

## Journal Pre-proof

The trajectory of loneliness in UK young adults during the summer to winter months of COVID-19

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The trajectory of loneliness in UK young adults during the summer to winter months of COVID-

19

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Highlights

- A U-shape longitudinal trend was observed in self-reported loneliness from June to November 2020, with a sharp rise during the winter months
- Young adults with long-standing physical or mental health conditions were more likely to feel lonely
- A higher household income, having a job, or being in school were associated with less loneliness
- While greater emotional support was associated with less reported loneliness in males, no association was shown for females.

## Abstract

Current research has shown that young adults are at the greatest risk of loneliness during the pandemic. Drawing a sample from the Understanding Society COVID-19 survey, this study investigated the trajectory of loneliness in young adults (aged 18-25) from June to November 2020 and its association with emotional support, demographic and health factors. The analytic sample included 419 young adults (296 females; 123 males). Growth curve modelling revealed a U-shape longitudinal trend in self-reported loneliness, with a sharp rise during the winter months under the national lockdown. Young adults with long-standing physical or mental health conditions were more likely to report feeling lonely. Those with a lower household income, who were unemployed or not in school reported higher levels of loneliness. Gender was found to moderate the association between emotional support and loneliness. While greater emotional support was associated with less loneliness in males, no association was shown for females. The current findings add to our understanding of how the pandemic has affected the mental health of young adults and the differential influences of emotional support as a potential coping strategy for males and females.

### Keywords:

loneliness; COVID-19; emotional support; young adults; gender; trajectory; mental health;

## 1. Introduction

On 23 March 2020, the UK announced the “stay at home” order and entered the first national lockdown in response to the COVID-19 pandemic. Such an enforced isolation can be associated with a subjective feeling of lack of companionship or a mismatch between one’s perceived and desired social relationships, which is called loneliness (Reinhardt et al., 2020). Recent studies among UK residents have found that young adults were at the highest risk of experiencing loneliness during COVID-19 lockdowns (Bu et al., 2020; Li & Wang, 2020; O’Connor et al., 2020). These studies have focused on the early months of the pandemic, with one study finding that individuals aged between 18 and 29 reported higher levels of loneliness, but experienced a decrease in loneliness from March to May 2020. However, research has yet to examine the trajectory of loneliness for young adults during the summer to winter months of 2020. Given that loneliness levels are likely to vary due to changes in restrictions, along with a possible rise during the winter months (Victor et al., 2015), this period is an important one to investigate.

The present study examined the trajectory of self-reported loneliness for young adults from June to November 2020 during the COVID-19 pandemic. We focused on young adults aged 18 to 25, in line with the theory of emerging adulthood. This theory characterises this period as one of identity explorations, new independence, physical separation from family and friends, intimate relationships, school transitions and entry into the workforce (Arnett, 2015). Not surprisingly, this is also the period during which

loneliness is often the most prevalent across the lifespan (Qualter et al., 2015). Being lonely in young adulthood has a range of negative implications, which can persist into later life. Young adults who are lonelier tend to have more mental health problems, engage in more physical health risk behaviours, adopt more negative coping strategies, and have a lower income (Matthews et al., 2019; Von Soest et al., 2020). In all, existing literature highlights the importance of investigating the factors associated with loneliness in young adults during the COVID-19 pandemic for intervention purposes.

One factor that has been identified as an effective coping strategy under the current pandemic is emotional support (Office for National Statistics, 2020). In a sample of more than 35,000 adults in the UK, for instance, Bu and colleagues (2020) found that having more than three close friends was a protective factor against loneliness during the strict lockdown period (March to May 2020). Gender differences have also been shown in the stress-buffering effect of social support for young adults. In a college student sample aged 18-25, for example, Lee and Goldstein (2016) found a greater adverse impact of low levels of emotional support on loneliness in females than in males. The authors concluded that this may be due to females' greater sensitivity to lack of support when compared to males.

