The Changing Landscape of Paternal Mental Health in the UK during the COVID-19 Pandemic

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Abstract

Background

During the COVID-19 pandemic, the UK experienced a multitude of restrictions, leading to a deterioration in the nation's mental health and the doubling of male suicide rates. Parents had the additional complexity of balancing work, childcare and home-schooling.

Objectives/ Aims

Research suggests that the psychological impact was greater for mothers compared to fathers, however, fathers are often underrepresented in the research. Consequently, this research aimed to explore the impact of the pandemic on paternal wellbeing, compared to mothers and men without children living at home.

Methodology

A review was conducted to inform the research questions. Longitudinal data from the United Kingdom Household Longitudinal Study (UKHLS) allowed for changes in fathers' (n=596) psychological wellbeing to be explored, compared to mothers (n=940) and men without children (n=5530). Data was obtained at five time points; pre-pandemic (March 2019-March 2020, T1), during (April 2020/ September 2020/ January 2021, T2-T4) and post-lockdowns (August 2021- August 2022, T5). Parent were not selected as dyads, however, may have resided in the same household. Surveys captured data relating to potential stressor variables, which were categorised into wellbeing, social and economic factors. Psychological wellbeing was measured using the General Health Questionnaire (GHQ-12), with higher scores indicating higher psychological distress (PsD).

Results

Linear mixed models were used to compared changes in PsD over time, including the impact of stressor variables on PsD over the course of the pandemic. Age, ethnicity and educational attainment were included as covariates. Differences in PsD and the impact of stressor variables were found between groups. Risk factors for fathers included loneliness, life dissatisfaction, living with a partner, average or less than average degrees of happiness with a partner and living with a child aged 0-11 years of age. A final linear mixed model was created for fathers to provide a more comprehensive account of the interaction between these factors. Loneliness and life dissatisfaction continued to have a significant effect on paternal mental health when accounting for living with a partner, happiness with partner and living with a child aged 0-11 years.

Conclusions

Findings highlight the need for gender-inclusive parental policies and mental health interventions. Implications were conceptualised within the challenging and changing expectations surrounding fatherhood and masculinity.

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Chapter 1. Introduction

1.1 Background of Study

1.1.1 Mental Health Responses to the COVID-19 Pandemic in the UK

On March 11th 2020, the World Health Organization (WHO) announced the onset of a global pandemic due to the emergence of the new coronavirus variant, COVID-19. By November 2021, the UK had documented over 10.3 million confirmed cases of COVID-19 and 145,477 fatalities (UK Health Security Agency, 2022). The UK implemented a variety of nationwide restrictions to protect public health. ‘Lockdowns' were introduced which prevented individuals from gathering with family and friends, accessing leisure facilities, and outings were limited to once a day. Many non-essential businesses temporarily closed, resulting to one in four employed adults being placed on ‘Furlough’, leading to a reduction in income and financial instability [The Office for National Statistics (ONS), 2021].

Previous research into large-scale viral outbreaks, such as the H1N1 flu pandemic, found psychological distress increased in countrywide populations (Cowling et al., 2010), with early studies into the COVID-19 pandemic indicating similar trends in the UK (Prime et al., 2020). Psychological distress can be defined as a broad term for negative mental states, including sub-clinical symptoms and clinical symptoms, such as anxiety and depression (Zhu et al., 2022), as assessed by common screening tools, such as the General Health Questionnaire (GHQ-12). Research findings relating to factors which may increase psychological distress have been inconsistent, suggesting that relationships between outcomes are likely to be complex. For example, in the initial phase of the pandemic, job loss was identified as a factor increasing the risk of suicide (Griffith et al., 2021). In contrast, greater psychological distress was associated with being employed and having a higher level of education attainment (Pierce et al., 2020). Additionally, research by Iob et al. (2020) in the UK, found that there was no association between ethnicity and depression symptoms,

whereas comparatively, Pierce et al.'s (2020) research using the UK Household Longitudinal Study (UKHLS) found that psychological distress was higher for adults from a white ethnic background.

Poor mental health outcomes have also been associated with low social support, low socioeconomic status and diagnosed physical health conditions (Griffiths et al., 2021), highlighting both individual and systemic implications. One's appraisal, response and adaptation to difficult situations, can be conceptualised within the transactional model of stress and coping (Lazarus et al., 1984). This cognitive framework assumes stress and coping to be a dynamic process characterised by changing appraisals of events and situations, therefore stress arises as a result of how we perceive and interpret our experiences. According to the model, we experience two stages of appraisal before reacting to stress, with stress defined as the interaction between an individual and their environment, within the context of potential impact on well-being and the reduction of resources (Lazarus et al., 1984). Therefore, responses are not limited to external events but from the transactions, i.e., interactions between an individual's complex environment and their own resources (e.g., psychological and physiological). The model suggests that during the COVID-19 pandemic, specific stressors could increase an individual's vulnerability to developing mental health issues.

1.1.2 Gender Differences in Mental Health Responses to the Pandemic

Globally, a common finding in the literature is that females generally report higher levels of psychological distress compared to males, however, there have been differences in the rates of psychological recovery dependant on gender during the pandemic. For example, Matud et al. (2022) found that women reported higher levels of psychological distress compared to men in the later stages of the pandemic, with social support being a protective factor for both genders. Comparatively, despite initial gender differences in psychological

distress at the beginning of the pandemic, with females reporting greater psychological distress, gender differences reduced over time in Fenollar-Cortés et al.'s (2021) study. A potential habituation to countrywide restrictions may not only have reduced the risk of developing a common mental health disorder (CMD) but could have led to recovery from a CMD in some cases (Chandola et al., 2020).

In the UK, one of the initial studies exploring the pandemic's effects on psychological wellbeing in the UK revealed that men reported greater psychological distress (i.e., traumatic stress) compared to females during the early stages of the pandemic (Shevlin et al., 2020). Comparatively, Stroud (2020) observed that psychological distress was reported less by men and the trajectory was relatively stable over time, whereas psychological distress peaked for women in the UK at the beginning of the pandemic, improved up until September, and then deteriorated. To explore the effects of specific risk factors over time, Andrada et al. (2021) used data from the UKHLS to assess for short-term and long-term impacts of the pandemic, comparing pre-pandemic data with both data obtained early and mid-crisis (July 2021). They found initially that, compared to men, there was a greater reduction in wellbeing for women who reported an increase in financial pressures and those aged 20-39 years, although the effect of gender disappeared in the long-term model. Another risk factor appeared to be living with a partner, as men living alone reported greater psychological distress compared to women living alone. Comparatively, although women may be more likely to report increased anxiety with financial difficulties (Hossain, 2021), historically, associations between suicide and low income or unemployment have been greater for men (Sher, 2006) with higher depression symptoms reported by men as a response to involuntary job loss (Andreeva et al., 2015).

From a social perspective, pandemic restrictions enforced isolation, increasing the likelihood of reduced quality and quantity of social contact to meet social needs, i.e.,

'loneliness' (Bu et al., 2020). In the US, rates of anxiety and depression were 5-10 times higher for those in the highest loneliness quartile (Kantor et al., 2020). As loneliness is a major public health concern due to its association with increased rates of suicidality (Stickley et al., 2016) this was an important consideration during the pandemic. Bu et al. (2020) used pre-pandemic data from the UKHLS along with data from the COVID-19 Social Study and found that loneliness was greater for women than men during the pandemic, which was similar to trends pre-pandemic. Furthermore, loneliness was associated with anxiety and depression in men and women, although gender differences were not found for those aged 30 years and older (McQuaid et al., 2021).

Psychological distress was also found to be higher for women both during and prior to the pandemic compared to men from a large-scale survey in the UK, suggesting that, although rates were higher, the actual impact may not have necessarily been greater for women compared to men (Smith et al., 2022). For example, Rania et al. (2021) found that women reported greater loneliness compared to men, however, the increase in loneliness was only significant for men when comparing pre-pandemic averages and participants during COVID. The researchers proposed that men may not be used to spending so much time at home and so the restrictions may have led to a greater experience of social isolation and subsequent loneliness. Furthermore, gender differences were no longer observed in mental health symptoms or perceived happiness during the pandemic.

Subsequently, although the increase in rates of mental distress is important to consider, the meaning and implications of an increase in psychological responses to the pandemic are equally as important to understand the gendered nuanced risks to self and others. That is, whilst psychological distress may be higher in one group, responses are important to consider, and such responses may differ by group. For example, although suicide attempts may be higher for women, men often select more lethal means and so

mortality rates as a result of suicide are around three times higher for men (Oliffe et al., 2011). Additionally, women before and during the pandemic were more likely to contact a crisis hotline compared to men, including expressing suicidal ideation, suggesting men are less likely to help-seek or access support using these forums (Zalsman et al., 2021). Nevertheless, by September 2020 in the US, male contact with mental health services increased by 5.5 times compared to pre-pandemic (Landi, 2020). As aggressive behaviour has been associated with an increase in impulsivity and suicidal behaviour (Dumais et al., 2005) and emergency calls were more likely to be associated with acute anxiety or behavioural concerns in UK men during lockdowns (Moore, 2022), this suggests that men were particularly vulnerable during UK lockdowns. A recent longitudinal study by Upton et al., (2023) found that help-seeking behaviour in young adults did not increase over the course of pandemic, suggesting that age may have also impacted on how psychological distress was experienced and responded to.

1.1.3 Conceptualising Male Responses to the COVID-19 Pandemic

As a response to the pandemic, surveys by two UK charities found that around 40% of men experienced regular feelings of worry or low mood and suicide rates had doubled (Samaritans, 2020; Mind, 2019). The Samaritans (2020) reported that there was an increased sense of shame and lowered self-esteem for men compared to women due to reduced financial stability and difficulty providing for the family. Additionally, a survey by Mind (2019) of over 2000 UK residents indicated that men were unable to manage stress or worry through previous means, such as accessing therapy in person or speaking with others in informal locations such as the pub or gym. Respondents identified that increased experiences of loneliness and isolation were less likely to be shared with partners due to concerns of burdening them.

It is proposed that social isolation for men was likely to increase during the pandemic as contact with friends amongst men has historically been more activity-based (Riggio, 2014). This was evident in the UK, where men reported spending less time than women seeking contact with friends or family during the pandemic via video or telephone calls (Fancourt et al., 2021). Furthermore, UK research in barbershops during the pandemic demonstrated that informal conversations in activity-based settings identified loneliness and financial worries as the main cause of male stress during this time, highlighting the importance of informal settings to promote good mental health (Ogborn, 2022). Research with members of Men's Sheds ('Shedders') during the COVID-19 pandemic, i.e., community-based physical spaces to engage together in activities and share skills to increase sense of self and purpose, found that subjective wellbeing was seen to reduce, and loneliness increased over three time-points (3, 6 and 12 months) during the pandemic (McGrath et al., 2021). Increased loneliness was associated with lower life satisfaction and reduced physical activity. Rates of loneliness were similar for members 6 months into the pandemic and non-members pre-pandemic, suggesting that attendance to 'Shed' events safeguarded men against loneliness. Historically, evaluations of Men's Sheds have found that these spaces can lead to a reduction in social isolation and promote well-being as means of seeking support on an informal basis (Wilson et al., 2013).

Additionally, communities or settings (e.g., sports clubs) where sharing emotional difficulties are normalised and validated may increase help-seeking behaviours through the motivation to access more formal support (Hernandez at el., 2014). In a study by Parent et al., (2018) which was representative of US nationals, the researchers found that greater mental health care help-seeking behaviour was reported by men who were white, homosexual, older and not in a relationship (Parent et al., 2018). Additionally, when accounting for intersectionality, white men with lower income had increased help-seeking

behaviours, whereas men from a black ethnic background with lower income were less likely to seek help. Furthermore when men sought help, they were less likely to receive a service.

A review was published by WHO in 2020, focusing on the associations between European traditional masculine norms within changing sociocultural contexts, help-seeking behaviour and subsequent mental health difficulties found that men often misinterpreted low mood. This resulted in an increase in externalising behaviours such as overworking and when masculine norms were challenged, such as through unemployment, this led to an increase in loneliness and psychological distress. Additionally, the review suggested that men who adhere to norms perceived as traditionally masculine, such as self-reliance, dominance and resistance to discussing emotions, may be less motivated to seek support. Furthermore, this may be exacerbated by significant life events, including unemployment or retirement.

As a reduction in economic status has been associated with male mental health decline (Hadar-Shoval et al., 2022), the pandemic may have posed a significant threat as social distancing measures and reduced commercial activity had significant implications for the UK economy (Baker et al., 2020). Gendered responses to economic factors could be conceptualised as a response to threatened traditional masculinity ideologies, including seeking social status and the value placed on work (Paul & Batinic, 2010). Social status offers a sense of control, routine and purpose, perpetuating the perceived need to provide and protect which aligns with masculine ideals (Levant & Richmond, 2016). If the ideal cannot be conformed to and there is a limited capacity to improve the situation, this can lead to Gender Role Discrepancy Stress (Levant & Richmond, 2016), resulting in low mood and feelings of helplessness (Andreeva et al., 2015). This was supported by research by Walther et al. (2023) who found that, compared to those with job security during the pandemic, men who had experienced a reduction in status were four times more likely to experience suicide

ideation and twice as likely to report suicide attempts. Additionally, those who reported a greater alignment to traditional masculinity ideologies were more likely to report an increased risk of suicide.

Suicide prevalence in male populations has been understood within the context of dominant social norms that have been historically associated with men, with regards to emotional expression and subsequent health-related practices (Courtenay, 2000). Stereotypes related to self-reliance, strength and dominance may lead to stigma surrounding mental illness, with rationality and 'emotional restraint' preventing men from expressing difficulties with their mental health (Gough et al., 2020). Currently, hegemonic masculinity, defined as behaviours and attitudes that characterise being a man, is disputed with the modern ideals of masculinity, allowing for men to be considered caring with a higher value placed on well-being (Connell et al., 2005). Subsequently, help-seeking is conceptualised as independent action-taking, requiring bravery and can therefore be considered a strength as opposed to a weakness, which is important to consider within therapeutic approaches, e.g. goal-setting and practical exercises (Seidler et al., 2018). These approaches can be also conceptualised within the framework of the WHO Gender Responsive Assessment Scale (WHO, 2011). This reviews current policies and procedures within the context of whether they are gender-unequal, blind, specific, sensitive or transformative, to ensure that physical and mental health services acknowledge potential gender differences in the needs of those accessing services.

1.1.4 Parental Psychological Wellbeing During the Pandemic

It is becoming increasingly recognised in the research that the role of parenting during the pandemic increased vulnerability to mental health difficulties. For example, COVID-19 pandemic produced additional stressors for parents due to the confinement of families and balancing working from home with increased childcare responsibilities (including home-schooling), at a time when support systems were increasingly unavailable (Fegert et al.,

2020). Early research into the pandemic found that, compared to adults not living with children, those who lived with children reported greater psychological distress (Kwong et al., 2020). In particular, exposure to lockdowns led to an increase in psychological distress in parents, including low mood (Brooks et al., 2020). Balancing the demands of home-schooling and work increased mental exhaustion, resulting in the deterioration of wellbeing (Marchetti et al., 2020; Johnson et al., 2020). As parents were placed in situations whereby their resources were outweighed by external demands, parental stress was observed, particularly when lacking financial stability and experiencing an increase in social isolation (Griffith, 2020). Persistent exposure to parental stress has been found to be associated with exhaustion and parental burn-out, characterised by emotional exhaustion and lack of confidence in the parent role, resulting in emotional distancing (Roskam et al., 2017). Factors associated with parental burnout include chronic stressors (e.g., health conditions), critical stressors (e.g., illness of a child) and daily caring giving activities (Mikolajczak & Roskam, 2018). Similar to male mental health, as discussed earlier, it was proposed that the increase in parental distress and suicidal ideation was associated with social distancing measures and lockdowns (Johnson et al., 2021).

Additionally, the relationship between parental stress and child behaviour may be bidirectional, with stress leading to parents being less available and responsive to the needs of their child and the subsequent behavioural challenges of children increasing parental stress (Marchetti et al., 2020). It is important to understand and respond to the mental health needs of parents to identify the systemic impact on families, including potential bi-directional relationships with child mental health, in order to target support and interventions. For example, a nationwide survey of 9,117 children in the UK identified that children living with a parent with a diagnosed mental health disorder were more likely to experience their own mental health difficulties (ONS, 2019). The ‘family stress model’, was reconceptualized by

Prime et al. (2020) in response to the pandemic. The original model, developed by Conger et al. (2002), proposed that parental psychological responses to economic stress can impact on the ability to respond and relate to children in a positive way. Subsequently, children within households with increased parental distress as a result of economic hardship are more likely to experience emotional and behavioural difficulties. Therefore, Prime et al. (2020) extended this concept and proposed that family wellbeing is dependent on the wellbeing of those providing care, including their ability to manage daily challenges and find meaning within this. They suggested that parental stress as a response to enduring restrictions during the pandemic, were likely to impact on family processes and subsequent child psychological wellbeing.

In a systemic review by Fong et al. (2020) which explored the mental health outcomes of families within the context of the pandemic, it was found that stress and anxiety increased as a response of the pandemic, although with rates being lower for older parents, or those with a higher socioeconomic status. Additionally, at the start of the pandemic, it was identified that parents with more than three children aged 5 to 15 years reported higher subjective wellbeing (Andrada et al., 2021), potentially due to increased childcare support within the home from older siblings. Pierce et al. (2021) identified that from April to October 2020 in the UK, adults with children were more likely to follow a 'recovery' trajectory rather than 'deteriorating' or remaining 'consistently very poor'. They found that once restrictions initially eased in July 2020, psychological distress improved, although not to rates prior to the pandemic. They predicted that many adults would return to pre-pandemic levels within 6 months of the end of the pandemic, in line with previous research into experiences of traumatic events (Kessler et al., 2017). This could be explained by the resilience framework which conceptualises responses to serious threats as an adaptation to the event, dependant on several factors at individual, family, cultural and community levels, which can either serve to

protect or increase one's risk of poor health outcomes (Fleming & Legogar, 2008). Therefore an increase in resources would in theory lead to increased resilience.

Comparatively, additional research has emerged that suggests that the parenting role during the pandemic could be a protective factor when considering psychological wellbeing, such as fostering resilience and post-traumatic growth (Prime et al., 2020). Prime et al. (2020) conceptualised the act of establishing a 'new normal' as a response to meaning-making and developing new routines and rituals within the family unit, within a framework they termed the 'COVID-19 Family Disruption Model'. Furthermore, they proposed that a new sense of purpose may have arisen as a result of spending more time together, which is unpinned by attachment processes. Later research critiqued these claims, as it was unclear whether processes of resilience were specific to the initial stages of the pandemic, particularly when the early restrictions were anticipated to be short-term (Achterberg et al., 2021).

Nevertheless, parenthood has been suggested to moderate the correlation between emotional stability and symptoms of adjustment disorder in response to the COVID-19 pandemic (Kestler-Peleg et al., 2022). Drawing on identity theory (Stryker, 2007), the researchers proposed that being a parent transcends a social role and becomes an intrinsic dominant identity. The challenges in caregiving may be protected by identifying with the ideals of generative parenting which have been associated with better physical and mental health outcomes. For example, the act of caring for another may lead to a greater self-efficacy and positive self-concept (Roth et al., 2015). Therefore, given the opportunity to invest in the parenting role can give meaning to actions, guiding beliefs and behaviours in changing social contexts and supporting adjustment to these (Keslter-Peleg et al., 2022).

Conclusively, the current literature is inconclusive as to the role of parenting in gendered differences in the psychological wellbeing of adults during the pandemic,

highlighting the need for further exploration into specific factors which may serve to increase risk or safeguard against psychological distress.

1.1.5 A Consideration of Fatherhood

As the pandemic led to social adaptations, it is reasonable to consider how tensions between masculine social norms and such adaptations may have been further impacted by the role of fatherhood. Historically within the UK, social structures have positioned fathers as patriarchs, managing and establishing control within the family system (Knibiehler, 1995). Fatherhood later transitioned from the 'moral father' to the primary worker and provider as a response to industrialisation in the 19th Century. The second world war further shifted the father to a gender role model, followed by a nurturing father in the mid-19th Century (Lamb, 1995). Current social ideals position the father as responsible for providing resources for the family, being a role model and supporting moral development (Singley et al., 2015). Later, it was idealised that the role of the protector and provider within the home should focus on the interpersonal, such as in increase in paternal involvement with children (Dollahite, 1997), creating a tension between traditional and ideal masculine norms.

