COVID-19 cases (CPTK) and flourishing via settlement remote support approached significance ($\beta = -.05, p = .057$). This suggests that participants from heritage countries with higher accumulative numbers of COVID-19 cases per capita at the time of the survey tended to be more likely to have lower quality remote support with British people. In turn, those with worse remote support with British people were then more likely to report lower levels of flourishing.

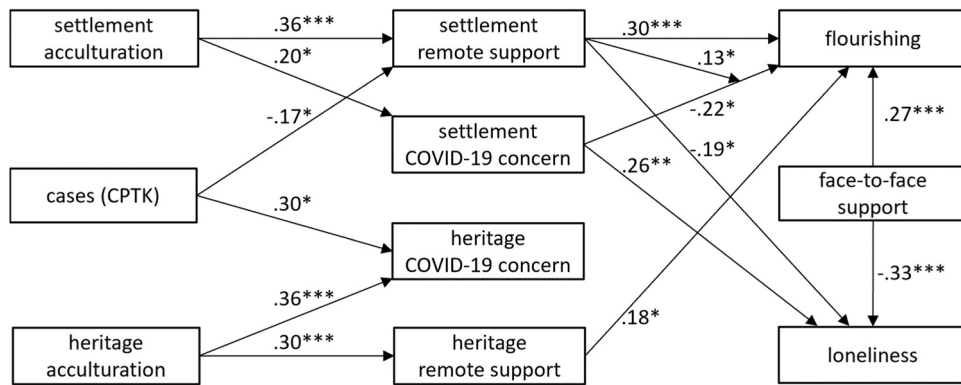


Fig. 3. Structural Path Model showing Significant Hypothesised Between-subject Relationships. Note. Values represent the standardised coefficient (β). CPTK = COVID-19 cases per 10,000 people in the heritage country. DPHK = COVID-19 related deaths per 100,000 people in the heritage country was not a significant predictor of any variables (so is not shown). * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

The present study examined how the well-being of UK based 1st to 3rd generation migrants during the first wave of the COVID-19 pandemic was influenced by their experience of social support and COVID-19 concern. A short interval longitudinal design with staggered start points was assessed using multi-level path analysis to assess effects within and between subjects.

Greater settlement acculturation predicted higher settlement remote support and greater COVID-19 concern. The equivalent relationships were also present between heritage acculturation, heritage remote support and heritage COVID-19 concern.

Settlement COVID-19 concern was associated with lower levels of flourishing and higher levels of loneliness. Whereas heritage COVID-19 concern predicted neither of those well-being variables. Both settlement- and heritage remote support positively predicted flourishing but only settlement remote support significantly predicted loneliness. In addition, settlement remote support moderated the relationship between settlement COVID-19 concern and flourishing such that as participants reported greater levels of remote support from the settlement culture contacts, the strength of the negative association between settlement COVID-19 concern and flourishing diminished.

The buffering hypothesis, which argues that social support should moderate the link between stressors and well-being (Cohen & Wills, 1985), was only supported in one of the four paths that tested that hypothesis. The limited support for the buffering hypothesis may be due to the modality of social support. Rui and Guo (2022) found support for the buffering hypothesis for perceived social support but not received social support. Perceived social support relates to whether people believe they get support when they need it whereas received social support relates to whether people have recently received social support.

Settlement remote support predicted both well-being outcomes, but heritage remote support only predicted loneliness. This may be due to a greater variation in coping strategies existing amongst the 55 heritage cultures than within the single settlement context (UK). In collectivist cultures people tend to feel more supported just by knowing they belong to a network of family and friends, which is known as implicit support. Whereas in less collectivist countries people explicitly ask for support with the stressors they are experiencing, which is known as explicit support and is represented by the social support items in this study (Taylor et al., 2007). Cultural collectivism has also been associated with better well-being and lower depression (Bartucz et al., 2022; Z. Li et al., 2021), however relying on culturally collectivist family and friends for explicit support may negatively impact ones well-being as it may threaten the harmony of their network (Liang & Bogat, 1994). Alternatively, as explicit support may not be the most culturally appropriate form of support, participants may not resort to explicit support from their culturally collectivist contacts unless their well-being is particularly poor. That could induce a negative association between social support and well-being amongst cultures with highest collectivism. As such, if the heritage cultures in our sample were on average more collectivist than UK culture, then you might expect our finding that heritage remote support had a weaker association with flourishing than did settlement remote support.