A number of demographic and health factors have further been found to relate to loneliness during the pandemic. COVID-focused studies with UK samples have shown that females and those with low income or who are unemployed were more likely to experience loneliness, whereas those living with a romantic partner were less likely to feel lonely (Bu et al., 2020; Li & Wang, 2020; O'Connor et al., 2020). Other important covariates related to increased loneliness during the pandemic include physical and mental health problems (McGlone & Long, 2020; O'Connor et al., 2020).

Drawing upon a longitudinal, representative sample from the Understanding Society Covid-19, the present study used growth curve modelling to assess the trajectory of loneliness among UK young adults (aged 18 to 25) from June to November 2020. Given the increased need for intimate relationships during young adulthood (Qualter et al., 2015), we expected that self-reported loneliness changes in line with lockdown restrictions. We further examined how emotional support, demographic and health factors influence the trajectory of self-reported loneliness. In line with previous research (Bu et al., 2020; Li & Wang, 2020; O'Connor et al., 2020), we expected that those who report more emotional support, live with romantic partners, are employed or in school and have a larger household income report less loneliness; while those with a physical or mental health condition report more loneliness. Lastly, we investigated whether gender differences emerge in the stress-buffering effect of self-reported emotional support on self-reported loneliness, with expectations that emotional support has a greater impact on females (Lee & Goldstein, 2016).

## **2. Method**

### **2.1 Data Source**

The participants were drawn from Understanding Society COVID-19 survey, which is a national-wide, longitudinal panel survey of UK households taken from the Understanding Society UK Household Longitudinal Study (UKHLS). The Understanding Society COVID-19 survey focuses on how the pandemic has influenced individuals and families across the UK. The participants were invited within the main Understanding Society sample and allows analysis of a large sample that is representative of the population. Ethical approval for the survey was granted by the University of Essex Ethics Committee.

The Understanding Society COVID-19 survey was gathered monthly from April 2020 to June 2020, and then every two months from September 2020. The first four questionnaires were fielded to all members who had completed at least one of the last two waves of the main UKHLS. From Wave 5 onwards, only those who participated in at least one of the first waves of the study were sent the questionnaire.

The present study examined data for 18-25-year-olds collected in June (Wave 3), July (Wave 4), September (Wave 5) and November (Wave 6) 2020. As a quantifiable measure of emotional support was not gathered until Wave 3, the first two waves of data were not included in this study. The analytic sample included participants with no missing values for any of the predictors and at least two waves of loneliness data. This led to a reduced pool of participants ( $n = 419$ ), with a total sample size of 1676 data points over the four waves.

Differences between individuals included in the analytic sample ( $n = 419$ ) and those who were excluded due to missing data ( $n = 478$ ) were examined for all of the predictors and loneliness outcomes across Waves 3 to 6. There were no significant differences, except for living with a romantic partner at Wave 3 and being employed at the baseline level. Those who remained in the reduced sample were more likely to live with a romantic partner in June 2020,  $F(1,832) = 8.138, p < .01$  and be employed in January and February 2020,  $F(1,836) = 13.017, p < .001$ , than those who were not in the sample.

## 2.2 Procedure

Understanding Society collected responses through web surveys. At each wave, invitation materials were sent out to the main sample, either through email or SMS. Participants used the unique link they received to complete the survey for the month.

On average, the questionnaire took 20 minutes to complete. Each respondent received two English pounds upon completion of the survey.

### 2.3 Measures

Table 1 displays the means, range, and standard deviations of the measures included in the study, with the exception of Gender and Ethnicity. In the analytic sample, 29.4% were male, and 70.6% were female. The ethnic composition of the sample was: 77.8% White, 4.3% mixed, 15.0% Asian or Asian British, 2.6% Black or Black British, and 0.2% from other ethnic groups.

**Gender** was a dichotomous variable, coded as 1 = Male; 0 = Female.

**Ethnicity** was coded into five groups: White, Asian, Mixed, Black, and Other.

**Self-Reported Loneliness** was measured in Waves 3 to 6 with a single item: "How often do you feel lonely?" (Office for National Statistics, 2018). Responses included "Hardly ever or never", "Some of the time", and "Often".