Within adult development, Erikson's (1973) theory of generativity described the extension of the sense of self to encompass the next generation. Generative fathering (Dollahite et al., 1997) describes responding to the developmental needs of the child, i.e., meaningful paternal involvement, therefore, the act of providing and protecting is likely to present differently depending on the age of the child. This could be considered when exploring parenting of different age groups, e.g., being unemployed may have a greater impact on fathers of older children in relation to role-modelling, compared to an increased physical presence allowing for the provision of greater physical and emotional care for a younger child.

When faced with the task of managing work and family life, spending less time with children can increase efficacy in the workplace as a means of provided for the family but will likely reduce the self-efficacy for fathers in the care-giving role. As stress can further reduce self-efficacy, thus increasing stress, this bi-directional relationship may affect a paternal engagement with children (Murdock, 2013) and increase demands on other parental caregivers. Therefore, by better understanding the impact of pandemic lockdowns on the psychological wellbeing of families with increasing pressures on daily life, we can begin to consider where support may be most effective, e.g., psychosocial interventions.

1.2 Narrative Review

1.2.1 Aims of the Review

As mental health outcomes associated with parental vulnerability to the psychological impacts of the pandemic are likely to have lasting social, economic and wellbeing implications, there is a call for ongoing research to guide current policies and psychosocial interventions and to safeguard against similar experiences (Shevlin et al., 2020). Recent calls have highlighted the need specifically to investigate paternal health. This is due to research often exploring parental mental health without considering gender differences and as men are often underrepresented in parent research, the generalisation across genders and conclusions that the impact is greater for mothers, may miss the nuances of paternal mental health (Furlong et al., 2021). The deterioration of male mental health during the pandemic, reflected in the rise in suicide rates in the UK, may be exacerbated by the additional responsibility of parenthood, emphasising the importance of gaining a deeper understanding of fathers' mental well-being.

As a response, a narrative review was conducted to investigate current research into paternal mental health during the COVID-19 pandemic. The aim of the review was to ascertain current trends and inform potential gaps in the research, to identify research

questions for this study which will explore paternal responses to the pandemic within the UK. This included considerations of samples (including male representation) and tools used to measure psychological wellbeing. The main findings were discussed and synthesised, with an overall score given to the quality of the research. Additionally, the location of the study was also included to acknowledge the vastly differing responses of countries to the pandemic.

1.2.2 Methodology

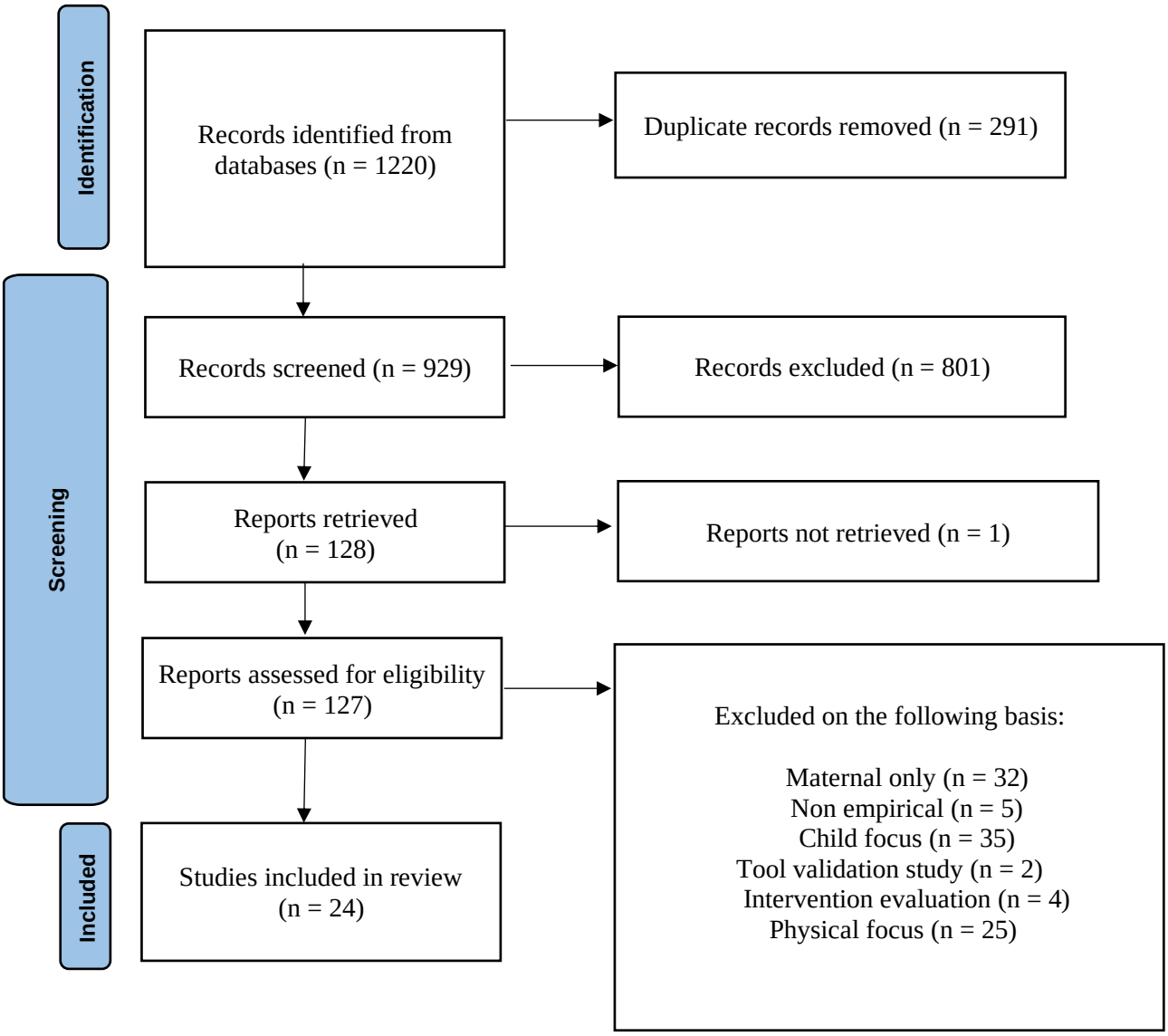
Search Strategy.

The literature was systematically searched in March 2024 within the following databases: MEDLINE Ultimate, APA Psychology Info, Science Direct, Cumulative Index of Nursing and Allied Health (CINAHL) and APA Psych Articles due to their extensive coverage of the literature and credibility. The range of dates was limited from March 2020 to March 2024 in order to capture experiences from the beginning of the COVID-19 pandemic, up until the time of data analysis. The search was conducted using the following terms and Boolean phrases; (“COVID-19” OR pandemic OR Coronavirus OR lockdown) AND (“mental health” OR “mental illness” OR “psychological health” OR “emotional health” OR stress OR "emotional wellbeing") AND (father OR paternal OR parental NOT maternal NOT mother) AND NOT students.

The search retrieved a total of 1220 papers with full texts. Once duplicates were removed, titles and abstracts were screened against the inclusion and exclusion criteria, as specified below, resulting in a full text review of 127 studies. Of these studies, 24 met the criteria for inclusion and were reviewed. Finally, reference lists were screened to identify any additional potential studies which also aligned with the inclusion criteria. Figure 1 details the search process, using the PRISMA approach (Page et al, 2020).

Figure 1

PRISMA flow diagram detailing search process (Page et al, 2020)



Inclusion and exclusion criteria.

Papers were included if they met the following criteria: 1) were written in English; 2) were published in peer review journals; 3) were the original paper; 4) reported on outcomes specifically for fathers; and 5) provided outcomes on psychological wellbeing. Papers were excluded based on 1) recruitment of mothers only; 2) were not empirical; 3) had child psychological wellbeing as its primary focus without paternal findings; 4) had a primary emphasis on maternal psychological wellbeing without paternal findings; 5) primarily

validated tools 6) evaluated a specific intervention 7) focused on a physical or neurological health need (i.e. additional vulnerabilities). Subsequently, a total of 24 papers met the inclusion criteria.

Quality Assessment.

A Mixed Methods Appraisal Tool [MMAT (Hong et al., 2018)] was selected to assess the quality of the reports, allowing for the consistent appraisal of five categories of studies, across all research methodologies. The tool includes two initial questions asking for clarity of the research questions and appropriateness of the data to address these, with five additional questions dependent on the design of the study (e.g., qualitative), relating to the procedure, measurements and analyses (as detailed in Appendix A) with 'yes', 'no' or 'can't tell' ratings. Table 1 indicates the number of criteria met for each study included (ranging from 1-5, with higher scores representing greater research quality). The review carefully considered the identified strengths and limitations throughout the analysis.

Statistical Methods.

A meta-analysis could not be conducted due to the inconsistency in measurements used to capture psychological wellbeing, in addition to inconsistences across the studies in reporting both the mean values and standard deviations.

1.2.3 Results

Table 1 describes the key characteristics of the total 24 reviewed articles. The main findings of the studies varied, in part due to the differences in the focus of the research, such the definitions and measurements of psychopathology (ranging from non-clinical stress to depressive disorders), as well as variations in risk and protective factors, e.g., low income. Although the research may hold clinical significance, it is important to consider methodological aspects when evaluating the quality of the reviewed papers, for example, with regards to the overall validity and application of the findings.

Table 1

Search results for narrative review of research into paternal mental health during the pandemic

Author & location	*N* males (% total)	Study design	Key features of total sample	Measure of psychological wellbeing	Main findings	Criteria met using MMAT
Zafar et al. (2021) Pakistan	318 (34.45%)	Survey; Quantitative	*M* age 34.19yrs, 97% sample married, children aged 0-18yrs, mostly low-low/middle income	COVID-19 Parenting Response Scale	Fathers experienced less parental concerns and childcare burden compared to mothers	1/5
Trumello et al. (2021) Italy	102 (100%)	Survey; Quantitative	*M* age 41.60yrs, 89% married, children aged 0-18yrs, majority medium-high socio-economic status	PSI-SF; PSS-10; HADS; SDQ; CRC	Psychological distress of fathers associated with higher parental stress, increased symptoms of anxiety and having less satisfaction in the parent-child relationship	2/5
Hellend et al. (2021) Norway	Control group, 403 (49%); Non-controls, 653 (49%)	Survey; Quantitative	*M* age fathers 42.7yrs, 55% living separately from partners, 1.65 children (*M* age 6.11yrs)	SCL-8; PSS; CPSS subscales VA, PA & CI	Fathers reported less stress compared to mothers; parents reported higher rates of stress during the pandemic compared to those without children; stress was higher during the pandemic	1/5
Bikmazer et al. (2020) Turkey	820 (25%)	Survey; Qualitative	*M* age 40.8yrs, children aged 6-18yrs, 18.2% healthcare workers (HW), 81.8% non-HW	GHQ-12; SDQ	Parents reported higher rates of parental distress during the pandemic compared pre-pandemic; risk factors included having a chronic health condition, being a mother, a younger parent	3/5

Author & location	*N* males (% total)	Study design	Key features of sample	Measure of psychological wellbeing	Main findings	Criteria met using MMAT
Russell et al. (2021) US	189 (51.5%)	Survey; Qualitative	*M* age 35.29yrs, 86% partnered, married, children aged 0-18yrs, 1-5 children, 64.2% white ethnic background	ARM; PSS-10; Adapted SSF; GAD; MDI; BSFC-S	Correlation between depressive symptoms and stress was greater for fathers	3/5
Alonzo et al. (2021) Guatemala	83 (34%)	Semi-structured telephone interview; Mixed	*M* age 36.42yrs, no further details reported	New measure	Parents reported greater stress during the pandemic compared to pre-pandemic; stress was higher compared to adults without children; gender differences not found	1/5
Mazza et al. (2021) Italy	136 (14.8%)	Survey; Qualitative	85.4% married, 1-6 children (aged 3-13yrs), 38.8% high school diploma, 84.1% employed, 45.6% medium-low socioeconomic status	SDQ: H-I, ES subscales; GHQ-12; BFI-10	Compared to pre-pandemic, parents reported higher rates of parental distress during the pandemic; distress higher for mothers and those parenting child aged 3-13yrs	1/5
Kerr et al. (2021) US	109 (10.8%)	Survey; Qualitative	*M* age 36.5%, 82.1% married, children aged 0-13yrs; 42.1% degree educated, 82% white, 65% higher income	PHQ-8; GAD; Adapted PBA; CIQ; New measure; Adapted PROPS	Higher anxiety for mothers compared to fathers during the pandemic	1/5
Elder et al. (2021) US	Not reported	Survey; Quantitative	Children aged 0-18yrs, no further details reported	New measure; Mental health scale (unspecified)	Parents report more symptoms of psychopathology during the pandemic compared to before; greater for parents compared to adults without children; no gender differences found	1/5

Author & location	*N* males (% total)	Study design	Key features of sample	Measure of psychological wellbeing	Main findings	Criteria met using MMAT
Aguiar et al. (2021) Portugal	315 (31.7%)	Survey, Quantitative	*M* age 41.26yrs, 85% two-parent family, 1-5 children, most 16yrs or more in education, 90.2% employed	PBA	Parenting exhaustion increased more for fathers in the initial stages of the pandemic; rates were higher for mothers pre-pandemic	3/5
Ben-Yaakov et al. (2022) Israel	137 (23%)	Survey, Quantitative	*M* age 31.42yrs, 97.7% married/ in spousal relationship, infants under 12 months old, 77.6% degree-educated, 55.9% average income	Unnamed questionnaire developed including PSI-SF	Mothers reported greater anxiety; fathers reported greater parenting stress; lower economic status, lower educational attainment and younger parents associated with increased COVID-19-related anxiety	3/5
Chen et al. (2023) UK	Approx. 280 (27-28%)	Survey; Quantitative	Majority living with one child, 84-87% cohabiting with adult, 42-45% degree or above, 67-87% white, 73-74% employed	GHQ-12	In September 2020, distress higher for fathers who were employed or had a child aged <2yrs. In February 2021, greater distress reported by fathers with 3+ children.	4/5
Manzi et al. (2022) Spain	121 (12%)	Survey; Quantitative	*M* age 49.25yrs, 84% married, children aged 0-14 years, all employed	Post Traumatic Growth Inventory, Perceived Stress Scale, Parental Efficacy Scale	Stress was higher/ parental efficacy lower for parents of child aged 6 years or below, associations between WRII and other factors moderated by gender; significant for mothers, not fathers	3/5

Author & location	*N* males (% total)	Study design	Key features of sample	Measure of psychological wellbeing	Main findings	Criteria met using MMAT
Borrescio-Higa et al. (2021) Chile	50% male (not reported for fathers)	Survey: Quantitative	*M* age 45.7yrs males, no further details reported	Vida en Pandemia ('Life During Pandemic') survey	Mothers more likely to report deterioration in mental wellbeing, associated with an increase in mothers' childcare responsibilities and becoming unemployed	4/5
Roberts (2022) UK	87 (100%)	Survey; Mixed	Children aged 6-11 years, 35% degree-educated, 70% white ethnic background, 43% higher income	PHQ-9; CIS; PPCF; PSDQ; SDQ	Increase in depression symptoms for fathers with lower income; paternal depression associated with child's externalising and internalising behaviours; worries associated with being a single parent and balance home-schooling with employment	4/5
Wade et al. (2021) Multi-national	143 (29%)	Survey; Quantitative	*M* age 41.33yrs, 90% married/ common-law partner, children aged 5-18 years, 73% white European	Adverse Childhood Experiences Questionnaire – revised; K10; PROMIS; TSQ	Paternal stress during pandemic more likely if experienced early adverse experiences	3/5
Yang et al. (2023) Singapore	166 (48%)	Survey; Quantitative	Children aged 0-18yrs, 78.3% Chinese, majority low income.	Childrearing Values Questionnaire; PHQ-4	Greater increase in symptoms for parents with a degree, younger mothers and fathers who aligned more with authoritarian values	3/5
Skrinpka-uskaite et al. (2023) UK	686 (7%)	Survey; Quantitative	*M* age 41.20 years, children aged 2–17yrs, 94% white ethnic background, 83% employed, 86% £16,000 or more per annum.	DASS-21	Parent stress and depression higher during restrictions. Effects were greater for those of children under 11yrs, other adults in household and WFH. Change moderated by being younger and having GSCEs or lower.	3/5

Author & location	*N* males (% total)	Study design	Key features of sample	Measure of psychological wellbeing	Main findings	Criteria met using MMAT
Thomeer et al. (2024) US	1090 (38.6)	Survey; Quantitative	M age 39yrs, 76% partnered, children aged 0-18yrs, 51.9% white ethnic background,	CES-D	Low mood related to unemployment, steeper increased for single parent, unemployed fathers and white parents.	3/5
Bourion-Bédès (2023) France	101 (13.8)	Survey; Quantitative	M age parents 51.5%, 74.4% married or living with partner, children aged 8-18yrs, 61.9% higher education, 63.3% full time employment	PSS-10, BRS	Poor parental resilience strongly associated with stress. Risk factors included being a mother, aged 35-44 and isolation from family.	3/5
Wiemer et al. (2021) Australia	31 (8%)	Survey; Mixed methods	M age 40.50yrs, average of two children, 77.2% Australian	PBA	Higher parental burnout for mothers during pandemic compared to fathers	2/5
Jaschke et al. (2023) Germany	Not reported	Survey; Quantitative	Not reported	MCS from SFHS, single item on life satisfaction.	No significant deterioration in mental health or subjective wellbeing	3/5
Molloy et al. (2024) US	44 (100%)	Semi-structured interview; Qualitative	93.2% married, at least one child aged 4yrs or younger; 55% graduate degree, 86.4% white ethnic background, 79.5% employed, majority mid-high income.	Semi-structured interview (unspecified)	Stress related to change in expectations; worries increased due to enhanced awareness of child's needs due to increase care-giving role; less likely to discuss emotions with partner if partner was stressed	4/5
Dawes et al. (2021) UK	9 (31%)	Semi-structured interview; Qualitative	Majority aged 40-44 years, 86.2% living with partner, 55.2% postgraduate degree, 62.1% White British, 34.5% employed.	Semi-structured interview (unspecified)	Fathers valued spending more time with family; limited access to usual support increased feelings of stress, particularly for mothers	3/5

Note. Adapted SSF, Specific Stressors Family; ARM, Adult Resilience Scale; BFI-10, Big 5 Inventory; BRS, Brief Resilience Scale; BSFC-S, The Burden Scale for Family Caregivers – Short Form; CES-D, Centre for Epidemiological Studies-Depression; CIQ, Coronavirus Impact Questionnaire; CIS, Coronavirus Impact Scale; CPSS, Conflicts and Problem Solving Scales; CRC, Change in Relationship With Child; DASS-21, The Depression, Anxiety and Stress Scale-21 items; GAD, Generalised Anxiety Disorder Assessment; GHQ-12, General Health Questionnaire; HADS, Hospital Anxiety and Depression Scale; K10, Kessler Psychological Distress Scale; MCS, Mental Component Summary Scale; MDI, Major Depression Inventory; MMAT, Mixed Methods Appraisal Tool; PBA, Parent Burnout Assessment; PBI, Parental Burnout Inventory; PAPF, Parent's Assessment of Protective Factors; PHQ-4, Patient Health Questionnaire - 4; PHQ-8, Patient Health Questionnaire – 8; PHQ-9, Patient Health Questionnaire; PPCF, Parent Proxy Cognitive Function; PROPS, Parent Report of Post-Traumatic Stress; PROMIS, Patient-Reported Outcomes Measurement Information System; PSI-SF, Parenting Stress Index – Short Form; PSDQ, Parenting Style and Dimensions Questionnaire; PSS, Parenting Stress Scale; PSS-10, Perceived Stress Scale; SCL-8; Symptoms Checklist; SDQ, Strengths and Difficulties Questionnaire; SFHS, 12-item Short-Form Health Survey; TSQ, Trauma Screening Questionnaire.

1.2.4 Discussion

Summary of findings.

