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COVID-19 lockdowns and changes in loneliness among young people in the U.K.

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ABSTRACT

Rationale: There has been growing concern that loneliness has increased throughout the COVID-19 lockdowns, and that the burden has fallen heavily on young people. This is important because loneliness is strongly linked to worse health outcomes.
Objective: We examine whether and how loneliness among young people changed during the pandemic across the different lockdown periods in 2020 and 2021. We also assess differences by gender, socioeconomic status, and economic activity before the COVID-19 outbreak.
Methods: We use nine waves of longitudinal data from the COVID-19 supplement of the UK Household Longitudinal Study (Understanding Society), collected between April 2020 and September 2021. We apply an individual fixed-effects event study design, which compares the loneliness reported by the same individual over lockdown transitions. We focus on loneliness reported by 1870 respondents aged between 16 and 24 years and compare it with pre-pandemic baselines.
Results: We find that the loneliness of young people tracked the extent of lockdown restrictions but had returned to baseline levels by September 2021. This loneliness response was more pronounced for females than males but similar for young people across higher and lower socioeconomic backgrounds.
Conclusions: These results suggest that policy interventions aimed at increasing opportunities for in-person social interactions for young people in 'normal' times, might have some success in tackling loneliness, particularly for young females.

1. Introduction

There is increasing concern about the high prevalence of loneliness and its potential impacts on health and well-being, with estimates suggesting that loneliness is as big a risk factor for mortality as smoking and is strongly linked to increased healthcare usage (Cacioppo and Cacioppo, 2018; Holt-Lunstad et al., 2015; Kung et al., 2021, 2022). Loneliness is becoming a major issue among adolescents and young adults (Eccles and Qualter, 2021; Loades et al., 2020; Matthews et al., 2019). The feeling of loneliness can be defined as the negative emotional response to the discrepancy between the quantity or quality of social relationships that individuals have, versus what they want (de Jong-Gierveld, 1987; Peplau and Perlman, 1982). Not surprisingly, concerns about loneliness have been exacerbated by COVID-19 lockdowns and restrictions (Banerjee and Rai, 2020), and a heavy burden has fallen on young people's education, employment opportunities, and normal social activities. This has led to increased uncertainty, heightened worries, and declines in mental health (Cattelino et al., 2021; McKinlay et al., 2022).

In the UK, for example, around one in four adults reported feeling lonely during the lockdown, but this figure was nearly one in two among 18- to 24-year-olds (Mental Health Foundation, 2021). The young experienced the largest increase in loneliness at the start of the pandemic compared with other age groups (Bu et al., 2020; Pierce et al., 2020), but this finding was not universal (Buecker et al., 2020). A key question is whether this increased loneliness is transient or whether it sets a lonely life course. In a recent survey of young people aged 16–24 years in the UK, 45% of respondents reported that their social life got worse in the pandemic, 22% reported difficulty in maintaining existing friendships, and 35% reported that they had never felt more alone. Worryingly, around one-quarter (23%) reported that they felt that they would never recover from the emotional impacts of the pandemic

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(Prince's Trust, 2022).

In this study, we build upon previous studies (e.g., Bu et al., 2020; Buecker et al., 2020; von Soest et al., 2022) by providing longitudinal evidence on the loneliness transitions of young people through the COVID-19 pandemic. We use unique monthly data from the UK covering the period from April 2020 to September 2021, applying an individual fixed-effects event study design to compare the loneliness reported by the same individual over different lockdown periods. We focus on loneliness reported by respondents aged 16–24 years, but also provide evidence for those aged 25–39 years. Furthermore, we observe five major transitions into and out of lockdowns and compare them with two waves of pre-COVID-19 baseline reports. In each survey wave respondents were asked, "In the last 4 weeks, how often did you feel lonely?", where possible responses were "Hardly ever or never", "Some of the time", and "Often". We ask how strongly and how quickly reported loneliness responded to changes in lockdown restrictions, and whether loneliness returned to pre-pandemic levels once restrictions were eased. This research question is consistent with the conceptual model of how social networks impact health (Berkman et al., 2000): large-scale social upheavals and transitions are likely to have an impact on social networks, including the frequency of face-to-face contact and level of intimacy. This can have a downstream effect on the extent of (available and/or perceived) social support and engagement, which can, in turn, affect health via behavioural, psychological, and physiological pathways.