**Self-Reported Emotional Support** was based on a single question in Wave 3: "How much emotional support are friends and family who do not live with you providing these days?" when compared to January and February 2020 (1 = Less; 2 = About the same; 3 = More).

**Living with a Romantic Partner** was a derived measure in Wave 3, filtering if any of the household members was the respondent's husband/wife/civil partner/partner/cohabitee (1 = Yes; 0 = No).

**Household Income** per year was categorised into a range with equal intervals of 5000 English pounds. A higher score indicated a higher household income (e.g., 1 = 0 to 5000; 15 = 70001 and greater).



**Employment Status** was based on the question “were you in paid work or self-employment at any time in January or February 2020” (1 = Yes; 0 = No).

**Education Status** asked whether one was in school in January and February 2020 (1=Yes; 0=No).

**Baseline Health Condition** was a count of 20 items asking whether the respondent had long-standing health conditions in the past 12 months including asthma, cancer, coronary heart disease, diabetes, epilepsy, stroke, or other conditions.

**Baseline Psychological Condition** was a single item asking whether the respondent has an emotional, nervous and psychiatric problem (1 = Yes; 0 = No).

## 2.4 Data Analysis

Using SPSS, growth curve modelling was employed to examine the trajectory of loneliness from June to November 2020. The use of growth curve modelling is advantageous as it does not require equal spacing between time points and accounts for missing outcome data. To assess the trajectory of loneliness, time was coded to reflect the number of months from Wave 3, where Wave 3 = 0, Wave 4 = 1, Wave 5 = 3, Wave 6 = 5. A level 1 model examined within-individual change in loneliness, assessing the linear slope (i.e., average rate of change) and quadratic slope (i.e., degree of curvature averaged across the sample). A level 2 model then incorporated significant covariates and interactions examining the associations between gender and emotional support at the intercept, linear slope and quadratic slope. Models were examined using maximum likelihood estimation to account for missing data. Due to the restriction in the degrees of freedom, the residual variance component of the quadratic slope was not included in the models.

### 3. Results

Table 2 presents the final growth curve model, with coefficient estimates of the intercept and slopes accounting for the self-reported loneliness trajectory from June to November 2020. As shown in Figure 2, on average, those aged 18 to 25 experienced a decrease in self-reported loneliness from June through July and then had an increase from September to November 2020. The positive quadratic trend for time was highly significant, indicating a U-shape trajectory of self-reported loneliness over time (see Table 2).

Several covariates revealed significant main effects at the intercept. Being employed or self-employed, being in school, as well as having a higher annual household income were all associated with lower levels of self-reported loneliness. Pre-existing physical and mental health conditions were associated with higher levels of self-reported loneliness.

A significant interaction between gender and self-reported emotional support was found at the intercept. As Figure 3 demonstrates, males who reported receiving a higher level of emotional support also reported lower levels of loneliness compared to males who reported receiving a lower level of emotional support. Females, however, reported similar levels of loneliness regardless of the amount of emotional support they reported.

### 4. Discussion

Drawing a sample from the Understanding Society COVID-19 survey, we investigated how self-reported loneliness changed as a function of time, emotional support, as well as demographic and health factors. A U-shape longitudinal trend was

observed in self-reported loneliness from June to November 2020, with a sharp rise during winter months under the national lockdown. Findings suggest that young adults with long-standing physical or mental health conditions were more likely to report feeling lonely. Lower household income, not having a job or not in school at baseline were also significant predictors of self-reported loneliness. Furthermore, gender was found to moderate the association between self-reported emotional support and loneliness. While greater emotional support was associated with less loneliness in males, no association was shown for females.