The reviewed literature, as summarised in Table 1, suggests that psychological wellbeing, including stress (Hellend et al., 2021; Alonzo et al., 2021), parental distress (Bikmazer et al., 2020; Mazza et al., 2021) and symptoms of psychopathology (Elder et al., 2021), was higher for parents during the pandemic compared to pre-pandemic levels. Additionally, parents experienced higher rates of stress (Hellend et al., 2021) and greater symptoms of psychopathology (Elder et al., 2021) during the pandemic compared to adults without children. Furthermore, it was suggested that stress was associated with poor parental resilience, partly due to isolation from wider family support (Bourion-Bédès et al., 2023) and as a response to limited access to usual means of support (Dawes et al., 2021), with rates of parental stress and depression highest during periods of restrictions in the UK (Skrinpkauskaite et al., 2023).

When exploring gender differences in mental health outcomes, symptoms of anxiety were reportedly higher for mothers during the pandemic compared to fathers (Kerr et al., 2021; Ben-Yaakov et al., 2022). Furthermore, parental distress was reportedly greater (Bikmazer et al., 2020; Bourion-Bédès et al., 2023) and increased more (Mazza et al., 2021) for mothers during the pandemic compared to fathers. Fathers reported less stress compared to mothers during the pandemic (Hellend et al., 2021), however a more nuanced measure of parental wellbeing, found that fathers reported an increase in parenting stress (Ben-Yaakov et al., 2022). Furthermore, when exploring associations between psychological wellbeing variables, Russell et al., (2021) reported a stronger correlation between stress and depressive symptoms in fathers compared to mothers. Additionally, research using a fathers-only sample further found that both parenting stress and symptoms of anxiety were associated with increased psychological distress (Trumello et al., 2021), suggesting that although mothers

reported a greater increase in psychopathology during the pandemic, the impact on paternal psychological wellbeing was nevertheless significant, particularly relating to the role of parenting.

Comparatively within some studies, gender differences were not always found, such as with regards to stress (Alonzo et al., 2021) and psychopathology symptoms (Elder et al., 2021). It is also important to note that in one study, no change was found in relation to psychological wellbeing as a response to the pandemic (Jaschke et al., 2023). These discrepancies could in part be due to the many aspects of psychological wellbeing measured and the breadth of tools used. This potentially may have highlighted the complexity of conducting research during a time when researchers were responsive in capturing the impact of the pandemic, with little opportunity to develop a consensus of measures within the research community.

Within the research, risk factors for those most likely to experience psychological distress during the pandemic were explored, including wellbeing, social and economic stressors. Paternal stress was reportedly higher during the pandemic for parents who had experienced early adverse life experiences (Wade et al., 2021). Particularly, a deterioration in mental health symptoms and COVID stress was highest for fathers with pre-existing vulnerabilities, e.g., substance misuse (Wade et al., 2021), which was conceptualized within a stress sensitization model, i.e., stress was more likely to impact the mental health of those with early adverse experiences. Additionally, parental distress was greater for those with a chronic health condition (Bikmazer et al., 2020).

There were discrepancies in the research relating to gender differences in the impact of childcare responsibilities. For example, Ben-Yaakov et al. (2022) reported that although mothers reported greater symptoms of anxiety during the pandemic, fathers reported greater parenting stress compared to mothers. The researchers suggested this was due to the

increased time of fathers with their child and consequently being more attuned to behavioural difficulties, compared to prior to the pandemic when their child may have being in child-care or parents would have been at work. Similarly, Molloy et al (2024) found that fathers reported increased worry due to an increased awareness of child's needs as a result of greater care-giving responsibilities. Additionally, an increase in reported stress by fathers was related to the change in expectations and behaviours of fatherhood (Molloy et al., 2024), in addition to the child-parent relationship (Russell et al., 2021). For example, fathers who aligned more with authoritarian values had poorer mental health outcomes, i.e., lower mood was associated with an increase in rule-setting and subsequent family conflict (Yang et al., 2023).

Comparatively in other studies, less childcare burn-out was reported by fathers compared to mothers (Zafar et al., 2021; Wiemer et al., 2021), with a greater deterioration in mental wellbeing associated with an increase in childcare responsibilities for mothers compared to fathers (Borrescio-Higa et al., 2021). Similarly, fathers reported less parental concerns compared to mothers (Zafar et al., 2021) and reported valuing more time spent with family (Dawes et al., 2021). This allowed fathers to develop a renewed purpose as a result of taking on roles which may have previously been culturally positioned as maternal, e.g., housework and childcare responsibilities, suggesting fatherhood may have been a protective factor (Dawes et al., 2021). Nevertheless, although rates of parenting exhaustion were higher than mothers prior to the pandemic, exhaustion increased for fathers in the initial stages of the pandemic, (Aguiar et al., 2021) suggesting the stage of initial restrictions (e.g., lockdowns) and subsequent childcare responsibilities may have been particularly impactful for fathers. Additionally, the impact of stage may have varied dependent on parent gender.

There were also discrepancies in the impact of age of parents on psychological wellbeing during the pandemic. For example, being a younger parent was a risk factor for

parental distress (Bikmazer et al., 2020), COVID-19 related anxiety (Ben-Yaakov et al., 2022) and symptoms of stress and depression (Skrinpkauskaite et al., 2023). Comparatively, poor parental resilience associated with stress was linked to being 35-44 years old (Bourion-Bédès et al., 2023). As being a younger mother was associated with an increase in mental health difficulties (Yang et al., 2023), gendered differences relating to age may have impacted on findings, however, were not typically explored.

The age of the child was often associated with the psychological wellbeing of parents. For example, parenting a child aged 3-13yrs increased parental distress (Mazza et al., 2021) with stress and depression reported as higher for parents of children below the age of 11 years during periods of restrictions in the UK (Skrinpkauskaite et al., 2023). Fathers reported greater distress in September 2020 following further restrictions when living with a child aged 2 years and above, however distress was lower for fathers of a child aged above 5 years compared to men without children (Chen et al., 2023), suggesting that fatherhood may have reduced the psychological impact of the pandemic due to being able to adopt to the role of 'provider' in other ways, e.g., caregiving. Despite similar trends for fathers, there were discrepancies in psychological outcomes for mothers relating to the age of the child. For example, stress was reported as higher and parental efficacy lower for mothers of children aged 6 years and below (Manzi et al., 2022) compared to decreased distress reported by mothers of younger children (Chen et al., 2023). This highlighted the importance of exploring gendered responses.

Chen et al. (2023) found that fathers in the UK living with three or more children reported the greatest distress in February 2021, soon after the third and final national lockdown, suggesting that increased distress may have been more associated with having more children rather than the child's age, potentially due to increased financial strain and increased caregiving needs; therefore impacting on financial, physical and psychological

resources. The impact of number of children was not reported in the remaining literature to further explore the potential impact on parental wellbeing.

In relation to social support, parental stress and depression was higher overall for parents who had other adults residing in the household (Skrinpkauskaite et al., 2023). However, with regards to gender differences, symptoms of depression in fathers were associated with being a single parent (Robert et al., 2022; Thomeer et al., 2024). As fathers were less likely to discuss emotions with partner if their partner was stressed (Molloy et al., 2024) this may have contributed to differences in the impact of living with another.

With regards to gender differences in the impact of economic factors during the pandemic, mothers reported a greater deterioration in wellbeing compared to fathers after loss of income as a result of becoming unemployed (Borrescio-Higa et al., 2021). As stress was lower for mothers with higher work-parent identity integration (WPII), which was associated with higher job satisfaction, greater parental efficacy and increased post-traumatic growth (i.e., ability to recognise positive aspects of a stressful event), this suggests that mothers who are less integrated are impacted more by their parental performance.

However, there were discrepancies in the findings for fathers. For example, low mood increased more for fathers who were unemployed compared to mothers (Thomeer et al., 2024), with symptoms of depression increasing for fathers in the UK with lower income (Roberts, 2022). Comparatively, distress was higher for UK-residing fathers in employment in September 2020 following restrictions (Chen et al., 2023), with symptoms of depression in fathers associated with balancing home-schooling and employment (Robert et al., 2022). Similarly, Skrinpkauskaite et al. (2023) found that stress and depression was higher for UK-residing parents who were working from home and a main stressor for fathers were increased work demands (Yang, 2023). For parents working reduced hours, there were differing findings, with fathers who worked reduced hours claiming this allowed for addition time with

children, increasing a sense of wellbeing (Roberts, 2022), whereas working reduced hours in Manzi's et al.'s (2022) study was not found to be a protective factor.

Parents within a lower economic status and with lower educational attainment reported greater COVID-related anxiety, which the researchers suggested was due to increased resources (Ben-Yaakov et al, 2022). Similarly, changes in depression and stress scores were found to be moderated by having GSCEs or lower (Skrinpkauskaite et al., 2023) and mental health difficulties were overall highest for parents with a secondary diploma or lower (Yang et al., 2023), suggesting greater educational attainment may have been a protective. However, there was a greater increase in scores during the pandemic for parents with a degree, therefore the researchers suggested that unemployment or changes to income may have a greater effect for those who were in professional roles (Yang et al., 2023).

The literature also addressed systemic concerns surrounding mental wellbeing. For example, symptoms of paternal depression were associated with child's externalising and internalising behaviours (Robert et al., 2022) and psychological distress was associated with having less satisfaction in relationships for fathers (Trumello et al., 2021). Similarly, mothers reported greater parent-child and parental conflict during the pandemic, with increased conflict in interpersonal relationships within the family associated with an increase in mental health symptoms at pre-pandemic to pre-lockdown and pre-lockdown to post-lockdown (Yang et al., 2023). Additionally, there was a greater increase in mental health difficulties for parents who were white, with ethnicity of parents commonly not explored within the reviewed research (Thomeer et al., 2024), despite these demographics being collected (Yang et al., 2023), which limits our understanding of intersectionality and therefore groups that may be particularly vulnerable.

Sample Considerations.

A key weakness in the literature reviewed was the underrepresentation of males within the research studies. For example, only four of the studies reported that 50% of their sample were males (Trumello et al., 2021; Russell et al., 2021; Roberts, 2022; Molloy et al., 2024). Additionally, three studies did not report on the gender distribution within the sample (Elder et al., 2021; Borrescio-Higa et al., 2021; Jaschke et al., 2023). It is not uncommon to experience lower response rates for fathers with health research, e.g. do to not widening recruitment opportunities such as social services programs or barbershops (e.g., Davison et al., 2018), however, this is likely to reduce validity of findings for this demographic and impacts on the generalisability of findings in our understanding of parental psychological responses to the pandemic. Despite using purposive sampling, the representation of fathers remained low in the sample of fathers interviewed in Dawes et al, (2021) study, therefore the location of recruitment may require greater consideration with this population.

Three of the studies reviewed recruited fathers only (Molloy et al., 2024; Roberts, 2022; Trumello et al., 2021), allowing for difficulties in this population to be explored, however, in contrast to Chen et al. (2022) mothers and men without children were not recruited to examine parental gender differences, or the role of fatherhood on male mental health. Furthermore, despite gender differences being explored in the literature, at times these were not statistically significant resulting in findings being generalised to parental wellbeing (Alonzo et al., 2021; Elder et al., 2021). The majority of the studies reported on the ages of the children belonging to parents recruited, however, there were inconsistencies in the way ages were categorised. For example, the age ranges of children often varied, some studies did not explore age specifically whereas some papers grouped the ages into smaller ranges to assess for differences. A small proportion of the papers did not specify which age groups were represented. By recruiting a wider range of ages, this may enhance our

understanding of the impact of parenthood and subsequent challenges experiences during the pandemic.

Furthermore, recruiting parents of a wider sample of children could increase the generalisability of findings for parents of children living at home. However, it could be argued that a variety of child-related stressors are more relevant to particular age groups including increased care needs and educational responsibilities, e.g., supervising home-schooling. Furthermore, it is important to acknowledge that the wide representation of ages with limited consideration groups within the analyses may have led to a discrepancy in findings across the literature. Therefore, an exploration of specific age ranges could further enhance our understanding of the nuanced impact of age of child and subsequent caregiving on parental psychological wellbeing.

Previous research has proposed that societal factors can impact on resilience to stressful events (Fleming & Legogar, 2008). The studies mostly took place within Western countries, including four within the UK, which carries implications for interpretating the findings within the context of culture (e.g., masculine norms) and responses to the pandemic, such as the imposition of restrictions. The collection and reporting of sample characteristics were often inconsistent within the available literature. For example, the diversity may not have been reported (Skripkauskaite et al., 2023) or groups were restricted, such as 'white' and 'non-white' (Chen et al., 2022). Additionally, participants were mostly from a white ethnic background, were employed, heterosexual and were of mid-socioeconomic status. To enhance the diversity of the samples to improve the generalisability of the findings and subsequent implications, it is important to consider the representation of the sample, such as using weighting within analyses.

When considering additional sample characteristics, such as age or income, this was often underreported or not analysed in the literature and so the diversity of parents could not

be considered in relation to those at greater risk of psychological distress. This concern was directly addressed in the limitations of three studies by suggesting future research could explore both public and private healthcare (Zafar et al., 2021), recruit using a quota-based sample (Elder et al., 2021) or access crowd-sourcing platforms (such as MTurk) diverse client bases (Russell et al., 2021).

Additionally, often the research did not report the relationship between the child and parent, with 'parent' potentially including non-biological parents or carers. In Skripkauskaite et al.'s (2023) study, participants were either a parent or caregiver and the sample were referred to as caregivers in Wade et al.'s (2021) study. In the UK, family structures can be diverse, and can may include same-sex parents which may be accompanied by different stressors, such as societal stigma (Farr et al., 2020). Only one of the studies appeared to use parenting dyads (Yang et al., 2023), however, the relationship between outcomes between couples was not reported. To better understand the complexities of family mental health, parenting clusters could allow for the interplay between stressors to inform systemic interventions.

Methodological Directions.

In the early stages of the pandemic, research observed changes in the parental role, such as increased childcare, changes to employment arrangement, such as the ability to work from home and reduced informal support from social (Prime et al., 2020). To explore interactions between multiple variables at a single point in time in the early stages of the pandemic, a cross-sectional design was used by many of the studies (e.g. Mazza et al., 2021; Alonzo et al., 2021; Zafar et al., 2021; Bikmazer et al., 2021; Kerr et al., 2021; Molloy et al., 2024). Alternatively, many studies collected data at two or more time periods, to provide baseline comparisons and to explore changes over time (Hellend et al., 2021; Chen et al., 2023). This likely improved the validity of the research in relation to the impact of the

pandemic by using longitudinal data to captured change over time (Aguiar, 2021). For example, Skripkauskaite et al., (2023) used data from a large scale (Co-SPACE) administered within two UK-based longitudinal studies which had explored parental and child pandemic support (Lawrence et al., 2020; Waite et al., 2022).

A limitation of earlier research during the pandemic was that it did not allow for the any long-term impacts of the pandemic to be explored both during restrictions and once lockdown restrictions were completely removed, e.g., to assess if new routines and establishing a 'new norm' may reduce the impact on psychological wellbeing. This did not allow for the most vulnerable groups to be identified following the 'end' of the pandemic and for services to be targeted to those most effected by the enduring impact of the pandemic. Yang et al. (2023) collected data in June 2020 requiring participants to retrospectively report pre-pandemic, pre-first lockdown and post-first lockdown experiences. Multiple time points allowed for longitudinal analyses, however, the researchers acknowledged potential recollection errors.

To adapt to restrictions around contact during the COVID-19 pandemic, most research designs utilised surveys and questionnaires due to a limited capacity to collect data through other means (e.g., Elder et al., 2021; Mazza et al, 2021; Zafar et al., 2021; Russell et al., 2021; Trumello et al, 2021). The strengths of this design included extending geographical reach with reduced costs by allowing for larger amounts of data to be collected over a shorter amount of time. However, the validity of the findings may have been impacted through bot (non-human) responses if this was not mitigated, e.g. removing data in accordance with completion time and verifying responses by collecting participants age via email (Kerr at al., 2021; Russell et al., 2021). The use of video (Zafar et al, 2021) or telephone (Alonzo et al., 2021) interviews may have reduced this response bias. Furthermore, engagement in the research on the basis of having access and the ability to use technology can result in

populations which may be more vulnerable being underrepresented in the research, e.g. low income, lower educational attainment and impaired cognitive abilities (Kerr et al, 2021). Additionally, those accessing particular online platforms may have had similar characteristics and therefore similar pandemic-related experiences to others recruited into the studies. Qualitative studies during the later stages of the pandemic allowed for more detailed and richer insights into paternal mental wellbeing (Dawes et al., 2021; Molloy et al., 2024) whilst increasing the validity of the findings, although the low number of nine fathers in Dawes et al.'s (2021) study will have limited the generalisability of findings to this population.

Outcome Measures and Analyses.

Psychological wellbeing was measured using a variety of tools or reported on outcomes using phrases such as 'parental distress', whereas others specifically explored stress, anxiety and depression symptoms. To extend the availability of literature for the review, broad search terms were used, however, the reliability and validity of outcomes across studies was difficult to assess and may have partially explained the discrepancies in the findings. Nevertheless, the studies often used established measures with good reliability and construct validity, such as the GHQ as a measurement of common mental health disorders (i.e. anxiety and depression) and the Perceived Stress-Scale-10 (PSS-10). Additionally, as a response to the pandemic, further established measures were adapted; two indicated good internal consistency with the Specific Stressors Family (SFF) adaptation indicating a Cronbach's alpha of 0.90 (Russell et al. (2021), and an unspecified mental wellbeing measure in Elder et al's (2021) study demonstrating reporting $\alpha = 0.87$. Others reported acceptable internal consistency such as when measuring the quality of the parent-child relationship, $\alpha = 0.70$ (Trumello et al., 2021) or when exploring parenting practises and stressors, $\alpha = 0.74$ (Zafar et al., 2021). Additionally, measures were shortened to allow for prompt data collection, e.g. reducing the PBA from 23 to 5 items, or increasing the frequency

of data collection, e.g. monthly intervals compared to yearly intervals (Kerr et al., 2021). The reliability analyses were not reported for some new measures of psychological wellbeing within the sample (Alonzo et al., 2021; Ben-Yaakov et al., 2022) or for parenting behaviours (Kerr et al., 2021). Additionally, the 'Vida de Pandemia' measure was not standardised in Borrescio-Higa et al.'s (2021) study. Nevertheless, the development of these tools have arguably contributed to our current understanding of parental experiences.

Research to date has predominantly employed quantitative or mixed methods approaches to examine the impact of COVID-19 on mental health. However, a qualitative design could provide a deeper understanding of paternal experiences, the validity of which could be further explored with quantitative research. The majority of the quantitative measures in the studies reviewed utilised Likert scales, therefore the reliability of the findings could be reported, and this also allows for easier replication of the research. Nevertheless, self-report measures can lead to social desirability bias, therefore the validity of the findings may be compromised if participants for example report increased psychological wellbeing due to this being publicised in the media at the time.

Another further limitation is the possibility of central tendency bias, which limits the likelihood of capturing more extreme responses to experiences, resulting in the under or overestimation of items measures. Due to additional pressures on parents during the pandemic, scales with fewer ratings (e.g., Trumello et al., 2021) could have increased the likelihood of participants completing each item rather than these being limited to, e.g., parents of children with less care-needs, therefore reducing non-response bias of respondents. However, by limiting the ability to capture a wide range of responses, each rating might have represented a wider range of responses, therefore reducing the validity of the findings. Furthermore, the subjective nature of self-report measures could mean responses aren't indicative of individual experiences, e.g., if thresholds are different, therefore studies who

captured experiences with qualitative measures such as semi-structured interviews to perform grounded theory analyses, e.g., Molloy et al. (2024), were likely to have provided more nuanced and richer accounts of the impact of the pandemic on daily life.