We stratify the analysis by gender, socioeconomic background (defined by maternal education and household income), and by economic activity (full-time education or paid work), each measured just before the pandemic. We base our hypotheses on the conceptual model of loneliness (Lim et al., 2020), which provides a comprehensive synthesis of the literature on its correlates and risk factors, along with more recent evidence (Kung et al., 2021, 2022): females are likely to experience higher levels of loneliness than males, younger people (aged 16–24) are likely to experience higher loneliness than others (e.g., aged 25–39), and those with lower socioeconomic status are likely to experience higher loneliness than those with higher status.

Fig. 1 illustrates the chronology of lockdown periods in the UK. We use reports in 2018–19 for pre-pandemic baselines. The |–| bars show the survey dates (Waves 1–9), and the grey solid bars show the period over which loneliness is recalled (i.e., in the last 4 weeks). The responses from Waves 1 to 3 cover the first national lockdown, as do around half of the responses in Wave 4; Wave 5 covers the period between the first and second national lockdowns; most responses in Wave 6 cover the second national lockdown; around half of Wave 7 responses cover the third national lockdown, with regional lockdowns affecting some early responses; Wave 8 covers the third lockdown; and Wave 9 covers the post-lockdown period. Therefore, if the loneliness of young people responded quickly to the extent of lockdown restrictions, then we expect reports of loneliness to be higher in Waves 1 to 4and Waves 6 to 8, than in Waves 5 and 9.

2. Methods

The UK Household Longitudinal Study (Understanding Society) is an annual household panel survey that collects rich information on health, socioeconomic circumstances, social life, attitudes, and behaviours. The study is based on a probability sample of postal addresses intended to be nationally representative of households in the UK (more information can be found in McFall and Garrington, 2011). The first wave of data collection began in 2009, and every sample member is interviewed approximately one year apart, even though fieldwork for each wave continues over two years. The most recent wave was Wave 11, for which data were collected between January 2019 and May 2021 from 32,006 respondents across 18,507 households.

To enable research on the COVID-19 pandemic, a supplementary survey was administered in April (W1), May (W2), June (W3), July (W4), September (W5), and November 2020 (W6), and January (W7), March (W8), and September (W9) 2021. At each COVID-19 wave, fieldwork ran for one week at the end of the corresponding month. All members of the main Understanding Society sample who participated in main Waves 8 (2016–17) and/or 9 (2017–18) were eligible to participate in the COVID-19 survey. They were first sent pre-notification letters explaining the purpose of the survey, what they would be required to do, and how they would be rewarded (£2 for each survey completed from W1–8, plus a one-off £10 bonus in W4; and £10 for the W9 survey). They were then sent an email and/or an SMS invitation containing a personalised link to the online survey, and subsequent reminders on days 2, 3, and 5 of the fieldwork period. Of the 42,221 invitees at the start of the COVID-19 study (16 years and above in April 2020), 17,761 were interviewed (42% response rate). Ethics approval for the Understanding Society main study and COVID-19 waves was granted by the University of Essex Ethics Committee. More information on the main study and COVID-19 waves can be found at https://www.understandingsociety.ac.uk.