The U-shaped self-reported loneliness trajectory from June to November might point to two main directions. First, this might imply that there is a seasonal variation in loneliness. As earlier research has addressed, loneliness peaks during the winter months among older adults (Victor et al., 2015). While less research has focused on the 18-25 age group, young adults can also suffer from the lack of companionship during the winter months. Indeed, after hitting the lowest in July, the mean loneliness level rose again towards November. However, as the current analysis only covered June to November, this seasonal variation explanation needs further examination.

Second, the trajectory of self-reported loneliness might correspond to the extent to which social activities were limited due to the lockdown policies. Looking at the policy changes during this period (see Figure 1), it seems plausible that the further easing of social distancing policies from June to July mapped onto the reduced loneliness from Wave 3 to Wave 4. During the two-month interval between July and September, the new 'rule of 6' was introduced. This was also when an increase in loneliness was reported in the Wave 5 data, toward the end of September. Finally, the introduction of 3-tier local alert levels systems and the start of the second national

lockdown seemed to correspond to the further rise in self-reported loneliness in November, exceeding the initial level observed in June. This explanation is in line with previous research highlighting the importance of social connection in predicting levels of loneliness for this age group (Qualter et al., 2015).

Regarding the demographic factors, the present study yielded findings in accordance with past COVID-19 research (Bu et al., 2020; Li & Wang, 2020; O'Connor et al., 2020). Socio-economic characteristics had a significant association with how often one feels lonely. In addition, being employed and being in school at the beginning of 2020 were associated with a lower risk of reporting feeling lonely during the pandemic. This is consistent with the theory of emerging adulthood (Arnett, 2015), where work and education status might potentially be signs of age-specific personal achievements among the 18-25 age group (Luhmann & Hawkley, 2016). School and work may also benefit the young adult due to the more extensive social network it can provide, reducing social disconnection (Qualter et al., 2015).

Meanwhile, young adults with a pre-existing mental health problem or one or more long-standing physical health conditions reported higher loneliness levels during this unusual period, coinciding with previous research (McGlone & Long, 2020; O'Connor et al., 2020). The current findings reaffirm the heightened risks brought by these long-term conditions, calling attention to tailoring interventions for vulnerable young adults.

In the present study, gender was found to moderate the association between self-reported emotional support and loneliness. This finding was unexpected as females have reported feeling lonelier than males in the UK since the start of 2020 (Bu et al., 2020; Li & Wang, 2020; O'Connor et al., 2020). With a heightened focus on social

relationships, one hypothesis is that females are at a higher risk of experiencing a discrepancy between what is idealistic and what has been achieved (Lee & Goldstein, 2016). Consequently, young females may require more emotional support to buffer feelings of loneliness compared to males. The meaning of emotional support could also be interpreted differently by male and female respondents. It has been argued that females are more willing to express emotions, which may lead to an unavoidable potential bias across self-reported data (Tamres et al., 2002). This may reflect the differential impact of self-reported emotional support on their self-reported loneliness.

#### **4.1 Limitations**

Several limitations need to be noted when interpreting the findings. First, the study is correlational. For this reason, no firm conclusions can be made about the factors that predict loneliness in young adults. Second, there could be sampling biases. For example, having access to the internet was a fundamental requirement to complete the web surveys from Understanding Society. Third, some measures were limited due to the constraint on the questionnaires. For example, the survey included one-item measures of loneliness and emotional support. These self-reported measures may not have the complexity to capture a more nuanced picture of either construct. Furthermore, the survey only asked about the amount of emotional support received from individuals outside the household, disregarding support from household members as well as the quality of support received. Fourth, a quantifiable measure of emotional support was not gathered at Waves 1 and 2 and subsequent waves after Wave 3. Thus, it was not possible to investigate how emotional support may predict the trajectory of loneliness from Wave 1 and whether changes in emotional support over time may predict changes in the trajectory of loneliness for young adults.

## 4.2 Conclusions and Implications

This study charts the trajectory of loneliness among UK young adults during the summer to winter months of the pandemic in 2020. The trajectory closely follows the restrictions of the lockdown, highlighting the impact of the pandemic on the loneliness of young adults. The findings identify population sub-groups at risk of loneliness, such as those with long-standing physical and mental health conditions and those with a lower household income, as well as vulnerable time periods relating to increased lockdown restrictions and winter months. The findings further highlight the importance of targeted interventions which consider diverse social needs, including young adults who are not enrolled in education or in employment.