A wide range of analyses were employed within the reviewed studies as a means of comparing psychological wellbeing between groups, measuring the significance of change over time and exploring the extent to which stressors impacted on the wellbeing of parents. This included linear regression models (Chen et al., 2023) and also linear mixed models (Yang et al., 2023) to account for clusters of individuals who were assessed at each time point, therefore stage of the pandemic was included as a fixed factor and interactions included timepoint with predictor variables. Furthermore, models were often run separately for mothers and fathers to provide comparisons of findings, as opposed exploring the statistical significance of outcomes. Others used a combination of quantitative and qualitative analyses to increase the reliability and validity of findings, such as in Roberts (2022) study which used regressional analyses of questionnaires and context analysis of open-ended comments, although did not have mothers or men without children as controls to highlight which experiences may have been unique to fathers. Comparatively, correlational analyses and associations were also used to compare the impact of stressors on psychological wellbeing between groups whilst taking into account covariates such as age, education and economic status (Ben-Yaakov et al., 2022), recognising that fathers are not a homogenous group and allowing for further investigation into populations who may have been at higher risk and required additional consideration or support.

1.3 Recommendations, Research Aims and Objectives

Despite some inconsistencies in the findings, as previously discussed, a general theme in the pandemic research is that parents and in particular, mothers, experienced a greater deterioration in psychological wellbeing. However, the review of the literature suggests that

fathers are often greatly underrepresented in the research, limiting the reliability and validity of these findings when generalising the impact of the pandemic to paternal populations. Furthermore, research often combines parents in the analyses, or focuses specifically on fathers, which limits our nuanced understanding of the experience of fatherhood in relation to both gender-specific parental responses and the role fatherhood and psychological wellbeing within male populations. Additionally, as fathers are not a homogenous group, subgroups of fathers should be explored to better understand those at increased risk of psychological distress, for example, understanding how ethnicity may impact on psychological wellbeing. Borrescio-Higa et al., (2021) recommend that future research explore the trajectory of mental health over the course of the pandemic. Concerns have also been raised relating to the systemic impact of paternal mental health, due to the relationship between paternal mental health and the psychopathological trajectories of children (Fontanesi et al., 2020), suggesting that family policy could benefit from a greater understanding of paternal impacts.

Specifically within the UK, males increasingly accessed crisis support during the pandemic and suicide rates peaked. Therefore, alongside the increased challenges of parenting children at home, within the context of stringent restrictions and lockdowns enforced by the UK Government, it is imperative that more is understood about paternal mental health during this period to ensure future responses to similar conditions have policies, resources, services and clinical interventions developed for fathers. As the threat and frequency of future pandemics has been predicted to be of greater severity, preparation within mental services in imperative (Hearne, 2021) due to the wellbeing, social and economic implications otherwise. Therefore there is a continuing need for pandemic research to better understand factors which may increase the psychological vulnerability of fathers during pandemic conditions. The review highlighted the need to include comparison groups to understand the nuanced impact on fathers, dependant on gender and parental role (i.e., having

children living at home). Additionally, to explore change specific to the pandemic it is important to compare this period to pre-pandemic data and consider long-term implications with the use of post-lockdown data. Consequently, this research aimed to contribute to the current literature by using longitudinal data from the UKHLS to explore the psychological wellbeing of fathers throughout the pandemic, compared to wellbeing prior to the pandemic and considering post-lockdown change. Potential stressors, categorised as wellbeing, social and economic, were included within the analyses to explore which may have the greatest impact for fathers, in comparison to mothers and men without children living at home. Subsequently, the following research questions (RQ) were examined within this research:

1. RQ1: Were there differences in psychological wellbeing during the pandemic for fathers compared with mothers and men without children living at home?
2. RQ2: Were there differences in the impact of wellbeing, social and economic factors on the psychological wellbeing of fathers, compared to mothers and men without children living at home?
3. RQ3: Which factors (i.e. wellbeing, social and economic) had the greatest impact on paternal psychological wellbeing during the pandemic?

Chapter 2. Methods

2.1 Epistemological Positioning

Within clinical psychology, quantitative research methodologies can be understood within the context of post-positivism epistemologies. Statistical methods can be used to explore distinct patterns within the social reality of human experience (Bisel et al., 2017), with significant results deriving from groups, leading to a generalisable truth with a small margin for error. Therefore the experience of the majority can dominate our understanding, minimizing the experience of the minoritised (Godwin et al. 2021).

Consequently, in order to offer a meaningful insight into the impact of the COVID-19 pandemic on paternal mental health, consideration was given to ethnic groups who are often underrepresented in clinical research. As the data was obtained from a large-scale UK survey, care was given not to assume representation due to statistical power alone. A recent paper by King (2021) investigated the construct validity of the measure used within this research (GHQ-12), with this specific dataset. Researchers found that the GHQ-12 did not demonstrate apparent bias relating to the ethnicity UK citizens, therefore the dataset was deemed appropriate for contributing to the current understanding of paternal mental health during pandemic phenomena.

Additionally, when considering a social constructionist viewpoint of mental health, different ethnic groups may define and explain symptoms for the same conditions differently. It could be argued that a qualitative methodological approach therefore may better suited to offer an enriched insight into mental health during the pandemic. However, due to the pervasive and enduring changes in the UK throughout the pandemic, a quantifiable perspective of the psychological changes over an extended period may offer a more insightful account of the mental health journey of fathers. As the current global literature focuses more on a countrywide narrative of the impact of the pandemic on mental health, a broader

introduction to the experience of fathers in the UK during this time may be better sought using a quantitative approach. This research hopes to pose questions for future research, which qualitative methodologies could address.

2.2 Design

The research used data from the UKHLS, in order to employ a longitudinal design for the purpose of this research. The UKHL study is based at the University of Essex within the Institute of Social and Economic Research. The project gathers longitudinal data from households within the UK (including England and Scotland) to ascertain changes in life over time and for the exploration of interpersonal relationships, e.g. couples and family dynamics. Each round of data collection occurs either annually or biannually and is referred to as a 'wave'. Waves are numbered sequentially since the first wave (i.e., wave 1) in 2009. Understanding Society was designed to be representative of the UK population in 2009 and represents 10,000 people for each birth cohort starting from the 1940s. Therefore, due to the extensive number of participants, it allows for research into sub-groups whilst maintaining overall good statistical power. A power calculation was not performed specifically for the purpose of this research. There is an ethnic minority boost sample which aims to gather data from an additional 1000 individuals from each of the following minority groups: African, Indian, Bangladeshi, Pakistani and Black Caribbean. Participants are selected for the study in accordance with specific criteria or move into a household with a participant already contributing to the study.

Participants were recruited utilising a multi-frame stratified sampling method based on data collected within the 2001 Census of England and Wales. The population were divided in subgroups, such as socio-economic status, and 40,000 households were selected. All members of the household over 16 years of age were invited to participate, with the understanding that they would be asked to contribute data to follow-up waves. All members

continue to be followed as they move households and establish new family systems. Participation is voluntary and if members leave the UK, they are no longer interviewed, however, currently 90% of the previous cohort remain, therefore the UKLHS claims that globally it is one of the most robust longitudinal studies.

Data collection for the main survey included in-person interviews and online surveys. In addition to the GHQ-12, participants were asked to complete other standardised measures to assess psychological wellbeing, including the PHQ-9 (Patient Health Questionnaire) to measure the severity of depression symptoms and the GAD-7 (Generalized Anxiety Disorder 7-item scale) as a measure of anxiety symptoms. During the COVID-19 pandemic, a shorter web-based survey (COVID-19 Survey) was developed. This additional survey was administered between April 2020 to September 2021, to track changes relating to the impact of the pandemic, with the GHQ-12 consistently used at each time point and therefore selected as the outcome measure.

2.3 Participants

Demographic information was obtained from the dataset including age, gender, ethnicity and educational attainment. To mitigate for missing data, demographics were assumed not to change for each participant and so were imputed from other waves where this had been reported. Paternal status was defined as having one or more child under the age of 18 years living within the household, obtained from either a "number of children in household" question, or if one or more children were reported in a child age group category. Participants were asked to define their gender as either male or female. Participants were asked for their ethnic group, which will be categorised as either 'Asian or Asian British', 'Black, Black British, Caribbean or African', 'mixed or multiple', White or Other ethnic background. The response 'white' was used as the reference group for the purpose of analyses. Parental status was defined as being a parent of a child aged 0-17 years living

within the household, to allow participants to be grouped into one of three categories: mothers, fathers or men without children living at home. For the purpose of analyses, a variable 'parent gender' was created to include mothers and fathers, with father selected as the reference group. Similarly, the variable 'paternal status' was created to include fathers and men without children living at home (labelled non-fathers for the purpose of analysis), with father as the reference group. Participants were selected if they are above the age of 16 years with ages ranging from 18-81 years for fathers, 16-99 years for mothers and 18-89 years for men without children living at home. Information regarding long-term health conditions was collected and those with diagnosed enduring mental health conditions were excluded, due to the potential confounding impact on psychological wellbeing. Participants were selected if they provided psychological wellbeing scores (see Measures) at each of the five time points (see Procedure).

2.4 Procedure

Within this study, the stages of the pandemic were grounded within five specific time points. As the rate of data collection for each wave can vary, dates for data collection were created using the main survey waves 10, 11 and 12. Pre-pandemic (T1) data refers to data collected between March 2019 and March 2020, and post-lockdown (T5) data was specified as collected from August 2021 (when the last of the UK nationwide restrictions were lifted) through to August 2022. Some participants had two datasets for T1 from waves 10 and 11; in this case, wave 11 was selected as it was the closest to the beginning of the pandemic. Similarly, some participants had two datasets for T5 from waves 11 and 12; in this case, wave 12 was selected as this was the closest to the end of the lock-down period. Stages T2, T3 and T4 were collected at waves 1, 5 and 7 of the COVID-19 survey, as detailed in Table 2. T2 denotes the period when the UK went into the first full national lockdown, T3 was defined by the temporary lifting of restrictions with the introduction of the 'rule of 6' (six people from

different households were able to meet) and T4 was marked by the third and final national lockdown. A timeline of UK responses can be found in Appendix B.

The fieldwork for the main survey was carried out by Kantar either face-to-face or via telephone and consent was sought orally. Kantar is a global company which provides research and analysis to offer insights into many areas including behaviour and public opinion. For the COVID-19 survey, data was collected by Ipsos MORI (Market and Opinion Research International), and participants were asked to complete a 20-minute survey. Consent was indicated by the completion of the survey. For those with difficulty accessing the online COVID-19 survey, researchers obtained results via a telephone survey (conducted by Kantar) with oral consent. The questionnaire was administered in English. Table 2 illustrates the variables of interest selected for the purpose of this research and the specific time points they were measured using either survey.

Table 2.

Survey variables selected for study

Variable	Main survey: Waves 10/11/12	COVID-19 survey: Waves 1, 5 & 7			Main survey: Waves 10/11/12
	T1 (03/2019 – 03/2020)	T2 (April 2020)	T3 (September 2020)	T4 (January 2021)	T5 (08/2021 – 08/22)
Psychological distress (PsD)	✓	✓	✓	✓	✓
	Wellbeing factors				
Loneliness	✓	✓	✓	✓	✓
Life satisfaction	✓		✓	✓	✓
Health condition	✓	✓*	✓*	✓*	✓*
	Social factors				
Living with a partner	✓	✓	✓	✓	✓
Happiness with partner			✓	✓	✓
Division of childcare	✓		✓	✓	
No. children	✓	✓	✓	✓	✓
Child aged 0-4 years	✓	✓*	✓*	✓*	✓
Child aged 0-11 years	✓	✓*	✓*	✓*	✓
	Economic factors				
Employment	✓	✓	✓	✓	✓
Furlough		✓			
Ability to work from home	✓		✓	✓	✓
Yearly personal income	✓				✓

Notes: PsD defined as GHQ-12 score; Stages of the pandemic T1-T5; T1 March 2019 – March 2020, T2 April 2020, T3 September 2020, T4 January 2021 and T5 August 2021-August 2022. *Imputed from previous timepoint.

2.5 Measures

The main survey has remained relatively unchanged since the start of the study, due to the purpose of capturing changes in individuals. It continues to be overseen by the Subject Leadership Team at the University of Essex, and informed by the Scientific Advisory Group, comprising of methodological experts in the UK. The COVID-19 survey was developed to assess the welfare of UK individuals and families over the course of the pandemic. Questions

varied in accordance with the COVID-19 pandemic, including periods when families were expected to home-school.

The GHQ-12 was used to measure psychological distress (PsD) as a means of capturing change in the psychological wellbeing of participants over the course of the pandemic and served as the dependent variable. The measure is widely used in population research to assess for non-psychotic illness, e.g., anxiety and depression, and has demonstrated excellent reliability and validity (Goldberg et al., 1997). It has also been used by researchers when exploring psychological wellbeing during the COVID-19 pandemic (Chen et al., 2023). The tool measures anxiety and depression symptoms and requires participants to rate their responses to 12 items (as detailed in Appendix C) using a 4-point Likert scale, ranging from "not at all" to "much more than usual". The measure gives a total score, ranging from 0-36 with higher scores indicated lower subjective wellbeing and increasing the likelihood of being diagnosed with a common mental health disorder (CMD). For the purpose of this research, the change in scores was of primary interest, not whether scores crossed the clinical threshold to indicate a probable CMD.

The independent variables were grouped into the following categories: wellbeing, social and economic factors. Appendix D details the development of these factors, demographics and the dependent variable (PsD), using the UKHLS dataset to combine the main and COVID-19 surveys.

2.5.1. Wellbeing Factors

Wellbeing factors included feelings of loneliness, life satisfaction and long-term health conditions. In the current literature, loneliness is suggested to be associated with decreased psychological wellbeing (Bu et al. in 2020). Participants were asked "In the past 4 weeks, how often did you feel lonely", with responses ranging from 1 = hardly ever or never,

2 = some of the time or 3 = often. In the analyses, 3 was the reference value for this categorical variable.

Satisfaction with life has also been associated with wellbeing (McGrath et al., 2021), therefore, to capture life satisfaction, the categorical variable life satisfaction was created. In the original dataset participants were asked "How satisfied are you currently with your life overall?" with 7 responses ranging from completely dissatisfied to completely satisfied. Due to the small number of participants for fathers in some of the responses and to increase statistical power, responses were combined to form the following categories: 1 = dissatisfied, 2 = neither and 3 = satisfied. For the purpose of analyses, 3 was the reference value. This information was not captured at T2, however, was not imputed due to the research questions aiming to explore changes, therefore this could not be assumed.

Those with a diagnosed long-standing health condition may have experienced increased distress and worry due to the risk of harm of potentially contracting COVID-19 (Bikmazer et al., 2020), therefore a categorical variable 'health condition' was created to capture if a health condition was reported or not. Participants were asked if a doctor or other health professional had ever told them that they had the following condition: asthma, thyroid disorders, liver conditions, chronic bronchitis, epilepsy, hypertension, Multiple Sclerosis, H.I.V., Chronic Obstructive Pulmonary Disease (COPD), arthritis, cancer, diabetes, heart related conditions (e.g. angina) and stroke. Missing values were imputed from previous values. Further details of the variables from the original dataset which were combined to create this variable can be found in Appendix D.

2.5.2. Social Factors

Social variables included whether the participant was living with a partner, degrees of happiness with a partner, division of child-related responsibilities, number of children living in the household, living with a child of primary age (0-11 years), living with a child of pre-

school age (0-4 years). Men without children living at home did not provide any responses to the child-related questions, therefore analyses for these variables were conducted for fathers and mothers only. Living with a partner has been associated with psychological wellbeing (Andrada et al., 2021), therefore a cohabiting variable was created for those reporting to live with a partner and was derived from two variables from the data set, as detailed in Appendix D. The variables were assigned different response codes in the main survey compared to the COVID-19 survey, so these were recoded as the same value. Those who were married, in a civil partnership or who reported living together were categorised as 'yes' (a score of 1) and all other responses (e.g. widowed or divorced) were categorised as 'no' (a score of 2). The response 'no' was used as a reference group for this categorical variable.

Additionally, relationship satisfaction has been suggested to be associated with psychological wellbeing (Trumello et al., 2021), therefore a categorical 'happiness with partner' variable was created. Within the original dataset, those reporting to live with a partner, or married or in a civil partnership were asked to "select the response which best describes the degree of happiness, all things considered, of your relationship now, with the middle point 'happy', representing the degree of happiness of most relationships". Responses ranged from 1-7, with 1 representing extremely unhappy and 7 defining 'perfect'. To increase the statistical power of responses, these were reduced to three categories for the purpose of this study, ranging from 1 to 3. Those reporting being very/ extremely happy or perfect were combined to be 'more happy' (score of 3), those reporting happy were redefined as 'average' (score of 2) and those reporting being extremely, fairly or a little unhappy were grouped as 'less happy' (score of 1). The response 'more happy' was selected as the reference group for the purpose of analyses. This information was not captured at T1 or T2, however, it was not imputed due to the research questions aiming to explore changes, therefore this could not be assumed.

The division of childcare has been associated with psychological wellbeing, with caregiver burden suggested to be higher for those who provide the majority of care for their child (Russell et al., 2021). In the original dataset, participants were asked who is mainly responsible for looking after the children with responses including 'mainly self', 'mainly partner', shared, or 'someone else'. Due to the small number of responses for 'someone else' during the pandemic, a categorical 'division of childcare' variable was created by combining 'mainly partner' and 'someone else', leading to three responses; 'mainly self', shared or 'someone else'. The response 'someone else' was used as a reference group for this categorical variable. This information was not captured at T2 or T5, however, was not imputed as the division of childcare could not be assumed due to the unknown adaptations in household functioning during the pandemic.

The number of children living in the household has been suggested to have effected the psychological wellbeing of parents during the pandemic (Chen et al., 2023), therefore a categorical variable was created to capture this information. In the original dataset, responses ranged from 1 child up to 8 children within the household, with much smaller sample sizes in the higher responses. Therefore these were reduced to 1, 2 or '3 or more'. As participants were not asked for this information within the COVID-19 survey, the data was imputed for time points T2-T4, using figures from the previous time point. The response '3 or more children' was used as the reference group.

Research into the effects of parenting during the COVID-19 pandemic, often selects an age range of children as being under 12 years, for example due to the additional support required in general care-giving responsibilities (e.g., preparing meals) and home-schooling (Skrinpkauskaite et al., 2023). Therefore a categorical variable for children aged 0-11 years was created, with responses being yes or no and 'yes' selected as the reference group. Variables from the original dataset were combined if they pertained to having children within

this aged range, as detailed in Appendix D. Furthermore, research into the caregiving of a pre-school child (aged 0-4 years) has found that the additional caregiving responsibilities (e.g., higher levels of supervision), may have increased parental stress during the pandemic (Chen et al., 2023), therefore a categorical variable was created to explore gender differences in psychological wellbeing as a result of parenting a child of this age range. All variables from the original dataset relating to the age of the child being below 5 years were used (as detailed in Appendix D), with responses being yes or no. The response 'yes' was selected as the reference group.

2.5.3. Economic Factors

Due to the literature suggesting an association between economic status and psychological wellbeing (Griffith et al., 2021), economic variables were selected including employment status, if they were furloughed or receiving Government funding, ability to work from home and yearly personal income. A new employment variable was created to combine variables from the main and COVID-19 surveys. Respondents were asked in the main waves if they were in paid employment; 'yes' was coded as 1 and 'no' was coded as 2. In the COVID-19 survey the responses were coded differently, therefore 'employed' and 'self-employed' responses were coded as 1, and 'no' was coded as 2.

To explore the impact of accessing the UK Government's Furlough Scheme following the first lockdown on psychological distress, a furlough variable was selected from the dataset. Respondents were asked "have you received a written letter or email from your employer to confirm that you have been furloughed under the Coronavirus Job Retention Scheme" with 'yes' coded as 1 and 'no' coded as 2. 'No' was selected as the reference group for this categorical variable. Respondents who were employed and had flexible working at their place of work were asked if they were able to work from home on a regular basis. If this was mentioned, a score of 1 was given and if it wasn't mentioned, a score of 0 was given.

A yearly income variable was created by selecting the total net personal income (no deductions) variable, which gave a monthly total, and firstly multiplying this by 12 months. To increase statistical power in each category, earnings of £0 to £10,000 were coded as 1, £10,001 to £20,000 was coded as 2, £20,001 to £30,000 was coded as 3, £30,001 to £40,000 was coded as 4, £40,001 to £50,000 was coded as 5, and finally earnings of £50,001 and above were coded as 6, with 6 representing the reference group for this categorical variable.