A loneliness module was administered in Waves 9 to 11 of the main survey, and in every COVID-19 wave. Our sample consists of 1870

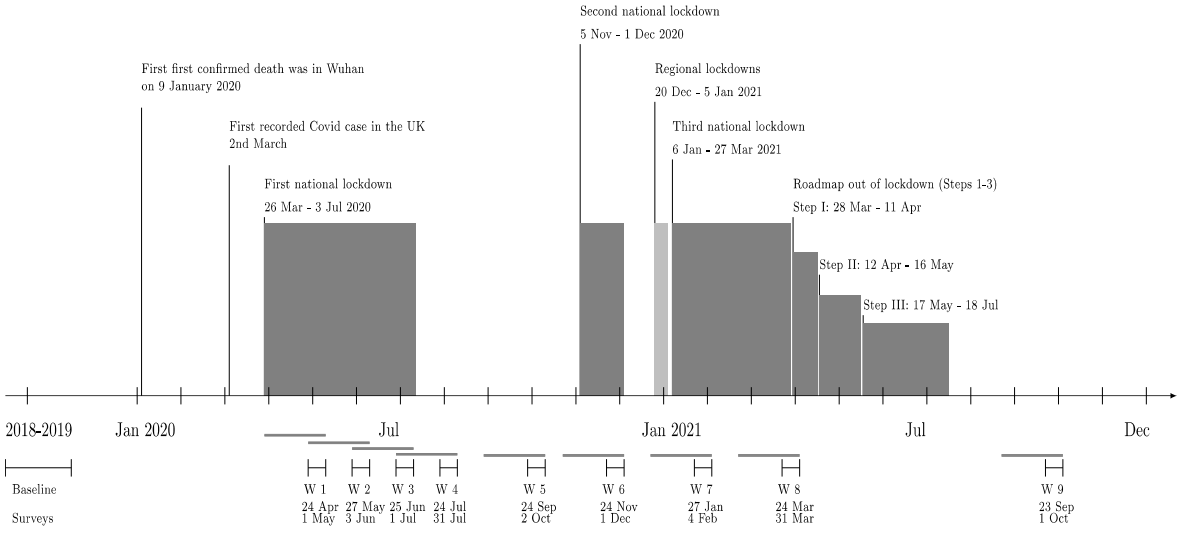

Fig. 1. Lockdown dates, survey dates, and recall dates.
Notes. See Brown and Kirk-Wade (2021) for a detailed timeline of the UK Government's COVID-19 lockdowns and restrictions.

respondents who were between ages 16 and 24 years at the point of data collection, with valid loneliness information in 2018 or 2019, and at least one of the COVID-19 waves. Males were under-represented (n = 635) relative to females (n = 1235), but this ratio did not change over the waves. This sample of 1870 respondents is around 38% of those with valid loneliness information in 2018 or 2019, which is close to the overall response rate at the start of the COVID-19 study. The sample is reduced to 1495 with valid maternal education responses; 1254 with pre-pandemic information on household income; and 1500 who were observed in full-time education, paid employment, or other work status (measured in January/February 2020).

We use a fixed-effects event study design, using the within-subject variation over time, and the pre-pandemic period as a baseline. We estimate regressions as follows:

$$Lonely_{it} = \sum_{j=-1}^{9} \tau_j D_j + \alpha_i + \delta_t + \varepsilon_{it}$$

where $Lonely_{it}$ is an indicator for answering "Some of the time" or "Often", and D_j are mutually exclusive survey wave indicators, indexed relative to the first wave after the outbreak (April 2020, W1, j = 1). The years prior to the outbreak are 2018 (j = −1) and 2019 (j = 0), the latter used as the omitted baseline category. Importantly, the individual fixed effects α_i control for unobserved static differences between individuals, such as genetic predisposition to loneliness and personality traits, and wave fixed effects δ_t control for aggregate-level shocks. Finally, ε_{it} is an individual- and wave-specific error term. Standard errors are clustered at the individual level.

This event study design (Clarke and Tapia-Schythe, 2021) is commonly used when analysing changes before and after a specific event of interest (examples using the COVID-19 pandemic can be seen in Bento et al., 2020; Jay et al., 2020; Weill et al., 2020). All analyses are conducted using Stata 17.0.