The present study also adds to our knowledge of the impact of emotional support on loneliness and possible gender differences in the strength of this association. The findings seem to suggest that the quantity of emotional support from friends and family outside of the household may not benefit females' feelings of loneliness. To further our understanding, it would be beneficial to study variations in the social and emotional connectedness patterns of young adults, both in terms of quality and quantity, and their effectiveness in easing loneliness across population groups.

Declarations of interest

none

### Author Statement YH

Yanran Hu: Conceptualization, Formal Analysis, Writing-Original Draft Preparation.  
Leslie Gutman: Methodology, Writing-Review and Editing, Supervision.

## References

Arnett, J. J. (2014). *Emerging adulthood: The winding road from the late teens through the twenties*. Oxford University Press.

<https://doi.org/10.1093/acprof:oso/9780199929382.001.0001>

Bu, F., Steptoe, A., & Fancourt, D. (2020). Loneliness during strict lockdown: trajectories and predictors during the COVID-19 pandemic in 38,217 adults in the UK. medRxiv. <https://doi.org/10.1016/j.socscimed.2020.113521>

Lee, C. Y. S., & Goldstein, S. E. (2016). Loneliness, stress, and social support in young adulthood: Does the source of support matter? *Journal of Youth and Adolescence*, 45(3), 568-580. <https://doi.org/10.1007/s10964-015-0395-9>

Li, L. Z., & Wang, S. (2020). Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom. *Psychiatry Research*, 291, 113267. <https://doi.org/10.1016/j.psychres.2020.113267>

Luhmann, M., & Hawkley, L. C. (2016). Age differences in loneliness from late adolescence to oldest old age. *Developmental Psychology*, 52(6), 943. <https://doi.org/10.1037/dev0000117>

Matthews, T., Danese, A., Caspi, A., Fisher, H. L., Goldman-Mellor, S., Kopa, A., ... & Arseneault, L. (2019). Lonely young adults in modern Britain: findings from an epidemiological cohort study. *Psychological Medicine*, 49(2), 268-277. <https://doi.org/10.1017/s0033291718000788>

McGlone, M., & Long, E. (2020). Are young adults with long-standing illness or disability at increased risk of loneliness? Evidence from the UK Longitudinal Household Study. *Journal of Public Health Research*, 9(4). <https://doi.org/10.4081/jphr.2020.1861>

O'Connor, R., Wetherall, K., Cleare, S., McClelland, H., Melson, A., Niedzwiedz, C., . . . Robb, K. (2020). Mental health and wellbeing during the COVID-19 pandemic: Longitudinal analyses of adults in the UK COVID-19 Mental Health & Wellbeing study. *The British Journal of Psychiatry*, 1-8.

<https://doi.org/10.1192/bjp.2020.212>

Office for National Statistics. (2018, December 5). *Testing of loneliness questions in surveys*.

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/compendium/nationalmeasurementofloneliness/2018/testingoflonelinessquestionsinsurveys>

Office for National Statistics. (2020, April 16). *Coronavirus and the Social Impacts on Great Britain: 16 April 2020*.

<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/bulletins/coronavirusandthesocialimpactsongreatbritain/16april2020>.

Qualter, P., Vanhalst, J., Harris, R., van Roekel, E., Lodder, G., Bangee, M., et al. (2015).

Loneliness across the life span. *Perspectives on Psychological Science*, 10, 250–264. <https://doi.org/10.1177/1745691615568999>

Reinhardt, G., Vidovic, D., & Hammerton, C. (2020). Understanding Loneliness: a Systematic Review of the Impact of Social Prescribing Initiatives on Loneliness. *Perspectives in Public Health*.