2.6 Analyses

Due to the non-normative nature of the dataset (as assessed in Results), initial non-parametric tests were selected to explore differences in PsD scores between groups. Due to the research question exploring changes in PsD scores over the course of pandemic, repeated measures were then utilised as subjects were asked for GHQ scores at each of the five time points. To examine statistical differences in the stressor variables over time for each group, a Cochran's Q test was conducted for variables with two categories at multiple time points, a Pearson Chi-Square for variables with two categories at two time-points and a Friedman's test was used for those with three or more categories at three or more time points.

Parametric tests (i.e., Linear Mixed Models) were conducted explore the impact of interactions between each group (fathers/mothers/non-fathers) and predictor (fixed variables), categorised as either wellbeing, social or economic variables, to see if changes in any effects were unique to specific pandemic stages (i.e., time points). Each stressor variable was included in its own model, independently of the other factors to explore the effects of these on PsD. This enabled an insight into the unique contribution of each variable without potential confounding effects of the remaining stressor variables. As each factor was run on its own in separate models, this could have increased the risk of Type I errors, therefore the models were adjusted using a Bonferroni correction method in order to control for the likelihood of false positives. Furthermore, the models were created as part of an exploratory

analysis to identify predictor variables to later include in a multivariate model (for fathers only), to further investigate the complexity of paternal psychological distress, as specified in RQ3. This accounted for potential type 1 errors, collinearity and interactions between variables within the earlier models, to indicate which factors may have been most impactful on paternal psychological wellbeing.

Linear Mixed Models were selected for the repeated measures analyses due to the robust nature in handling non-parametric data and ability to manage missing values. Subjects were grouped by participant ID to allow scores to be clustered for each participant and to account for random effects, i.e. the variability in the outcome variable that is specific to each individual in the dataset. A scaled identity covariance structure was selected for the models as it assumes that the variations within different groups or time points are similar. As the average effect of time on GHQ scores across all participants was of interest, stage of the pandemic (Tx) was included as a fixed factor in every model, with the earliest time point as the baseline for each variable, with all further time points being compared to these scores. Each of the additional fixed factors (wellbeing, social and economic) were included in the model but independent of each other, not in combination. As mentioned, covariates included age, ethnicity and educational attainment (i.e., highest qualification attained). Restricted maximum likelihood (REML) estimation was chosen to account for the non-parametric nature of the data.

Linear mixed models are useful in mental health research due to the nature of such studies whereby responses are sampled within subjects and subjects within populations. Furthermore, these models offer robust, multidimensional insights by utilizing repeated measures from longitudinal data, capturing individual differences in outcomes, such as well-being (Gibbons, 2000).

2.7 Ethical Considerations

The use of data from the UKHLS for DClinPsych trainees is approved by The University of Essex Ethics Committee, including consent for data linkages. Participants were assured that the data collected was for social research use only and details would not be shared for marketing use. Both Understanding Society and the partners who collect the data (NatCEN Social Research and Kantar Public) are compliant with ISO-27001 data security protocols. The companies are also GDPR (General Data Protection Regulation) compliant, in accordance with the Data Protection Act 2018. All identifying information was removed from the data, including names and addresses before being stored within the UK Data Archive at the University of Essex. Participants are giving login details which are unique, in order to access the survey.

As the majority of the data during the pandemic was collected via web-based responses, participants may have disclosed high levels of psychological distress or may have had increased insight into this, without potential risks being immediately safeguarded. At the end of the COVID-specific questionnaires, participants were informed of contact details for the Samaritans and were also advised to visit the relevant NHS websites for further information and support with regards to COVID. We are mindful that those with more severe symptoms of psychological difficulties may have struggled to seek help independently, especially men who may be less likely to display help-seeking behaviours (Parent et al., 2018). Comparatively, a proportion of the data was collected via telephone and so there may have been more opportunity to support signposting at these times. However, as this was not specifically reported, it is unknown how often this happened.

There were a selection of questions within the survey pertaining to the use of child-management, e.g. punitive measures used. Participants were advised that researchers needed to ensure the safety of household members and so may have liaise with other agencies if there

were concerns. It is unclear who they may have liaised with and whether this was discussed with participants at the time.

There are a couple of potential ethical considerations of this research, which have been considered retrospectively and therefore cannot be managed at this stage. The pandemic led to periods of lockdown, and many isolated due to contracting the virus or as a result of shielding with severe and enduring health needs. As the research is looking specifically at parents of children living within the home, the ability to accurately complete the survey may have been impeded, e.g., due to home-schooling. There is also the issue of confidentiality, especially for data collected over the phone, during times that lockdown restrictions meant that other family members would have likely been at home too.

2.8 Dissemination

It is important to disseminate research findings to inform academic and public understanding and contribute to policymaking relating to the impact of the COVID-19 pandemic on psychological wellbeing. This is due to the individual, systemic, social and economic implications of this research area. Consequently, the following journals will be approached to request publication of the findings; International Journal of Social Psychiatry, The Interdisciplinary Journal of Family Studies and the International Journal of Psychology. The following organisations will also be contacted to support in disseminating the research; NHS England website, the Samaritans, Mind and the UKHLS. Finally, the research may also be of relevance at the Understanding Society Scientific Conference and The BPS Division of Health Psychology (DHP) Annual Conference.

Chapter 3. Results

3.1 Research Questions

The analyses selected aimed to explore the following research questions:

RQ1: Were there differences in psychological wellbeing during the pandemic for fathers, compared to mothers and men without children living at home?

RQ2: Were there differences in the impact of wellbeing, social and economic factors on the psychological wellbeing of fathers, compared to mothers and men without children living at home?

RQ3: Which factors (wellbeing, social and economic) had the greatest impact on paternal psychological wellbeing during the pandemic?

3.2 Tests of Assumptions

Analyses were performed using IBM SPSS Statistics and IBM SPSS AMOS. A Kolmogorov-Smirnov test of normality was used to assess whether scores measuring psychological distress (PsD) were normally distributed. Non-normal, left-skewed distributions for all timepoints were determined through a visual inspection of the histograms, which was demonstrated also in the results of the significant Kolmogorov-Smirnov tests, (T1 = .18, p <.001; T2 = .13, p <.001; T3 = .19, p <.001; T4 = .17, p <.001; T5 = .18, p <.001). A result of p<.05 indicates that the data does not demonstrate normal distribution, suggesting that the null hypothesis is to be rejected. As the dataset contained scores of zero within the dependant variable (PsD), a constant of 1 was added to the scores and a log transformation was performed. The data became negatively skewed and remained not normally distributed; therefore the original data was selected for the analyses.

3.3 Participant Characteristics

Separate non-parametric tests (i.e., Chi-square and t-test) were used to ascertain if there were significant differences in characteristics dependant on parent gender and paternal

status, using baseline dataset. Therefore, fathers' characteristics were compared to mothers and similarly fathers were compared to men without children living at home, as demonstrated in tables 3 and 4 respectively. In total, 596 fathers, 940 mothers and 5530 men without children had PsD scores at each stage and therefore included in the analyses. On average, fathers were slightly older (M = 43.59, SD = 7.81) compared to mothers (M = 40.53, SD = 7.75) and this difference was significant, $t(1534) = 7.5$, $p < .001$. Furthermore, fathers were significantly younger than men without children (M = 50.43, SD = 19.51), $t(6124) = -8.49$, $p < .001$. There were similar representations of ethnic background for each group, with no significant differences compared to fathers, $p > .05$. The majority of the sample identified as white (75.2% fathers, 78.5% mothers and 76.8% men without children), followed by Asian or Asian British (16.9% fathers, 13.2% mothers and 16.2% men without children), Black, Black British, Caribbean or African (4.5% fathers, 4.6% mothers and 4.7% men without children), mixed or multiple (2.3% fathers, 2.8% mothers and 1.9% men without children) and final participants who identified as 'other' (1.0% fathers, 1.1% mothers and 1.0% men without children).

With regards to educational attainment, significant differences were not found between fathers and mothers, $p > .05$, however, fathers did differ significantly to men without children, X^2 (3, N = 6126) = 103.43, $p < .001$. The majority of the sample were educated to degree level or higher (59.5% fathers, 60.8% mothers and 39.0% men without children). The second largest group were fathers and mothers educated to A-Level or similar (19.4% and 18.9% respectively) compared to GSCE or lower for men without children (29.1%). This was followed by GCSE or lower for mothers and fathers (19.0% and 18.5% respectively) and A-Level or similar for men without children (23.7%) and no qualification (2.1% fathers, 1.9% mothers and 7.6% men without children).

Table 3.

Differences Between Characteristics of Parents at Each Stage of the Pandemic

Baseline characteristic	Mothers		Fathers				
	n	%	*n*	%	*df*	*Test statistic*	*p*
Age (*M(SD)*)	40.53 (7.75)		43.59 (7.81)		1534	7.5	<.001
Ethnicity					4	4.26	.37
Asian or Asian British	124	13.2	101	16.9			
Black, Black British, Caribbean or African	43	4.6	27	4.5			
Mixed or multiple	26	2.8	14	2.3			
White	737	78.4	448	75.2			
Other	10	1.1	6	1.0			
Education					3	.27	.97
Degree or higher	556	60.8	347	59.5			
A-Level or similar	173	18.9	113	19.4			
GSCE or lower	169	18.5	111	19.0			
No qualification	17	1.9	12	2.1			

Note. Total fathers = 596; Total mothers = 940. Test statistics for Chi-Square (X^2 value) and t-test (*t* value).

Table 4.

Differences Between Characteristics of Males at Each Stage of the Pandemic

Baseline characteristic	Fathers		Men without children				
	n	%	*n*	%	*df*	*Test statistic*	*p*
Age (*M(SD)*)	43.59 (7.81)		50.43 (19.51)		6124	-8.49	< .001
Ethnicity					4	1.52	.82
Asian or Asian British	101	16.9	845	15.5			
Black, Black British, Caribbean or African	27	4.5	256	4.7			
Mixed or multiple	14	2.3	103	1.9			
White	448	75.2	4185	76.8			
Other	6	1.0	57	1.0			
Education					3	103.43	< .001
Degree or higher	347	59.5	2090	39.0			
A-Level or similar	113	19.4	1273	23.7			
GSCE or lower	111	19.0	1561	29.1			
No qualification	17	2.1	451	7.6			

Note. Men without children living at home. Total fathers = 596; Total men without children = 5530; Test statistics for Chi-Square (X^2 value) and t-test (*t* value).

3.4 Changes in Stressor Factors Over Time

To examine statistical differences in the stressor variables over time for each group, a Cochran's Q test was conducted for variables with two categories at multiple time points, a Pearson Chi-Square for variables with two categories at two time-points and a Friedman's test was used for those with three or more categories at three or more time points. Results are displayed for fathers, mothers and men without children in Appendix E. Loneliness scores for fathers appeared to peak during the third and final lockdown (T4) and were lower post-lockdowns (T5) compared to pre-lockdown (T1), however this change was not significant, $p > .05$. Comparatively, there was a significant difference in loneliness scores over time for mothers, as the number of mothers reporting feeling lonely often increased during the first national lockdown (T2), reduced when restrictions were temporarily lifted (T3), peaked at the third (T4) and reduced to higher than pre-pandemic levels post-lockdown (T5), $\chi^2(4) = 22.23$, $p < .001$. There was also a significant difference in loneliness scores for men without children over time, with the percentage of men reporting feeling often lonely being highest pre-pandemic, reducing during the first lockdown (T2), increasing slightly at the third and final lockdown (T4) and then reducing to lower than pre-pandemic levels post-lockdowns (T5), $\chi^2(4) = 20.21$, $p < .001$.

There were significant differences in life satisfaction scores over the course of the pandemic for fathers, $\chi^2(3) = 11.06$ $p < .05$, mothers, $\chi^2(3) = 9.73$, $p < .05$ and men without children, $\chi^2(3) = 77.94$, $p < .001$, with all groups demonstrating an increase in dissatisfaction when restrictions were temporarily lifted (T3), with this peaking during the third lockdown (T4) and reducing to lower than pre-pandemic levels post-lockdowns (T5). There were also significant differences in the number of fathers, $\chi^2(4) = 111.18$, $p < .001$, mothers, $\chi^2(4) = 111.18$, $p < .001$ and men without children, $\chi^2(4) = 663.74$, $p < .001$, reporting health

conditions during the pandemic, with the highest percentage of participants reporting a health condition during the first lockdown (T2) compared to other timepoints and this gradually reducing over time.

There were significant differences in the percentage of fathers living with a partner over the course of the pandemic with those cohabiting being lowest during the first lockdown (T2) and gradually increasing, albeit to lower that pre-pandemic figures, $\chi^2(4) = 40.62$, $p < .001$. Comparatively, it appeared that percentage of mothers living with a partner increased from the first lockdown (T2) to the third (T4), with figures being lowest post-lockdowns (T5) and these differences were significant, however, this change was not significant, $p > .05$. Furthermore, the percentage of men without children living with a partner significantly increased when restrictions were temporarily lifted (T3) and then reduced to lower than pre-pandemic figures at post-lockdowns (T5), $\chi^2(4) = 259.7$, $p < .001$. The percentage of fathers reporting less than average degrees of happiness with their partner significantly increased from when restrictions were temporarily lifted (T3) to the third lockdown (T4) and was lowest post-lockdowns, $\chi^2(2) = 1399.55$, $p < .001$. Conversely, this figure slightly decreased for mothers during the same time period (T3 to T4) and was highest post-lockdowns (T5), $\chi^2(2) = 2352.02$, $p < .001$. Similarly, the percentage of men without children reporting less than average degrees of happiness with their partner decreased during this period (T3 to T4) and slightly increased at post-lockdown (T5), $\chi^2(2) = 5478.33$, $p < .001$.

With regards to child-related demographics, there were significant differences in the provision of childcare by fathers, $\chi^2(2) = 13.61$, $p = .001$ and mothers, $\chi^2(2) = 61.65$, $p < .001$. Fathers reported that child-care was provided mostly by others pre-lockdown, childcare responsibilities were mostly shared (56.7%) when restrictions were temporarily lifted (T3) and there was a gradual increase over time in the percentage of fathers always or usually providing childcare. Comparatively there was an increase over time in the percentage of

mothers who reported that they always or usually provide childcare (50.3% increasing to 60.6%). Additionally, there was an increase in childcare provision by others over time, although shared provision reduced over time (45.7% to 38.8%).

There were significant changes in the number of children living at home over time for fathers, $\chi^2(4) = 62.85$, $p < .001$ and mothers, $\chi^2(4) = 102.58$, $p < .001$, with the percentage of parents with one child living at home being highest during the third lockdown (T4), two children during the first lockdown (T2) (plus post-lockdowns for mothers) and three children when restrictions were temporarily lifted (T3). There were significantly higher percentages fathers and mothers with children aged 0-4 years living at home pre-pandemic, compared to other stages, $\chi^2(4) = 70.54$, $p < .001$ and $\chi^2(4) = 117.39$, $p < .001$ respectively. Similarly, the percentage of fathers and mothers with a child aged 0-11 years living at home pre-pandemic was significantly higher than other timepoints, $\chi^2(4) = 64.91$, $p < .001$ and $\chi^2(4) = 117.39$, $p < .001$ respectively.

The majority of fathers (91% and above) and mothers (80% and above) were employed throughout the pandemic, with no significant changes over time found, $p > .05$. Comparatively, there were significant changes in the employment of men without children over the course of the pandemic, $\chi^2(4) = 19.69$, $p < .001$, with there being a reduction in the percentage of men employed when restrictions were temporarily lifted (T3) and during the third lockdown (T4) compared to pre-pandemic figures (55% to 47% and 46% respectively). Access to the UK Government's Furlough Scheme (i.e. partial subsidisation of wages due to business closures) was not assessed over, however, it is noted that this was awarded 12.9% of fathers, 15.6% of mothers and 23.1% of men without children. It appeared that there was a greater percentage of fathers being able to work from home when restrictions were temporarily lifted (T3) compared to other timepoints and this was higher at post-lockdown (T5) compared to pre-pandemic (T1), although the difference was not statistically significant,

$p > .05$. There appeared to be an increase over time in the percentage of mothers able to work from home, with this figure being highest post-lockdowns, however, again this was not significant. Similarly, the results indicated a trend in the percentage of men without children being able to work from home increasing when restrictions were temporarily lifted (T3) (13.1% to 25.2%) and being highest post-lockdown (25.8%), however, this difference was not statistically significant.

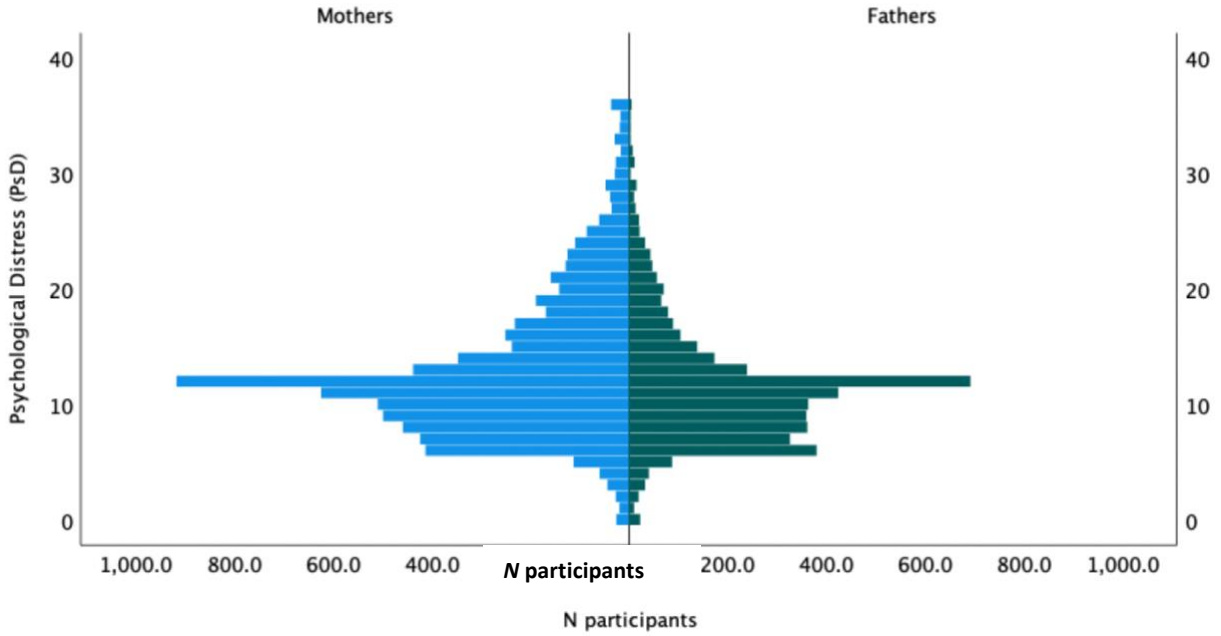
Finally, the majority of all of the sample earnt between £20,001 - £30,000 per annum before tax (32-36%), although there was a reduction in this band post-lockdown (29-32%), in addition for fathers and men without children earning £10,001 - £20,000 and mothers earning £0 - £10,000. There was an increase in percentages in all other annual personal income bands from pre to post pandemic (T1 to T5). Changes in income were significant for fathers, $\chi^2(25) = 199.00$, $p < .001$, mothers, $\chi^2(=25) = 385.52$, $p < .001$ and men without children, $\chi^2(25) = 756.46$, $p < .001$.

3.5 RQ1: Differences in Psychological Distress Over the Course of the Pandemic

In accordance with RQ1, in order to explore differences in psychological distress over the course of the pandemic between fathers and mothers, and fathers and men without children, initially Mann-Whitney U tests were conducted to compare overall differences in distress. Visual inspections of population pyramids found the distributions to be similar for fathers/mothers and fathers/ men without children and so the results were interpreted with regards to median scores, see figures 2 and 3 respectively. Median psychological distress scores were significantly difference between fathers and mothers, $U = 13191691.5$, $z = -13.84$, $p < .001$. Similarly, there was a significant difference in median scores when comparing fathers with non-fathers, $U = 48237095.5$, $z = -10.06$, $p < .001$.

Figure 2.