3. Results

The distributions of reported loneliness shown in Fig. 2 confirm that loneliness was prevalent among young people in the UK, with 58.5% of females and 50.1% of males reporting loneliness "Some of the time" or "Often" at the 2019 baseline. For the event study, we use this binary measure of loneliness, and estimates and 95% confidence intervals are provided in Fig. 3. Increases in reported loneliness were particularly pronounced for females in the first national lockdown (W1-4), although highest at the very start (W1); with an increased probability of reporting loneliness by 12.6% (2.9% for males) compared with the 2019 baseline. The decline observed from W1 to W4 suggests some recovery from the shock of the initial lockdown. Loneliness reports increased for both females and males in the second (W6) and third (W7-8) national lockdowns, but had returned to pre-pandemic levels by September 2021 (W9). For comparison, Fig. 4 shows the corresponding estimates for individuals aged 25–39 years. Interestingly, we see a similar profile with the lockdowns for both females and males, but the movements in loneliness are dampened relative to what we find for younger people. However, we again find evidence of a return to pre-pandemic baseline levels of loneliness.

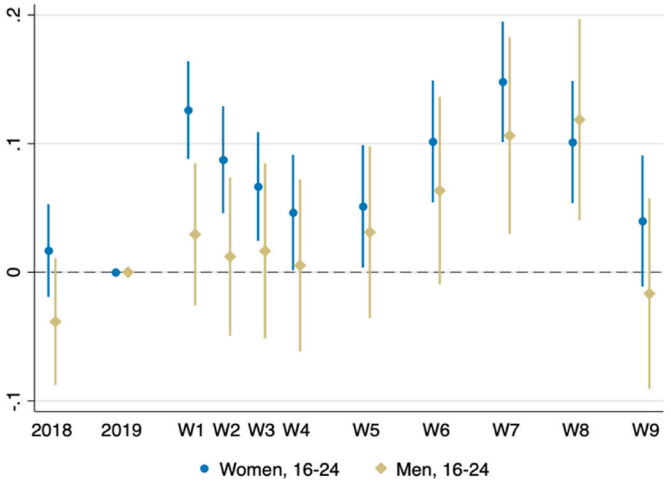

Fig. 3. The effect of lockdowns on reported loneliness by gender (ages 16–24). *Notes.* The figure shows OLS fixed-effect event study regressions of the probability of feeling lonely on the wave indicators relative to the pre-pandemic baseline; vertical lines represent 95% statistical confidence intervals. Estimates therefore reflect changes in the probability of feeling lonely "Some of the time" or "Often" (vs. "Hardly ever or never") in the last four weeks in the corresponding wave, relative to 2019.

Fig. 5 provides estimates for respondents by socioeconomic background as measured by maternal education, distinguishing between young people whose mothers had a degree-level qualification and those whose mothers had less education. Importantly, we find similar patterns for both groups. A similar pattern is found when we distinguish respondents by their pre-pandemic household income tercile, as shown in Fig. 6. These results suggest that higher socioeconomic status, which could have provided higher quality housing or reduce household financial stress throughout the pandemic, did not protect young people from experiencing loneliness during the lockdowns. Finally, Fig. 7 distinguishes between young people who were in full-time education and those who were in paid work or self-employment, as recorded before the pandemic (in January/February 2020). In the initial lockdown period (W1-3) we see that those in employment experienced a significant