Tamres, L. K., Janicki, D., & Helgeson, V. S. (2002). Sex differences in coping behavior: A meta-analytic review and an examination of relative coping. *Personality and*



*Social Psychology Review*, 6(1), 2-30.

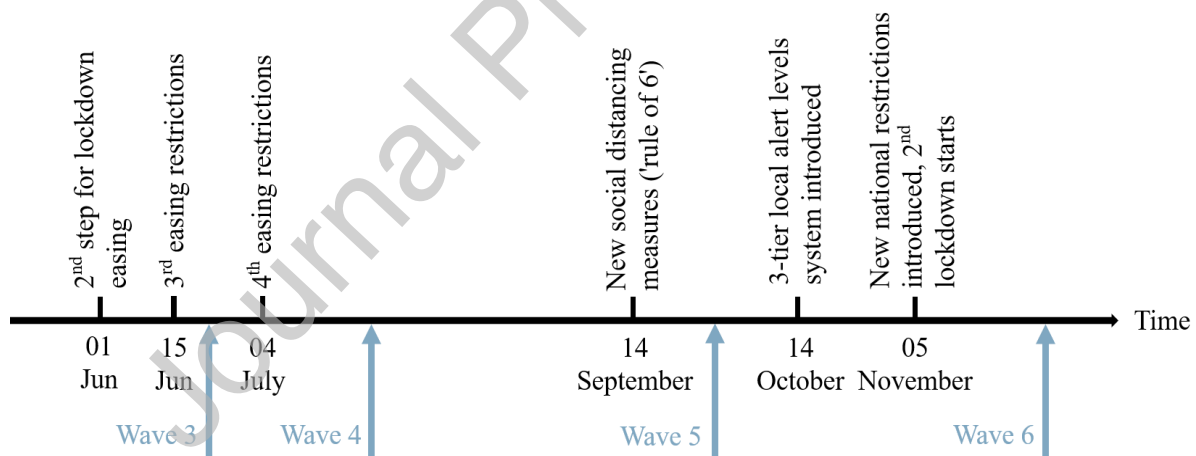
[https://doi.org/10.1207/S15327957PSPR0601\\_1](https://doi.org/10.1207/S15327957PSPR0601_1)

Victor, C., Sullivan, M. P., Woodbridge, R., & Thomas, M. (2015). Dancing with loneliness in later life: a pilot study mapping seasonal variations. *The Open Psychology Journal*, 8(1), 97–104. <https://doi.org/10.2174/1874350101508010097>

Von Soest, T., Luhmann, M., & Gerstorf, D. (2020). The development of loneliness through adolescence and young adulthood: Its nature, correlates, and midlife outcomes. *Developmental Psychology*. <https://doi.org/10.1037/dev0001102>