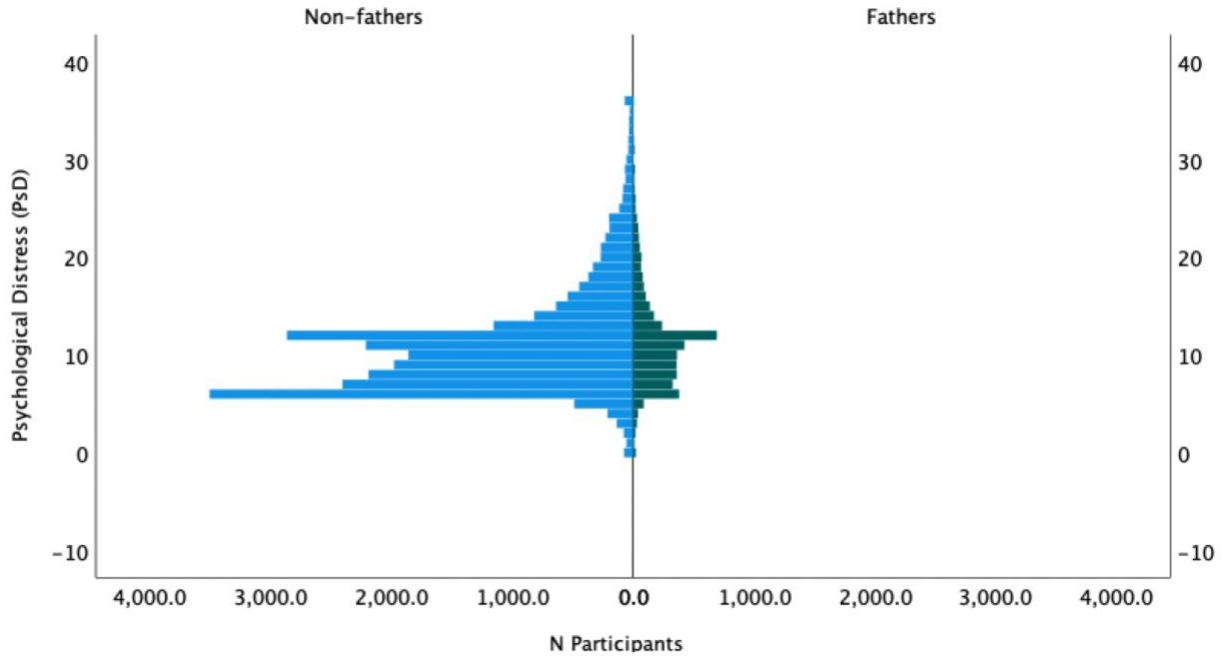
Visual Plots of Psychological Distress Dependant on Parent Gender



Note. Non-fathers defined as men without children living at home. PsD defined as GHQ score.

Figure 3.

Visual Plots of Psychological Distress Dependant on Paternal Status

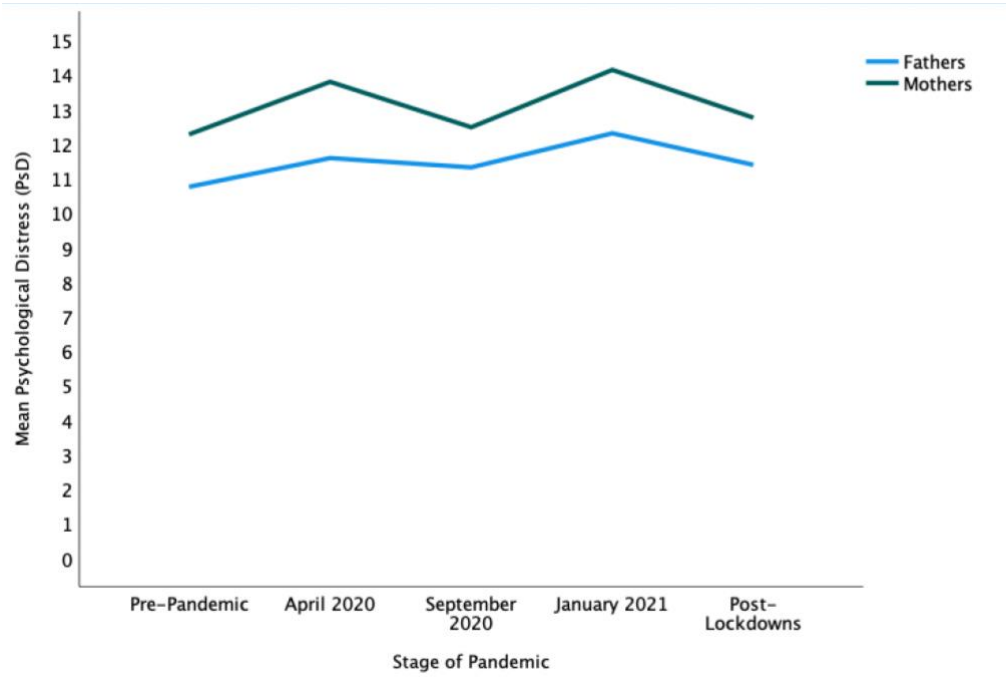


Note. Non-fathers defined as men without children living at home. PsD defined as GHQ score.

Secondly, an analysis was conducted to explore the impact of the stage of the pandemic on psychological wellbeing and statistical differences between fathers and mothers, and fathers and men without children. A linear mixed model was conducted to explore the main effects of stage of the pandemic and gender of parent on PsD and the effect of the interaction between stage and parent gender on PsD. Age, ethnicity and educational obtainment were also added to the model as covariates. The results demonstrated that the interaction between parent gender and stage of the pandemic did not have a significant effect on PsD, F (4, 6318) = .32, p = .87. The main effect of stage of the pandemic was significant for parents, F (4, 6318) = 13.23, p<.001. The main effect of parent gender was also significant, F (1, 6318) = 74.29, p<.001, with fathers reporting lower scores of PsD compared to mothers, as demonstrated in Figure 4. Fixed effects indicated that on average, fathers self-reported PsD was 1.41 points lower compared to mothers and this effect was significant, t (6318) = -4.55, p < .001, 95% CI (-2.02, -.80).

Figure 4

Changes in the Psychological Wellbeing of Parents During the COVID-19 Pandemic

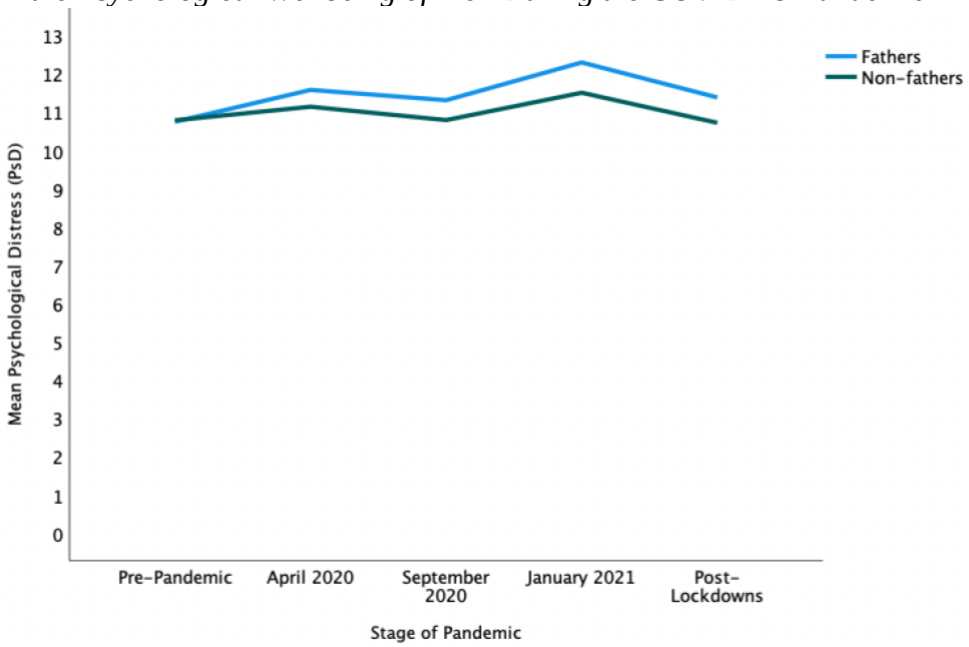


Note. PsD defined as GHQ score.

A linear mixed model was used to explore the main effects of stage of the pandemic and parental status of men on psychological wellbeing and the interaction between stage and paternal status on psychological wellbeing. Age, ethnicity and educational obtainment were also added to the model. The effect of the interaction between paternal status and stage of the pandemic on PsD was not significant, F (4, 17853) = 1.11, p = .35. However, the main effect of stage of the pandemic on PsD was significant for males, F (4, 17853) = 14.20, p < .001. Fathers reported higher scores of PsD compared to men without children at all time points except before the pandemic, as demonstrated in Figure 5, however, the main effect of paternal status in the model was not significant, F (1, 17853) = 1.50, p = .22. Estimates of fixed effects indicated that on average, fathers self-reported PsD was 0.19 points lower compared to non-fathers overall, however, this was not significant, t (17853) = -.81, p = .42, 95% CI (-0.64, 0.27).

Figure 5

Changes in the Psychological Wellbeing of Men During the COVID-19 Pandemic



Note. Non-fathers defined as men without children living at home. PsD defined as GHQ score.

The models were also run separately for each group, with the covariates age, ethnicity and educational obtainment. In the fathers-only model, there was a significant main effect of stage of the pandemic on PsD scores, F (4, 2447) = 5.93, p < .001, with estimates of fixed effects demonstrating significant results for T2, T4 and T5 only compared to pre-pandemic scores. Compared to other stages, the effect was highest at T4 compared to pre-pandemic (an increase in PsD scores by 1.55 points), t (2447) = 4.54, p < .001, 95% CI (.88, 2.22). Education also had a significant main effect on PsD scores, F (3, 2460) = 3.12, p<.05 with estimates of fixed effects demonstrating that scores of PsD were 1.61 points less for those with a degree or higher compared to those without any qualifications t (2460) = -2.11, p<.05, 95% CI (-2.74, 0.331). Ethnicity did not have a significant main effect on PsD, p>.05 however, estimates of fixed effects indicated that those from a mixed or multiple ethnic group background had greater PsD (scores were 1.46 higher) compared to those from a white ethnic background, t (2447) = 2.07, p <.01, 95% CI (.08, 2.83). There was no significant main effect or estimate of fixed effects of age on PsD for fathers.

When running the model separately for mothers, there was a significant effect of stage of the pandemic on PsD scores, F (4, 3863) = 8.77, p<.001. Estimates of fixed effects indicated that compared pre-pandemic scores, psychological distress increased by 1.06 points at T2, t (3863) = 3.28, p <.001, 95% CI (.43, 1.69), and scores were highest (a 1.69-point increase) at T4 compared to pre-pandemic, t (3863) = 5.13, p <.001, 95% CI (1.04, 2.33). Education also had a significant main effect on PsD scores, F (3, 3863) = 2.64, p <.05, however, there were no significant estimates of fixed effects. Ethnicity had a significant main effect on PsD, F (4, 3863) = 6.24, p <.001, with estimates of fixed effects indicating that compared to those from a white ethnic background, PsD scores were 1.10 points lower for those from an Asian or Asian British background, t (3863) = -3.44, p <.001, 95% CI (-1.72, -.47) and 2.08 points lower for those who were Black, Black British, Caribbean or African, t

(3863) = -3.70, p <.001, 95% CI (-3.19, -0.98). There was a significant main effect of age on PsD scores for mothers, F (1, 3863) = 12.23, p <.001, with estimates of fixed effects demonstrating that for each year age increased, PsD scores decreased by .05 points, t (3863) = -3.50, p <.001, 95% CI (-.07, -.02).

When running the model separately for non-fathers, there was a significant effect of stage of the pandemic on PsD scores, F (4, 15398) =16.10, p <.001. Estimates of fixed effects indicated that compared pre-pandemic scores, psychological distress increased by 0.61 points at T2, t (15398) = 4.39, p <.001, 95% CI (0.34, 0.99), and scores were highest (on average by 1.10 points) at T4 compared to pre-pandemic, t(15398) = 6.79 p <.001, 95% CI (.78, 1.41). Education did not have a significant main effect on PsD scores, F (3, 15398) = 1.46, p >.05, however, estimates of fixed effects demonstrated that those with A-levels or equivalent, on average, had PsD scores 0.39 lower than non-fathers without any qualifications, t (15398) = -2.00, p <.05, 95% CI (-.77, -.01). The ethnicity of non-fathers had a significant main effect on PsD, F (4, 15398) = 3.24, p <.05. Estimates of fixed effects indicated that compared to those from a white ethnic background, PsD scores were 0.78 points higher for those from a mixed or multiple ethnic background, t (15398) = 2.36, p <.05, 95% CI (.13, 1.43). There was a significant main effect of age on PsD scores for non-fathers, F (1, 15398) = 167.44, p <.001, with estimates of fixed effects demonstrating that for each year age increased, PsD scores increased by 0.03 points, t (15398) = -.12.94, p <.001, 95% CI (-.04, -.03). Table 5 demonstrates the effects in the main models, Appendix F demonstrates the fixed effects.

Table 5.

Results of linear mixed models to explore the main effects of stage of the pandemic and covariates on psychological distress.

Factor	Fathers		Mothers		Non-fathers	
	F	*p*	*F*	*p*	*F*	*p*
Intercept	341.49	<.001	521.42	<.001	4593.29	0.00
Age	1.33	.25	12.23	<.001	167.44	<.001
Ethnicity	1.42	.22	6.24	<.001	3.24	0.01
Education	3.11	<.05	2.64	<.05	1.46	0.22
Stage	5.93	<.001	8.77	<.001	16.09	<.001

Note. Results following Bonferroni correction. Non-fathers defined as men without children living at home.

3.6 RQ2: The Impact of Stressor Factors on Psychological Distress

In accordance with RQ2, to explore if there were differences in the impact of wellbeing, social and economic factors on the psychological wellbeing of fathers, compared to mothers and men without children living at home, linear mixed models were developed. The models assessed the impact of the interactions between each group (fathers/mothers/non-fathers), each stressor (i.e., predictor) variable (categorised as either wellbeing, social or economic) and time points (Tx), to see if changes in any effects were unique to specific pandemic stages. As mentioned previously, each stressor variable was included in its own model using a Bonferonni correction. Age, ethnicity and educational attainment were included as covariates in each model.

3.6.1 Wellbeing Factors

Wellbeing stressor factors included loneliness, life satisfaction and having a diagnosed health condition. Table 6 demonstrates the effects of wellbeing factors in the main models.

Table 6.

Results of linear mixed models to explore the interaction and main effects of wellbeing factors and stage of the pandemic on psychological distress

Factors	Fathers		Mothers		Non-fathers	
	F	*p*	*F*	*p*	*F*	*p*
Intercept	523.06	<.001	708.09	<.001	6639.40	<.001
Loneliness	351.88	<.001	698.57	<.001	1979.37	<.001
Stage	7.11	<.001	9.47	<.001	33.76	<.001
Loneliness x Stage	1.82	.07	2.39	<.05	8.08	<.001
Intercept	453.51	<.001	732.00	<.001	6087.30	<.001
Life satisfaction	243.05	<.001	535.57	<.001	1638.83	<.001
Stage	3.63	<.05	6.04	<.001	8.88	<.001
Life satisfaction x Stage	.56	.76	5.65	<.001	14.90	<.001
Intercept	327.57	<.001	554.25	<.001	4669.47	<.001
Health condition	.003	.96	30.19	<.001	87.61	<.001
Stage	5.61	<.001	6.91	<.001	15.42	<.001
Health condition x Stage	3.48	<.01	1.38	.24	2.34	.053

Note. Results following Bonferroni correction. Non-fathers defined as men without children living at home. Stage denotes stage of the pandemic.

Loneliness.

When including loneliness in the model to explore the effect of the interaction between stage, parent gender and loneliness on PsD, a significant interaction was found, F (20, 5938) = 1.67, p <.05. Loneliness had a significant main effect on PsD in parents, F (2, 5938) = 865.71, p <.001, with estimates demonstrating that compared to parents who reported feeling often lonely, PsD decreased by 10.66 points for those who were hardly ever/never lonely and by 5.98 points for those who were lonely some of the time, t (5938) = -15.02, p <.001, 95% CI (-12.06, -9.27) and t (5938) = -8.20, p <.001, 95% CI (-7.42, -4.55) respectively. The interaction between parent gender and loneliness did not have a significant effect on PsD scores, nor were estimates of effect significant, p >.05.

Similarly, when running the model with paternal status, the interaction between stage, loneliness and paternal status had a significant effect on PsD, F (20, 16566) = 4.03, p <.001. Loneliness had a significant main effect on PsD in males, F (2, 16566) = 1145.07, p <.001, with estimates demonstrating that compared to males who reported feeling often lonely, PsD decreased by 8.19 points for males who were hardly ever/never lonely and by 4.09 points for those who were lonely some of the time, t (16566) = -27.66, p <.001, 95% CI (-8.77, -7.61) and t (16566) = -13.00, p <.001, 95% CI (-4.70, -3.47) respectively. The interaction between paternal status and loneliness did not have a significant main effect on PsD scores, nor were estimates significant, p > 0.05.

When running the model separately for fathers, mothers and non-fathers, the interaction between loneliness and stage was no longer significant for fathers, p >.05, however, it was for mothers, F (8, 3641) = 2.40, p <.05, and non-fathers, F (8, 14269) = 8.08, p <.001. Loneliness continued to have a significant main effect on the psychological distress of fathers, F (2, 2289) = 351.88, p <.001, mothers, F (2, 3641) = 698.57 p <.001 and non-fathers, F (2, 14269) = 1979.37, p <.001. Estimates of fixed effects demonstrated that on average, compared to those who often reported feeling lonely, PsD scores decreased by 7.73 points for fathers who felt hardly ever or ever lonely, t (2289) = -6.36, p <.001, 95% CI (-10.11, -5.45), compared to 10.65 points for mothers, t (3541) = -14.20, p <.001, 95% CI (-12.12, -9.18), and 8.20 points for non-fathers, t (14269) = -27.63, p <.001, 95% CI (-8.79, -7.62). Compared to those who often reported feeling lonely, PsD scores decreased by 3.65 points for fathers feeling lonely some of the time, t (2289) = -2.89, p <.01, 95% CI (-6.13, -1.18), compared to 5.93 points for mothers, t (3641) = -7.69, p <.001, 95% CI (-7.44, -4.42), and 4.10 points for men without children, t (14269) = -12.99, p <.001, 95% CI (-4.72, -3.48).

Estimates of fixed effects demonstrated that compared to fathers who often felt lonely pre-pandemic (T1), at T2, fathers who felt hardly ever/never lonely had a PsD score 4.70

points lower, *t* (2289) = -2.69, *p* <.01, 95% CI (-8.14, -1.27) and those who felt lonely some of the time scored 3.77 points less, *t* (2289) = -2.07, *p* <.05, 95% CI (-7.35, -.20). Comparatively, these figures were much smaller for mothers at this stage, whose PsD was on average 0.82 points lower if they reported feeling hardly ever/ never lonely and 0.64 points lower if they reported feeling lonely some of the time compared to often feeling lonely, however, these results were not significant *p* >.05. Similarly, effects were smaller for men without children compared to fathers, as this group reported on average PsD scores 2.06 lower for those reporting feeling lonely hardly/never, *t* (14269) = -3.89, *p* <.001, 95% CI (-3.10, -1.02), or 1.64 points lower when feeling lonely some of the time, *t* (14269) = -2.89, *p* <.01, 95% CI (-2.76, -.52), compared to often.

At T4 when PsD peaked, compared to those feeling often lonely, on average fathers' PsD scores were 3.42 points lower if they reported feeling hardly ever/never feeling lonely, *t* (2289) = -2.02, *p* <.05, 95% CI (-6.75, -.10). Comparatively, this effect size was smaller for mothers whose scores were on average 1.33 points lower if they reported feeling hardly ever/never lonely, although this result was not significant, *p* >.05. The fixed effect size was similar for non-fathers compared to fathers, with those reporting feeling hardly/never lonely scoring on average 3.47 points less PsD, compared to those who often felt lonely, *t* (14269) = -6.02, *p* <.001, 95% CI (-4.60, -2.34). No further significant results were found for fathers for comparative purposes.