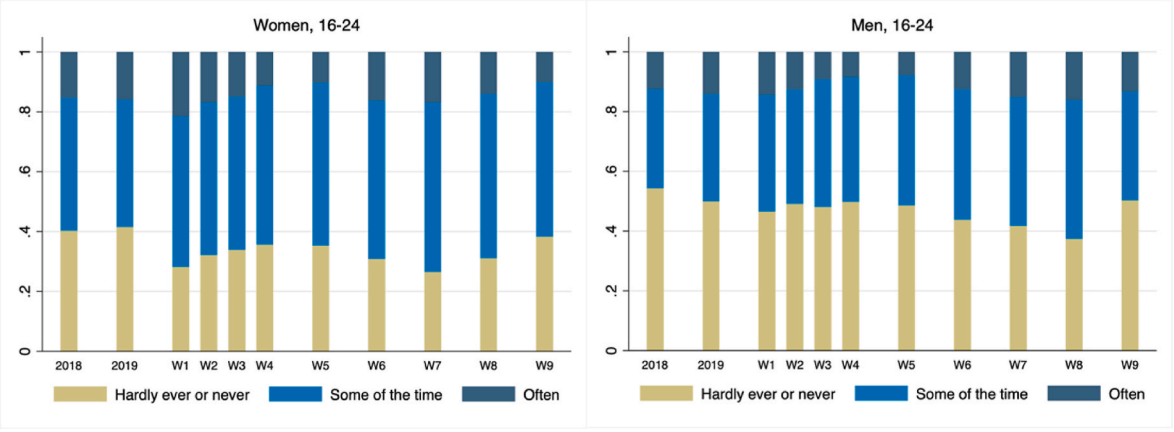

Fig. 2. Distributions of reported loneliness by gender (ages 16–24).

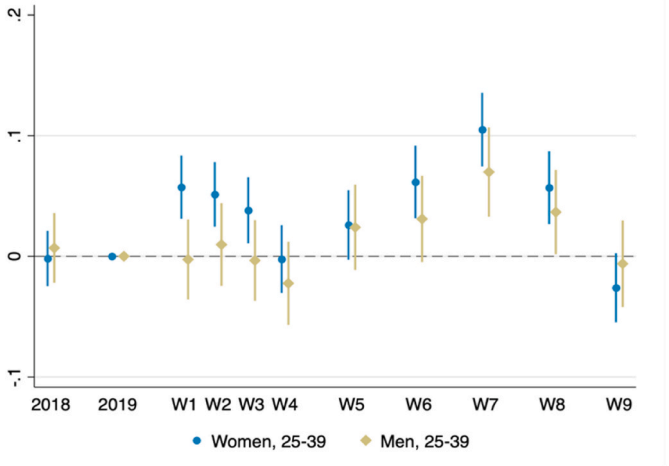

Fig. 4. The effect of lockdowns on reported loneliness by gender (ages 25–39).
Notes. The figure shows OLS fixed-effect event study regressions of the probability of feeling lonely on the wave indicators relative to the pre-pandemic baseline; vertical lines represent 95% statistical confidence intervals. Estimates therefore reflect changes in the probability of feeling lonely in the last four weeks in the corresponding wave, relative to 2019.

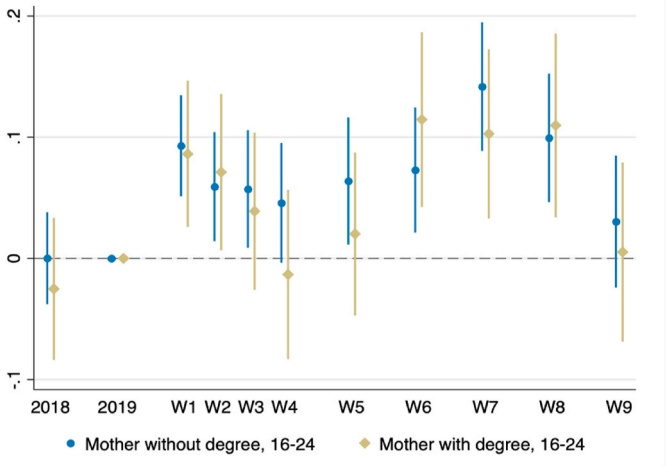

Fig. 5. The effect of lockdowns on reported loneliness by socioeconomic background (ages 16–24) (defined by maternal education).
Notes. The figure shows OLS fixed-effect event study regressions of the probability of feeling lonely on the wave indicators relative to the pre-pandemic baseline; vertical lines represent 95% statistical confidence intervals. Estimates therefore reflect changes in the probability of feeling lonely in the last four weeks in the corresponding wave, relative to 2019. Sample size 1495 (of 1870 in baseline sample).

increase in reported loneliness, but as the pandemic progressed both groups saw heightened loneliness (W6-8).