In the present study settlement COVID-19 concern predicted well-being, but heritage COVID-19 concern did not. This aligns with Chu and Lu's (2021) finding that, for US based migrants of Chinese heritage, COVID-19 related US media use was linked to psychological distress, whereas Chinese media use was not. This may be because in both studies, the current situation in the settlement country may have more personal relevance to the physical health and livelihood of participants than would the situation in the heritage country. Additionally, participants on average reported higher levels of settlement COVID-19 concern than they did heritage COVID-19 concern.

The pandemic situation in the settlement country being more directly relevant to participants lives, may also explain why loneliness was predicted by face-to-face support and settlement remote support but not heritage remote support. Settlement contacts and face-to-face contacts may have been more likely to be experiencing the same effects of the pandemic in the heritage country. Some heritage remote contacts will have been living in the heritage country and thus may have had a different experience of the pandemic at different time points. This may indicate that to reduce feelings of loneliness one needs the support of people who are experiencing the same reality.

This study also explored how acculturation may have influenced migrants' experiences during the first wave of the COVID-19 pandemic. Acculturation orientations positively predicted remote support with people who share that culture and predicted COVID-19 concern, which is in alignment with the prevailing acculturation theories (Ward & Geeraert, 2016).

The scale and magnitude of the COVID-19 pandemic, had not been seen since the influenza pandemic of 1918–1920. Thus, given the unprecedented nature of the events surrounding the study, it is hard to infer its implications beyond the unique circumstances of the COVID-19 pandemic. Nonetheless, we believe that the study is insightful in a number of ways. One, the study provides a direct test of the stress main effect and buffering hypothesis in a real world scenario. Two, the impact of the heritage cultural constructs (acculturation, remote support, and COVID-19 concern) was rather modest in comparison with the repeated associations between settlement cultural constructs and flourishing and loneliness. This may imply that in time of need, we turn to those people physically closest to us. Three, settlement remote support and face-to-face support were predictors for both measures of well-being. This would suggest that organisations that help newcomers need to ensure that they can provide appropriate levels of support within the settlement context.

Strengths and limitations

A short-interval longitudinal design with multi-level path analysis enabled this study to consider both between- and within-subject relationships which could not be assessed using purely cross-sectional designs. Allowing for participants to start the study at any point within an approximately two-month window additionally provided some insight into how behaviours and the psychological well-being changed as the pandemic progressed in the UK.

This study was conducted during the first few months of the COVID-19 pandemic in the UK. At that time, it was unclear how severely COVID-19 may impact individual's lives communities and national economies. Additionally, it was the first time that many people in the UK had ever experienced their government imposing restrictions on when they could leave their homes and how many people they could meet with (Johnson, 2020). If this study was repeated now or during a future pandemic or national lockdown, participants may respond differently because the lockdowns and threats would no longer be novel. For instance, people may not comply as consistently with lockdown laws which may mean that people can obtain enough face-to-face support that remote support loses its impact.

Conclusion

Our results indicated that acculturation strategies could be used to predict how much migrants worry about the consequences of COVID-19 for the country that they live in and their heritage country. Additionally remote support during a pandemic may only be as effective as face-to-face support at influencing particular aspects of well-being.

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CRedit authorship contribution statement

Matthew J. Easterbrook: Writing – review & editing, Writing – original draft, Software, Resources, Methodology, Formal analysis, Data curation. **Nicolas Geeraert:** Writing – review & editing, Writing – original draft, Supervision, Software, Resources, Project administration, Methodology, Conceptualization. **Benedict Hignell:** Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declarations of Competing Interest

None.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.ijintrel.2024.102095](https://doi.org/10.1016/j.ijintrel.2024.102095).

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