Life Satisfaction.

When life satisfaction was included in the model to explore the effect of the interaction between stage, gender of parent and life satisfaction overall scores on PsD, a significant interaction was found, *F* (15, 5294) = 2.77, *p* < .001. Life satisfaction had a significant effect on PsD in parents, *F* (2, 5294) = 685.34, *p* <.001, with estimates of fixed effects demonstrating that compared to those feeling satisfied with life, scores were 8.55 points

higher for those dissatisfied and 5.37 higher for parents who were neither satisfied nor dissatisfied, t (5294) = 18.31, p <.001, 95% CI (7.64, 9.47) and t (5294) = 10.39, p <.001, 95% CI (4.36, 6.38) respectively. Additionally, the interaction between parent gender and life satisfaction had a significant main effect on PsD scores, F (2, 5294) = 12.90, p < .001, with estimates indicating that compared to mothers, fathers dissatisfied with life were 2.78 points lower for PsD and fathers neither satisfied nor dissatisfied were 1.75 lower, t (5294) = -3.58, p <.001, 95% CI (-4.29, -1.25) and t (5294) = -2.14, p <.05, 95% CI (-3.36, -.15) respectively.

Similarly, when running the model with paternal status, a significant interaction was found, F (15, 15334) = 6.71, p <.001. Life satisfaction had a significant main effect on PsD in males, F (2, 15334) = 937.70, p <.001, with estimates demonstrating that compared to those feeling satisfied with life, scores were 7.50 points higher for those dissatisfied and 3.60 higher for males who were neither satisfied nor dissatisfied, t (15334) = 41.33, p <.001, 95% CI (7.14, 7.85) and t (15334) = 17.63, p <.001, 95% CI (3.19, 3.99) respectively. Additionally, the interaction between paternal status and life satisfaction had a significant main effect on PsD scores, F (2, 15334 = 3.07, p <.05, with estimates indicating that compared to men without children, fathers PsD scores were 1.78 points lower when dissatisfied, t (15334) = -3.03, p <.01, 95% CI (-2.93, -.63) and t (5294) = -2.14.

When running the model separately for fathers, the interaction between stage of the pandemic and life satisfaction on PsD was no longer significant, p >.05. This interaction was significant for mothers, F (6, 3239) = 5.65, p <.001 and men without children, F (6, 13299) = 15.08, p <.001. Life satisfaction continued to have a significant main effect on PsD for fathers, F (2, 2047) = 243.05, p <.001, mothers, F (2, 3239) = 535.57, p <.001 and non-fathers, F (2, 13279) = 1638.83, p <.001. Estimates of fixed effects indicated that compared to fathers who were satisfied with life, fathers who were dissatisfied had PsD scores 5.67

points higher and those who were neither had PsD scores 3.54 points higher, t (2047) = 10.13, p <.001, 95% CI (4.57, 6.76) and t (2047) = 6.14, p <.001, 95% CI (2.41, 4.67) respectively. Differences in scores were greater for mothers whose PsD scores were on average 8.60 points higher if dissatisfied with life and 5.37 if neither satisfied or dissatisfied compared to mothers who were satisfied, t (3239) = 17.43, p <.001, 95% CI (7.64, 9.57) and t (3239) = 9.82, p <.001, 95% CI (4.30, 6.44) respectively. Compared to fathers, the increase in PsD scores were slightly higher for men without children who reported an increase in PsD by 7.50 points if dissatisfied or by 3.60 points if neither, compared to those who were satisfied with life, t (13279) = 41.32, p <.001, 95% CI (7.15, 7.86) and t (13279) = 17.65, p <.001, 95% CI (3.20, 4.00) respectively. No further significant estimates of fixed effects relating to life satisfaction in fathers were found.

Health Condition.

When exploring the effect of interaction between stage, parent gender and whether the parent had a diagnosed health condition on PsD, the model demonstrated that the effect was not significant, p >.05. Having a health condition had a significant main effect on PsD scores in parents, F (1, 6308) = 12.87, p <.001; estimates demonstrating that parents with a health condition had scores .51 points higher, however, this was not significant. The interaction between parent gender and health condition had a significant effect on PsD, F (1, 6308) = 10.39, p <.001, however, estimates were not significant.

The interaction between stage of the pandemic, health condition and paternal status had a significant effect on PsD in males, F (12, 17843) = 2.11, p <.05. Health condition also had a significant main effect on PsD, F (1, 17843) = 11.02, p <.001, with estimates demonstrating that males with a health condition had PsD scores .87 points higher than those without, t (17843) = 5.50, p <.001, 95% CI (.56, 1.78). Additionally, the interaction between

paternal status and physical health had a significant main effect on PsD scores, F (1, 17843) = 8.40, p <.01, although estimates of fixed effects were not significant.

When running the model for fathers-only, the main effect of health condition on PsD was no longer significant, p <.05, nor were estimates. The main effect remained significant for mothers, F (1, 3858) = 30.19, p >.001, and men without children, F (1, 15393) = 87.61, p >.001. Estimates demonstrated that PsD scores were 0.58 higher for mothers with a health condition, however, this was not significant. For men without children, the results indicated that the main effect of health condition on PsD scores was significant, F (1, 15411) = 87.33, p >.001, with PsD scores increasing by 0.89 points for those with a health condition, t (15393) = 5.58, p <.001, 95% CI (.57, 1.20). The interaction between health condition and stage of the pandemic on PsD scores was not significant for mothers, nor men without children, however, it continued to have a significant effect on PsD for fathers, F (4, 2442) = 3.48, p <.01. No significant fixed effects were found for mothers. Comparatively, at T5 compared to T1, PsD scores were 2.92 points lower for fathers with a health condition compared to those without, t (2442) = -3.09, p <.01, 95% CI (-4.77, 1.07), whereas for men without children PsD scores increased by 0.66 points for those with a mental health condition, t (15393) = 2.55, p <.05, 95% CI (.15, 1.18).

3.6.2 Social Factors

Social stressor factors included living with a partner, degrees of happiness with a partner, provision of childcare, number of children in the household, living with a child aged 0-4yrs or living with a child aged 0-11yrs. Table 7 demonstrates the effects of social factors in the main models.

Table 7.

Results of linear mixed models to explore the interaction and main effects of social factors and stage of the pandemic on psychological distress.

Factors	Fathers		Mothers		Non-fathers	
	F	*p*	*F*	*p*	*F*	*p*
Intercept	344.22	<.001	501.82	<.001	3902.36	<.001
Cohabiting	9.00	<.01	52.91	<.001	92.73	<.001
Stage	5.21	<.001	7.97	<.001	21.15	<.001
Cohabiting x Stage	1.82	.12	.52	.72	7.39	<.001
Intercept	169.78	<.001	272.14	<.001	870.58	<.001
Happiness with partner	50.48	<.001	98.63	<.001	192.01	<.001
Stage	3.59	<.05	8.80	<.001	9.54	<.001
Happiness x Stage	.57	.69	.18	.95	1.19	.31
Intercept	86.16	<.001	189.12	<.001		
Provision	1.19	.31	4.49	<.05		
Stage	4.13	<.05	3.05	<.05		
Provision x Stage	.98	.42	1.91	.11		
Intercept	232.11	<.001	415.81	<.001		
No. children	1.00	.37	.34	.71		
Stage	3.64	<.01	5.32	<.001		
No. children x Stage	1.35	.22	.50	.86		
Intercept	236.40	<.001	346.93	<.001		
Child 0-11	1.42	.23	1.54	.21		
Stage	5.07	<.001	5.74	<.001		
Child 0-11 x Stage	.87	.48	2.07	.08		
Intercept	293.37	<.001	446.88	<.001		
Child 0-4	2.85	.09	.53	.47		
Stage	5.14	<.001	8.82	<.001		
Child 0-4 x Stage	.77	.54	2.30	.06		

Note. Results following Bonferroni correction. Non-fathers defined as men without children living at home. Stage denotes stage of the pandemic. Cohabiting is defined by whether individual lives with a partner. Happiness defined by degree of happiness with partner.

Childcare is defined by access to childcare. Provision of childcare is defined by who provides childcare (self, shared or other).

Living with a Partner.

Cohabiting status had a significant main effect on PsD, F (1, 5872) = 36.40, $p < .001$, with estimates of fixed effects demonstrating that for parents, PsD was 1.68 points lower if living with a partner, t (5872) = -4.07, p <.001, 95% CI (-3.80, -.33). The interaction between parent gender and cohabiting status did not have a significant effect on PsD scores and when adding stage to the interaction, the effect remained non-significant, $p < .05$. However, fixed effects demonstrated that fathers who lived with a partner had PsD scores 1.66 points higher than mothers who lived with a partner, t (5872) = 2.30, p <.05, 95% CI (.25, 3.08). The interaction between living with a partner and paternal status did not have a significant effect on PsD, nor were fixed effects significant, however, the effect became significant when adding stage of the pandemic into the interaction, F (12, 17229) = 3.49, $p <$ .001.

When comparing models by group, cohabiting status had a significant main effect on PsD for fathers, F (1, 2265) = 9.00, p <.01, mothers, F (1, 3599) = 52.91, p <.001 and men without children, F (1, 14956) = 92.73, p <.001. Estimates demonstrated that PsD reduced by 1.66 points for mothers living with a partner, F (1, 3599) = 52.91, p <.001, t (3599) = -3.74, p <.001, 95% CI (-2.53, -.79) and by 0.57 points for men without children, t (14956) = -3.62, p <.001, 95% CI (-.88, -.26). Estimates were not significant for fathers.

The interaction between stage and living with a partner was not significant for mothers or fathers, $p > .05$, however, it was for men without children, F (4, 14956) = 7.39, p <.001. Comparatively, estimates indicated that the interaction between stage and cohabiting status was significant for fathers only at T2 compared to T1, with PsD scores reducing by 3.16 points if living without partner, compared to those living with a partner, t (2265) = -2.42,

p <.05, 95% CI (-5.72, -.60). Similarly for non-fathers at the same point, those not living with a partner had a decrease in PsD scores (by 1.11 points), *t* (14956) = -3.63, *p* <.001, 95% CI (-1.70, -.51). The effect decreased to a -.99 reduction in scores at T3 for men without children who lived alone, *t* (14956) = -2.93, *p* <.01, 95% CI (-1.65, -.33), and 0.79 points at T4, *t* (14956) = -2.27, *p* <.05, 95% CI (-1.47, -.11). No further significant fixed effects were found for fathers, nor mothers.

Happiness with Partner.

The degree of happiness with a partner had significant main effect on PsD in parents, *F* (2, 3023) = 132.54, *p* <.001. Estimates of fixed effects demonstrated that PsD scores were on average 5.62 points higher for parents who reported a less than average degree of happiness with their partner compared to a higher degree, *t* (3023) = 9.76, *p* <.001, 95% CI (-6.75, -4.49), and 1.82 points higher if they felt an average degree of happiness, *t* (3023) = 3.74, *p* <.001, 95% CI (.86, 2.77). The interaction between parent gender and happiness did not significantly effect PsD, *p* >.05, however, fixed effects demonstrated that fathers who reported less happiness with a partner reported an overall reduction in distress by 2.14 points compared to mothers, *t* (3023) = .91, *p* <.05, 95% CI (-3.92, -.36). The interaction between stage of the pandemic, parent gender and happiness did not effect the psychological wellbeing of parents.

Happiness had a significant main effect on PsD scores in males, *F* (2, 5876) = 178.54, *p* <.001 with estimates demonstrating that PsD scores increased by 4.57 points for males who reported less than average happiness in their relationship and by 1.94 points for those reporting average happiness, *t* (5876) = 15.40, *p* <.001, 95% CI (3.99, 5.15) and *t* (5876) = 9.00, *p* <.001, 95% CI (1.51, 2.36) respectively. When exploring the effect of the interaction between relationship happiness and paternal status, this was not significant, p >.05, nor were

estimates of fixed effects. The effect of the interaction between paternal status, stage of the pandemic and happiness with partner on PsD scores was also not significant $p>0.05$.

When running the model separately for each group, the main effect of happiness with partner on PsD was significant for fathers, F (2, 1241) = 50.48, p <.001, mothers, F (2, 1774) = 98.63, p <.001 and men without children, F (2, 4627) = 192.01, p <.001. Estimates of fixed effects for fathers indicated that compared to those reporting below-average degrees of happiness in their relationship, PsD increased for fathers by 3.24 points, t (1241) = 5.26, p <.001, 95% CI (2.09, 4.59), of which the effect was greater for men without children (a 4.57 point increased), t (4627) = 15.56, p <.001, 95% CI (3.99, 5.14) and even greater for mothers who reported an increased in PsD by 5.68 points, t (1774) = 9.29, p <.001, 95% CI (4.48, 6.88). Compared to reporting a higher than average degree of happiness with a partner, fathers reporting a less than average happiness had an increase in PsD by 1.74 points for fathers, t (1241) = 3.46, p <.001, 95% CI (.76, 2.73), which increased to 1.94 points for men without children, t (4627) = 9.03, p <.001, 95% CI (1.52, 2.36) which was the same point increase for mothers, t (1774) = 3.75, p <.001, 95% CI (.93, 2.96). The effect of the interaction between stage of the pandemic and happiness in a relationship on PsD was not significant, p > .05 for any group, nor were fixed effects.

Division of Childcare.

When exploring the effects of the division of home-schooling and childcare responsibilities, a significant effect was not found for the interaction between parent gender and childcare provision on PsD was not found, nor when stage was added to this interaction, p >.05. However, childcare provision did have a main effect on PsD in the model, F (2, 2494) = 3.47, p <.05, with fixed effects demonstrating that compared to mainly others providing childcare, parents who always of mostly provided childcare had an increase in PsD scores by 1.05 points, t (2494) = 2.15, p <.05, 95% CI (.09, 2.01).

In the fathers-only and mothers-only models, the interaction between stage and provision was not significant, $p > .05$. Childcare provision also no longer had a significant main effect on PsD for fathers, however, it was significant for mothers, F (2, 1456) = 4.49, $p < .01$. No significant estimates of fixed effects were found for either group.

Number of Children.

When including number of children into the model, the interaction between stage, parent gender and number of children did not significantly affect PsD, nor was there a main effect of number of children on PsD, $p > .05$. No significant estimates were found. When running the model separately for mothers and fathers, the interaction between number of children and stage was not significant, nor was the main effect of number of children on PsD, $p > .05$. Estimates of fixed effects indicated that there was no significant interaction effects at any of the time points for mothers and fathers, $p > .05$.

Parent of Child Aged 0-11 Years.

When running the model including a factor describing those who have children under the age of 11 years, the interaction between having a younger child, parent gender and stage of pandemic did not have a significant effect on PsD, nor did the main effect of parenting a younger child. When running the model separately for fathers and mothers, the interaction between parenting a child aged 0 -11 years and stage of pandemic, did not have a significant effect on PsD scores, nor did parenting a child aged 0-11 years significantly effect PsD. However, compared to T1, PsD scores increased for fathers with a child aged 0-11 at T2 by .89 points and at T4 by 1.83 points; t (2442) = 2.22, $p < .05$, 95% CI (.10, 1.67) and t (2442) = 4.39, $p < .05$, 95% CI (1.01, 2.64) respectively. Scores were slightly higher for fathers who were not living with a child aged 0-11 years at T2 (1.45 points), however, were lower for fathers at T4 (a 1.22 reduction in PsD scores); t (2442) = 2.34, $p < .05$, 95% CI (.24, 2.67) and t (2442) = 1.98, $p < .05$, 95% CI (.01, 2.42) respectively. The change in scores was slightly

greater for mothers, who compared to T1, PsD scores increased for mothers with a child aged 0 - 11 years at T2 by 1.52 points and at T4 by 2.15 points; t (3858) = 3.92, p <.001, 95% CI (.76, 2.28) and (3858) = 5.38, p <.001, 95% CI (1.37, 2.94) respectively. No further significant interactions were found for mothers.

Parent of Child Aged 0-4 Years.

Living within a household with a child aged 0-4 years did not have a significant main effect on PsD, however, estimates of fixed effects demonstrated that PsD scores were 0.96 points lower for parents who lived with a child aged 0-4 years compared to those who did not, t (6308) = -2.34, p <.05, 95% CI (-1.76, -.16). The interaction between parent gender and having a child under the age of 4 years did not have a significant effect on PsD, p >.05, however, when including age in this interaction, the effect on PsD was significant, F (16, 6308) = 4.40, p <.001. In the father sample, there were no significant overall or fixed effects, p >.05. Comparatively for mothers, although the overall interaction and main effects were not significant, estimates of fixed effects demonstrated that PsD scores reduced by 1.10 points, t (3858) = -2.45, p <.05, 95% CI (-1.98, -.22) when living with a child aged 0-4 years. Furthermore, having a child aged 0-4 years at T3 and T4 compared to T1, led to a reduction in PsD scores by 1.49, t (3858) = -2.14, p <.05, 95% CI (-2.82, -.12) and 1.66 points, t (1258) = -4.48, p <.001, 95% CI (-3.06, -.23), respectively. For comparative purposes, these scores were much lower for fathers, however, as the results was not significant, inferences cannot be reliably interpreted.

3.6.3 Economic Factors

Economic stressor factors included employment status, access to the UK Government's Furlough Scheme, ability to work from home and annual personal income. Table 8 demonstrates the effects of economic factors in the main models.

Table 8.

Results of linear mixed models to explore the interaction and main effects of economic factors and stage of the pandemic on psychological distress

Factors	Fathers		Mothers		Non-fathers	
	F	*p*	*F*	*p*	*F*	*p*
Intercept	528.21	<.001	355.62	<.001	4533.39	<.001
Employment	26.72	<.001	15.54	<.001	27.96	<.001
Stage	4.30	<.01	1.30	.27	16.34	<.001
Employment x Stage	.42	.79	.43	.79	3.91	<.01
Intercept	40.22	<.001	81.58	<.001	295.84	<.001
Furlough	.82	.37	.39	.53	3.55	.06
Intercept	54.83	<.001	162.25	<.001	641.78	<.001
Home-working	.33	.57	.32	.57	.86	.35
Stage	1.95	.12	5.03	<.01	4.78	<.01
Home-working x Stage	.65	.76	.38	.77	1.01	.39
Intercept	181.12	<.001	224.22	<.001	2544.24	<.001
Income	1.11	.36	.74	.59	19.13	<.001
Stage	5.09	<.05	2.67	.10	.02	.88
Income x Stage	1.27	.28	.43	.83	.88	.50

Note. Results following Bonferroni correction. Non-fathers defined as men without children living at home. Stage denotes stage of the pandemic. Employment denotes if individual was working. Furlough denotes access to the UK Government Furlough Scheme. Income denotes annual individual income.

Employment Status.

When including employment status in the model to explore the effect of the interaction between stage, parent gender and employment status on PsD, an interaction was not significant, $p > .05$. Employment did have a significant main effect on PsD however, in the model, F (1, 6301) = 33.34, $p < .001$, with estimates of fixed effects demonstrating that parents in employment had PsD scores 1.48 points lower than those who were not employed, t (6301) = -2.94, $p < .01$, 95% CI (-2.47, -.50). When running the model depending on parent

status of men, the similarly, the interaction between stage, employment status and paternal status, did not have a significant effect on PsD, $p > .05$. The interaction between employment status and paternal status did have significant effect on PsD, F (1, 17805) = 8.24, $p > .01$, with a trend towards those in employment reporting lower PsD scores, however, these estimates were not significant. Employment had a significant main effect on PsD F (1, 17805) = 29.67, $p < .001$, with estimates demonstrating that males in employment had PsD scores -.89 points less than those not in employment, t (17805) = -5.75, $p < .001$, 95% CI (-2.00, -.59).