We have tested the robustness of these patterns in several ways. We observe the same general lockdown patterns when we (1) use a more balanced panel (respondents observed in at least six COVID-19 waves) or a less restricted, imputed panel (eligible respondents observed in 2018 or 2019, using a logistic regression method to impute missing loneliness information during the COVID-19 waves; see Sidi and Harel, 2018); (2) model loneliness as a continuous three-point measure; (3) use the bias-reduced, fixed-effects panel probit model (Kunz et al., 2021) instead of a linear probability model; or (4) control for two potential time-varying moderators, namely changes in financial situations and COVID-19 symptoms. Our conclusions also remain when we (5) control for seasonality, (6) recode the wave indicators (D_j) to reflect lockdown

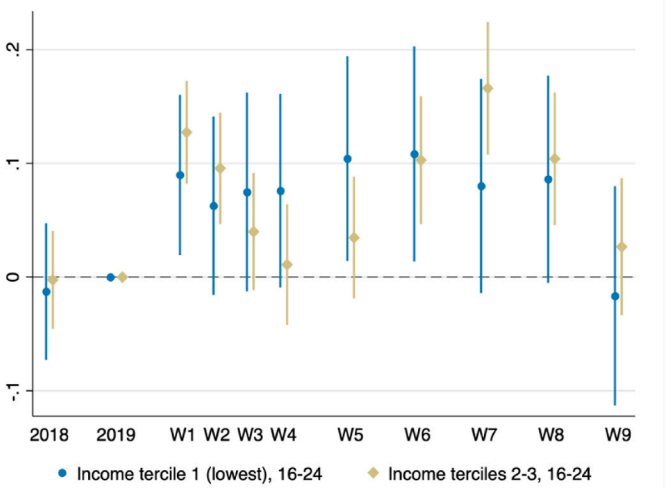

Fig. 6. The effect of lockdowns on reported loneliness by socioeconomic background (ages 16–24) (defined by household income terciles in January/February 2020).
Notes. The figure shows OLS fixed-effect event study regressions of the probability of feeling lonely on the wave indicators relative to the pre-pandemic baseline; vertical lines represent 95% statistical confidence intervals. Estimates therefore reflect changes in the probability of feeling lonely in the last four weeks in the corresponding wave, relative to 2019. Sample size 1254 (of 1870 in baseline sample).

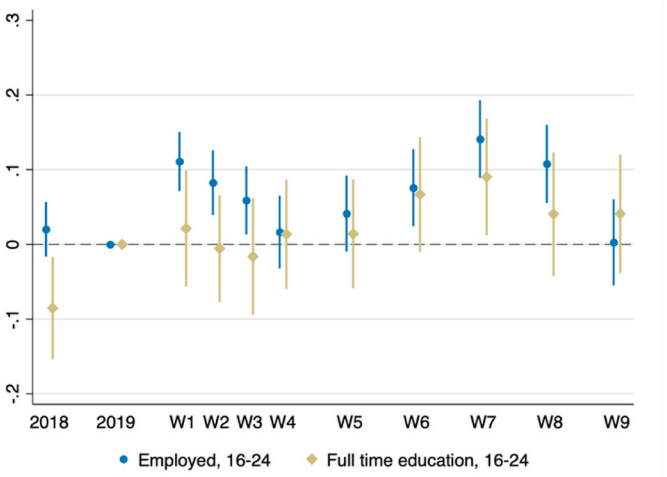

Fig. 7. The effect of lockdowns by economic activity (measured in January/February 2020) (ages 16-24).
Notes. The figure shows OLS fixed-effect event study regressions of the probability of feeling lonely on the wave indicators relative to the pre-pandemic baseline; vertical lines represent 95% statistical confidence intervals. Estimates therefore reflect changes in the probability of feeling lonely in the last four weeks in the corresponding wave, relative to 2019. Sample size 1500 (of 1870 in baseline sample).

vs. non-lockdown periods (e.g., W1–3 as Lockdown 1), or (7) redefine the waves in which reporting time (survey – 4 weeks) overlaps lockdown and non-lockdown periods.