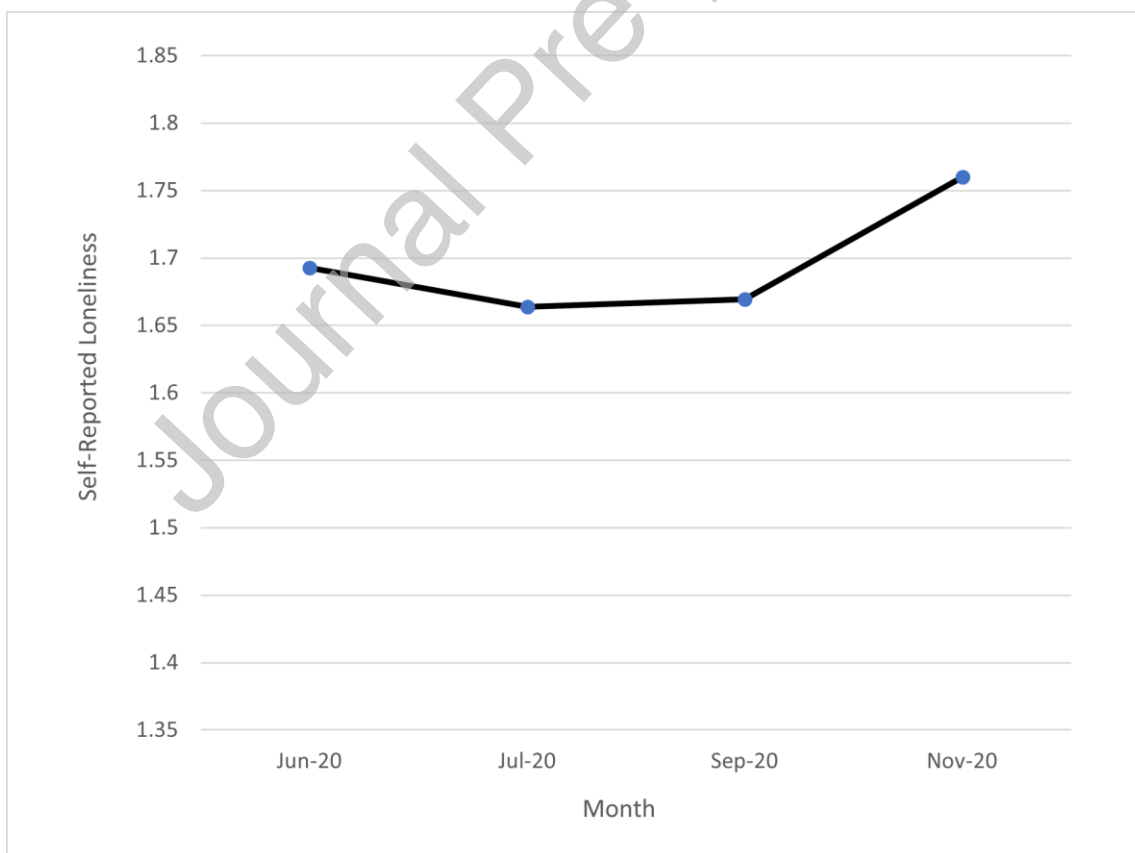
### Figure 1.