4. Discussion

The lockdown restrictions introduced in response to the COVID-19 pandemic have arguably been the greatest mass curtailment on physical mobility and social interactions in living memory, and there is evidence that the young have been particularly affected. This is

particularly worrying, since adolescence and young adulthood are periods of development that are "normally characterised by a strong need for autonomy, the desire for experimentation, a progressive independence from parental figures, and a redefinition of relationships with peers" (Cattelino et al., 2021).

While there is evidence of a genetic predisposition to loneliness (Day et al., 2018), and that loneliness has a high degree of trait-like stability from adolescence to old age (Mund et al., 2019), we find evidence of transient movements in loneliness that tracked the lockdown restrictions in the UK. These results, using monthly or bi-monthly observations from April 2020 to March 2021, and then a final observation in September 2021 – a period comprising multiple changes in lockdown restrictions – contrast with a recent study using annual data on adolescents in Norway collected between January and March each year (von Soest et al., 2022). The authors found, contrary to their expectations, "no adverse changes during the pandemic in adolescents' loneliness" (p. 224). However, unlike our study, their analysis of annual data does not capture transitions in loneliness across the lockdown and non-lockdown periods, so any estimated impact on loneliness is contingent on when the survey took place.

The more pronounced movements we find for females are consistent with the notion that in 'normal times', females tend to mobilise social support and share emotional experiences in response to stress, to a greater extent than males. That reports of loneliness dropped quickly at the end of the first national lockdown and returned to pre-COVID-19 (2019) levels by September 2021 after the third national lockdown, suggests that the increase in loneliness driven by the pandemic may be transient rather than permanent for young people (and also for those aged 25–39).

A recent meta-analysis suggests that interventions can be successful in alleviating loneliness in young people (Eccles and Qualter, 2021). However, gaining reliable causal evidence is difficult due to the selection of interventions and unknown confounders, while RCTs can suffer from issues of generalisability. The exogenous shock of lockdown restrictions and their universal nature help provide causal evidence that young people's loneliness does respond to changes in the opportunities for in-person social interactions. While there is some evidence on interventions that focus on social and emotional skills or learning a new hobby, and to a lesser extent on technology-based interventions (Eccles and Qualter, 2021), we can speculate from the pandemic 'experiment' that interventions that facilitate meaningful social interactions in 'normal' times might be a good target. Such interventions might be more successful for females than for males.

5. Limitations

Our study is nevertheless not without limitations that might restrict its generalisability. We are reliant on only a single-item, direct measure of loneliness, but this is highly correlated (around 0.88) with the often-used three-item UCLA Loneliness Scale (Office for National Statistics, 2018). Our data set also comprises only a modest sample size of young people, and observations to only September 2021. In addition, we are not able to track whether individuals (re-)engaged in in-person social interactions between and after the lockdowns, though it is encouraging that other studies find a recovery in mobility after the relaxation and removal of restrictions (e.g., Joshi and Musalem, 2021).

6. Conclusions

Loneliness is strongly linked to worse health outcomes and a greater use of healthcare services. The COVID-19 pandemic caused a major disruption to people's lives, and young people were heavily impacted. Using UK longitudinal data collected before and during the COVID-19 pandemic, we find evidence that loneliness experienced by young people increased during periods of lockdown but fell again during periods of eased restrictions, returning to pre-pandemic levels by September 2021. This movement was more pronounced for females than for males, and is consistent with a transient rather than permanent loneliness response to temporary reductions of in-person social interactions. Future research will be able to establish if this finding remains, as more recent data becomes available.

Credit

Claryn Kung: Formal Analysis, Writing, Visualisation. Johannes Kunz: Conceptualization, Methodology, Writing, Visualisation. Michael Shields: Supervision, Writing, Funding Acquisition, Supervision.

Declaration of competing interest

The authors declare no conflict of interest.

Data availability

Deidentified participant data and the data dictionary are available via the UK Data Service (Study Numbers 8644 and 6614), upon registration and authentication.

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