*The Timeline of National-Wide Lockdown Policies from June to November 2020.*



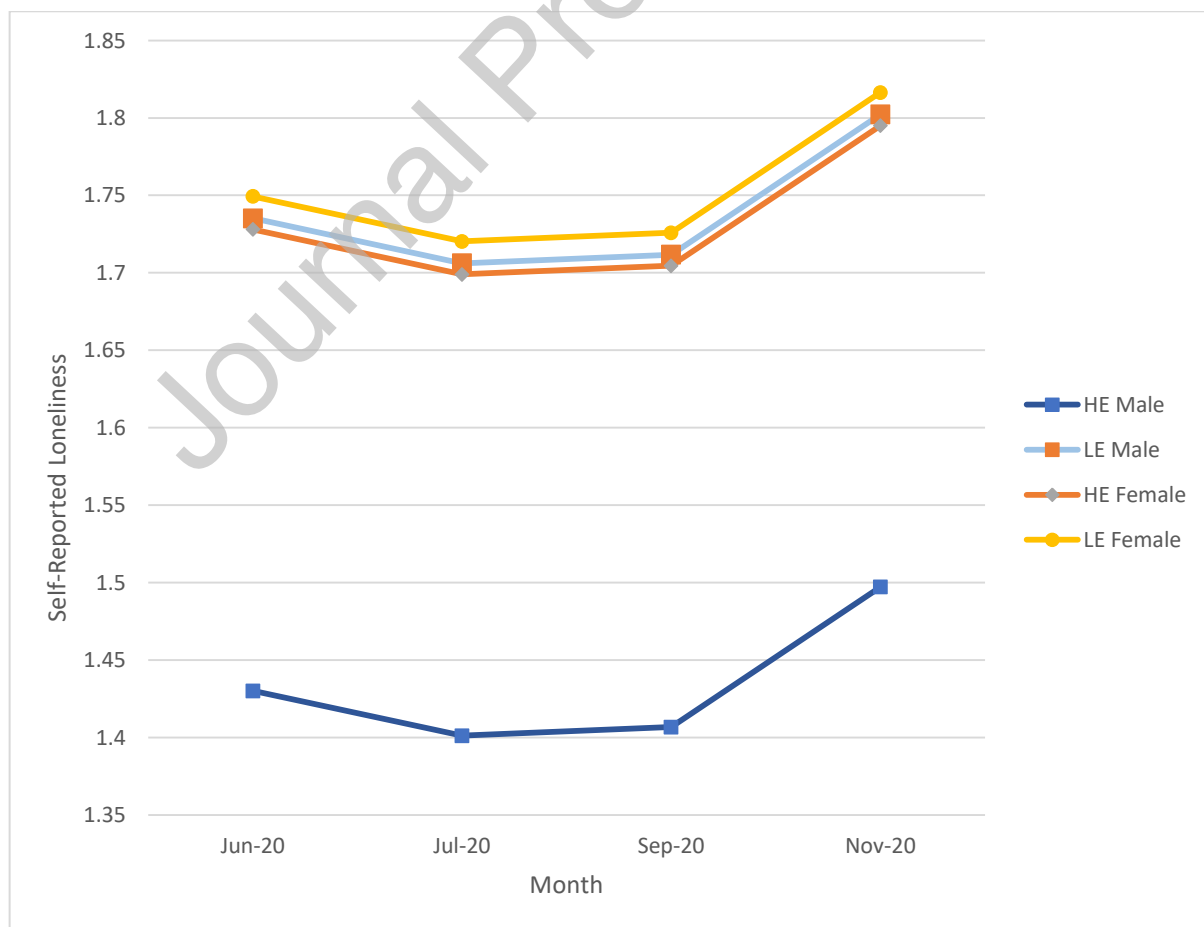
**Figure 2.**

*Mean Self-Reported Loneliness Trajectory among UK Residents Aged 18-25.*



**Figure 3.**

*Self-Reported Loneliness Trajectory as a Function of Gender and Self-Reported Emotional Support.*



*Note.* The four sub-groups in the figure are male with high emotional support (HE Male); male with low emotional support (LE Male); female with high emotional support (HE Female); and female with low emotional support (LE Female). In which, higher emotional support indicated one SD increase in mean emotional support, whereas lower emotional support indicated one SD decrease in mean emotional support.

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**Table 1.***Descriptive Characteristics of the Measures.*

Measure	Wave Measured	Min.	Max.	Mean	SD
Physical Health Conditions	Baseline	0	3	.24	.50
Mental Health Conditions	Baseline	0	1	.06	.25
Employment School	Baseline	0	1	.71	.45
Income	Baseline	0	15	7.10	4.50
Household Size	Wave 3	1	11	3.61	1.50
Living with Partner	Wave 3	0	1	.19	.39
Living with Parent	Wave 3	0	1	.74	.44
Emotional Support	Wave 3	1	3	2.02	.53
Loneliness	Wave 3	1	3	1.71	.66
	Wave 4	1	3	1.64	.62
	Wave 5	1	3	1.70	.64
	Wave 6	1	3	1.75	.66

*Note:* SD = standard deviation; N/A = not applicable.

**Table 2.***Growth Curve Model Predicting Loneliness Trajectory.*

Measure	Coef.	SE
For intercept		
Intercept	2.17***	.15
Male	.39	.23
Ethnicity: Mixed	.06	.12
Ethnicity: Asian	-.10	.07
Ethnicity: Black	-.17	.16
Ethnicity: Other	-.43	.49
Romantic Partner	-.10	.06
Health Conditions	.11*	.05
Mental Health Conditions	.26*	.10
Employment	-.35***	.10
School	-.31**	.11
Income	-.01*	.01
Emotional Support	-.02	.05
Gender × Emotional Support	-.27*	.11
For linear slope		
Intercept	-.04	.02
For quadratic slope		
Intercept	.01*	.00
Residual Variance		
For Intercept	.19***	
For Linear Slope	.00	

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

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