When running the model separately for fathers, mothers and non-fathers, the interaction was no longer significant for fathers or mothers, $p > .05$, however, it was for men without children, F (4, 15359) = 3.91, $p < .01$. Employment status continued to have a significant main effect on the psychological distress of fathers, F (1, 2438) = 15.54, $p < .001$, mothers, F (1, 3855) = 26.72, $p < .001$ and men without children, F (1, 15359) = 27.65, $p < .001$. PsD scores reduced by .92 points for men without children in employment, t (15359) = -5.88, $p < .001$, 95% CI (-1.23, -.61) and 1.61 points for mothers in employment, t (3855) = -2.88, $p < .01$, 95% CI (-2.67, -.55), however, the fixed effect was not significant for fathers. Estimates of fixed effects did not indicate any significant time points for the interactions between employment status and stage on PsD scores, $p > .05$ for fathers and mothers. Interestingly for non-fathers, PsD was 0.72 points higher for those in employment at T3 compared to T1, t (15359) = 2.30, $p < .05$, 95% CI (.011, 1.33) and .73 points higher at T4, t (15359) = 2.27, $p < .05$, 95% CI (.10, 1.35).

Access to Furlough Scheme.

To explore the impact of accessing the UK Government's Furlough Scheme at during April 2020 (T2) on PsD scores, a LMM was run including parent gender and whether the parent accessed the UK Government's Furlough Scheme on PsD. The model demonstrated

that the interaction between gender and access to Furlough did not have a significant effect on PsD, $p < .05$, nor was there a significant main effect of access on PsD. Similarly, the main effect of access to furlough was not significant, $p < .05$. The same findings were present for the model for males to explore the impact of paternal status. When running the model separately for fathers, mothers and men without children, access to the Furlough Scheme continued to not have a significant effect on PsD and no significant main or estimates of fixed effects for this factor were found, $p < .01$.

Working From Home.

When including the ability to work from home on a regular basis in the model, the interaction between stage of the pandemic, home-working and parent gender did not have a significant effect on, $p > .05$. Furthermore, ability to home-work on a regular basis did not have a significant main effect on PsD scores for parents, nor did the interaction between working from home and parent gender significantly effect PsD scores, $p > .05$. When running the model separately for fathers, mothers and non-fathers, the interaction and main effect was also non-significant, $p > .05$. Similarly, there were no observed significant estimates of fixed effects of ability to work from home on a regular basis on PsD, $p > .05$.

Income.

When including income in a model for parents, income did not have a significant main effect on PsD, nor was there a significant effect on the interaction between income and stage on PsD for parents, $p < .05$. Additionally, the interaction between parent gender, stage and income did not have a significant effect on PsD scores and fixed effects did not yield significant effects for income. Similarly in the model for males, income did not have a significant effect on PsD, nor did the effect of the interaction between paternal status and income on PsD. The interaction between stage, paternal status and income did not significantly effect PsD, however, the estimates of fixed effects did yield significant effects

for males. Compared to those earning more than £50,001 a year, PsD scores increased by 1.68 points for those earning less than £10,000 per annum, which reduced to a 1.41 point increase for those earning between £10,001-£20,000 a year and by .87 points for men earning £20,001-£30,000 a year; t (11634) = 4.73, p <.001, 95% CI (.98, 2.37), t (11634) = 4.20, p <.001, 95% CI (.75, 2.07) and t (11634) = 2.55, p <.05, 95% CI (.20, 1.54) respectively. Additionally, compared to pre-lockdown baselines, at T5 PsD increased by 2.06 points for fathers earning between £40001- £50000 per annum, t (11634) = 2.06, p <.05, 95% CI (.10, 4.01).

When running the model separately mothers and fathers, income did not have a significant main effect on PsD, nor was there a significant effect of the interaction between stage of the pandemic and income on PsD. Estimates of fixed effects for income were also not significant, p <.05. Comparatively, in the model for men without children, income had a significant main effect on PsD, F (54, 10373) = 19.13, p <.001, with estimates of fixed effects demonstrating that compared to those earning more than £50,001 a year, PsD scores increased by 1.73 points for those earning less than £10,000 per annum, which reduced to a 1.46 point increase for those earning between £10,001-£20,000 a year and by 0.90 points for men earning £20,001-£30,000 a year; t (10373) = 4.81, p <.001, 95% CI (1.03, 2.43), t (10373) = 4.28, p <.001, 95% CI (.79, 2.12) and t (10373) = 2.61, p <.01, 95% CI (.22, 1.57) respectively.

3.7 RQ3: A Further Exploration of Paternal Psychological Wellbeing

In accordance with RQ3, in order to ascertain which stressor factors were most impactful on paternal psychological wellbeing during the pandemic, a multivariate model was developed for fathers only. This included all stressor factors which had yielded statistically significant results in the previous models for fathers; loneliness, life satisfaction, having a diagnosed health condition, living with a partner, degrees of happiness with a partner, living

with a child aged 0-11yrs and employment status. The factors alongside stage were included as fixed variables and age, ethnicity and educational attainment were included as covariates. A Bonferroni correction was also used. Results are displayed in Table 9.

Table 9.

Results of a linear mixed model to explore the effects of stressor variables on the psychological distress of fathers over the course of the COVID-19 pandemic

Factor	*F*	*p*
Intercept	129.52	<.001
Age	.5	.82
Ethnicity	1.03	.39
Education	2.22	.08
Stage	.73	.48
Loneliness	81.55	<.001
Loneliness x stage	2.27	.06
Life satisfaction	69.29	<.001
Life satisfaction x stage	.13	.97
Health condition	1.59	.21
Health condition x stage	.71	.49
Cohabiting	.004	.93
Cohabiting x stage	1.20	.27
Happiness	1.00	.37
Happiness x stage	.42	.79
Child aged 0-11 years	.09	.76
Child 0-11yrs x stage	1.55	.21
Employment	3.04	.08
Employment x stage	.38	.67

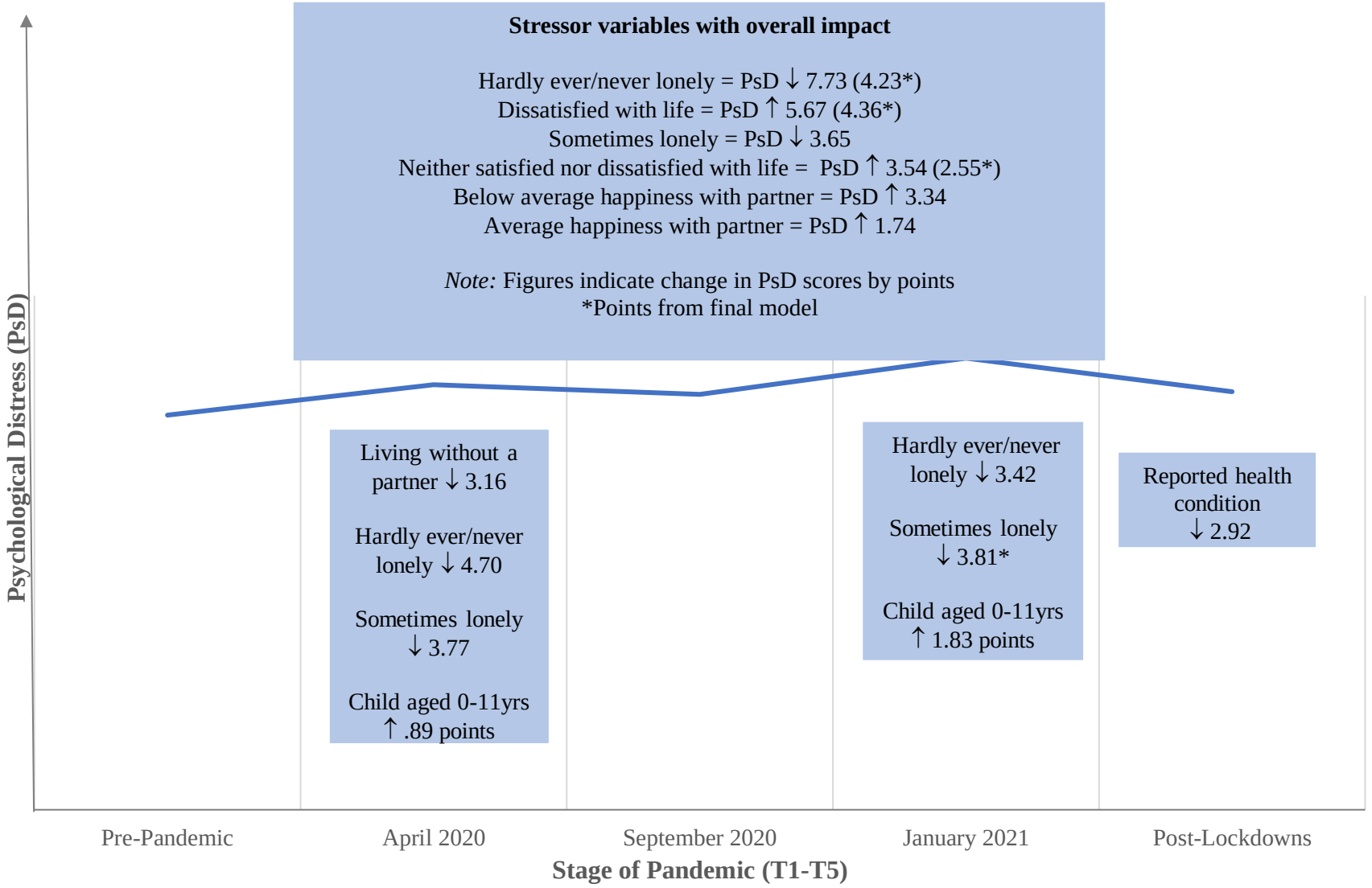
Note. Results following Bonferroni correction. Stage denotes stage of the pandemic. Cohabiting is defined by whether individual lives with a partner. Happiness defined by degree of happiness with partner.

Loneliness continued to have a main effect on psychological wellbeing, F (2, 1099) = 81.55, p <.001, with fixed effects demonstrating that compared to often feeling lonely, PsD

reduced for fathers on average by 4.23 points for those hardly ever or never lonely, t (1099) = -3.18, p <.01, 95% CI (-6.85, -1.62). The interaction between stage of the pandemic and loneliness no longer had a significant effect on PsD, p >.05, however, estimates of fixed effects demonstrated that for those reporting feeling lonely some of the time, PsD reduced by 3.81 points at T4 compared to pre-pandemic scores, t (1099) = -2.00, p <.05, 95% CI (-7.55, -.08). Life satisfaction continued to have a significant main effect on PsD, F (2, 1099) = 69.29, p <.001, with fixed effects demonstrating that compared to those satisfied with life, fathers who were dissatisfied with life had PsD scores 4.36 points higher, and those neither dissatisfied or satisfied had scores 2.55 points higher, t (1099) = 6.58, p <.001, 95% CI (3.06, 5.66) and t (1099) = 3.91, p <.001, 95% CI (1.27, 3.83) respectively. The interaction between stage of the pandemic and life satisfaction did not have a significant effect on PsD, with no significant estimates for this interaction dependant on stage.

Comparatively, having a health condition, living with a partner, happiness with partner, having a child aged 0-11 years in the household and employment status did not have a significant main effect on the PsD of fathers, nor did the interaction between stage and each of these factors have an effect on PsD. Additionally, estimates of fixed effects did not yield any significant effects of the stressors on paternal mental health, overall or according to stage of the pandemic. Table 9 demonstrates the effects of the factors in the final model for fathers. A visual summary of outcomes for fathers is displayed in Figure 6.

Figure 6. Visual Summary of the Impact of Stressor Variables on Paternal Mental Health



Note. PsD as defined by GHQ-12 score.

Chapter 4. Discussion

4.1 Summary of Findings

4.1.1 RQ1: Differences in Psychological Wellbeing during the Pandemic:

Overall Gender and Parental Differences.

The current literature suggests that there were gendered psychological responses to the pandemic and the role of parenting further impacted on wellbeing due to additional stressors. Using data obtained nationwide from a UK population, our findings supported these claims and identified nuanced differences in psychological wellbeing during the pandemic for fathers compared to mothers and men without children living at home. Initial findings demonstrated that the stage of the pandemic significantly impacted on the psychological wellbeing of parents, with fathers reporting less psychological distress than mothers overall. Psychological distress was previous associated with increased qualitative reports of anxiety by fathers during the pandemic (Trumello et al., 2021), with rates of anxiety found to be higher in mothers (Kerr et al., 2021; Ben-Yaakov et al., 2022). The difference in reports of psychological wellbeing could be explained by fathers valuing increased time spent with the family (Dawes et al., 2021), due to a renewed sense of purpose and ability to take on roles that had been culturally positioned as maternal.

Fathers may have also reported less psychological distress compared to mothers, due to the perception that that their experiences are not as valid as their partners which was identified in previous research (Darwin et al., 2017). Therefore social desirability bias may have made their responses less valid, i.e., due to reporting in a way they believed society to perceive as more acceptable. Additionally, as men may subsequently seek to reduce psychological distress through substance misuse and suppressing or avoiding difficult emotions, this can lead to depression being under or misdiagnosed (O'Brien et al., 2017). Finally, as fathers are less likely to seek support during times of distress compared to

mothers, the accumulated impact of the pandemic may have led to the escalation in scores over time.

When exploring the impact of the stage of the pandemic on males, it appeared that fathers reported greater psychological distress compared to men without children living at home at all time points, except pre-pandemic when it was suggested that distress was lower for fathers, however, statistical analyses did not yield significant results. Previous literature found there were differences between parents and those without children before accounting for gender, and suggested that stress (Hellend et al., 2021) and symptoms of psychopathology (Elder et al., 2021) were higher for parents during the pandemic compared to those without children. Furthermore, previous research found that adults who had children residing in the household reported low mood (Brooks et al., 2020) and reduced psychological wellbeing (Kwong et al., 2020) as a response to parental exhaustion (Marchetti et al., 2020). Isolation from the wider family or usual means of support and the impact of restrictions were attributed to this reduction in parental psychological responses to the pandemic (Bourion-Bédès et al., 2023; Dawes et al., 2021; (Skrinpkauskaite et al., 2023). As our initial findings relating to differences in paternal status were inconclusive, it served as a justification to further explore which stressor factors might have impacted on psychological wellbeing.

When exploring the psychological wellbeing of participants, the stage of the pandemic impacted overall on fathers, mothers and men without children living at home. There was a trend for psychological distress to increase in April 2020 following the first national lockdown, reduce until September 2020 when restrictions had begun to be lifted (including the reopening of pubs and hairdressers), although later in the month restrictions were reintroduced. Psychological wellbeing seemed to deteriorate for all groups until the third national lockdown in January 2021 and then steadily improved post-lockdown. It is worth noting that differences in post-lockdown compared to pre-lockdown scores were only

significant for fathers in our sample. Stroud (2020) reported a similar trend for women, although found that the trajectory for men was relatively stable which was not demonstrated in our findings. The deterioration in psychological wellbeing identified for all groups at the beginning of the pandemic in April 2020 following the first national lockdown, supports previous UK-based research into adult mental health (Prime et al., 2020), parental mental wellbeing (Bikmazer et al., 2020; Mazza et al., 2021; Elder et al., 2021) and historical responses to large-scale viral outbreaks (Cowling et al., 2010). Psychological distress increased most in January 2021 for all groups following the third and final national lockdown, supporting previous research whereby psychological distress was higher during the later stages of the global pandemic, particularly for females (Matud et al., 2022). Additionally, as distress peaked at the final lockdown following a period of access to informal locations where men in the UK may have previously managed stress and worry (Mind, 2019), the removal of this outlet may have led to a greater loss of resources. The deterioration in male mental wellbeing supports two surveys by major UK charities whereby feelings of worry or low mood increased in response to the pandemic (Samaritans, 2020; Mind, 2019).

Pierce et al. (2021) predicted that adults with children were likely to follow a recovery trajectory and psychological wellbeing would reach pre-pandemic levels at the end of the pandemic. This research suggests that psychological distress fluctuated in accordance with the restrictions enforced by the UK government, however, overall wellbeing appeared to be similar post-pandemic to pre-pandemic levels, for both adults with children and men without, in accordance with previous research into responses following traumatic events (Kessler et al., 2017). Furthermore, as psychological wellbeing particularly deteriorated for our sample following the third and final lockdown, this appears to align with previous research

suggesting that parental distress was associated with lockdowns and associated social distancing measures (Evans et al., 2020; Johnson et al., 2021).

Educational Attainment.

Our findings suggest that educational attainment effected the psychological wellbeing of males only, with distress being higher for men without children living at home with A-levels or an equivalent qualification. Compared to those without any qualifications, distress was higher for fathers with a degree or higher qualification, which contrasted previous research whereby COVID-19 related anxiety (Ben-Yaakov et al., 2022), higher rates of depression and stress (Skrinpkauskaite et al., 2023) and mental health difficulties (Yang et el., 2023) were observed in parents with lower educational attainment. Nevertheless, our findings were similar to the Yang et al.'s (2023) research whereby those with a degree reported greater mental health difficulties, suggesting that job loss or changes to pay as a result of the pandemic may have impacted those potentially more qualified, i.e., in professional roles and potentially of a higher social status, which further research could explore.

Age.

There was no statistical effect of age in the male sample, however, psychological distress significantly increased with age for mothers, which could be explained by research which found that that mothers aged 35-44 years have less parental resilience, i.e., the ability to cope with parenting stressors and adapt to challenges, compared to lower ages potentially due to increased health needs or reduced social support whilst being the primary caregiver (Bourion-Bédès et al., 2023). Overall, the literature suggests that parents who are younger were more at risk of parental distress, stress and depression during the pandemic (Bikmazer et al., 2020; Ben-Yaakov et al., 2022; Skrinpkauskaite et al., 2023), however, due to the wide range of ages represented in our sample, mothers who were much older than the average age

of the sample may have had additional stressors, e.g., health conditions or COVID-19 anxiety, which future research could explore.

Ethnicity.

With regards to ethnicity, previous research using data from the UKHLS has suggested that psychological distress was higher during the pandemic for adults from a white ethnic background (Pierce et al., 2020). Similarly, our findings suggest that mothers from an Asian or Asian British ethnic background reported less psychological distress compared to mothers from a white ethnic background, and distress was even lower for mothers from a black, black British, Caribbean or African background. Comparatively, fathers and men without children living at home from a mixed or multiple ethnic background reported greater distress compared to those from a white ethnic background. Males, particularly fathers, are often underrepresented in research with findings generalised to both genders, which may have accounted for this difference. However, our research supports the findings of Lenoir et al. (2023) who found through interviews that the mental wellbeing of young people from black and mixed ethnic groups deteriorated during the pandemic, with the most common reason being loneliness. This research did not explore the intersectionality of gender and ethnicity on mental health outcomes, or loneliness, however, future research could explore this further. Furthermore, research by Thomeer et al. (2020) suggested that racial injustices may have further impacted on the mental wellbeing of individuals during the pandemic (e.g., the Black Lives Matter Movement), therefore this may have increased feelings of vulnerability for men who are often positioned as a 'protector', which further research could explore.

4.1.2 RQ2: Differences in the Impact on Psychological Wellbeing of Wellbeing, Social and Economic Factors

Our findings demonstrate that there were differences in the impact of wellbeing, social and economic factors for fathers, compared to mothers and men without children living at home.

Wellbeing Factors.

Loneliness.

The findings suggested that parents who reported feeling lonely some of the time had lower psychological distress compared to those who were often lonely, and distress decreased further for those who reported feeling never or hardly ever lonely. The combination of being a parent and feelings of loneliness did not impact on psychological distress and in previous research, gender differences in the association between loneliness and psychopathology were not always found for adults aged 30 years and older (McQuaid et al., 2021). This suggests that including age as a covariate in our model may have led to inconclusive findings. Future research could explore the interactions dependant on age. However, when including stage in the interaction, there was an overall significant interaction. In the separate models, loneliness continued to have an overall effect on distress, with differences compared to pre-pandemic scores being greater for mothers compared to fathers, and the greatest for those who reported feeling lonely hardly ever or never.

Interestingly, in the early stages of the pandemic, the difference in the impact of loneliness on psychological wellbeing was greater for fathers compared to mothers, although effects were not significant for mothers at this stage. Similarly in January 2021, following the final lockdown when psychological distress peaked for all groups, the difference in the impact of loneliness on PsD scores compared to pre-pandemic scores was greatest for fathers compared to mothers. There was a greater reduction in points for those reporting feeling lonely hardly ever or never compared to feeling lonely often, however, again the results from the mothers-only model were not significant. Previous research has found that loneliness was

greater for women than men during the pandemic, similar to pre-pandemic trends (Bu et al. in 2020; Smith et al., 2022), however, the increase was not significant for women during the pandemic (Rania et al., 2021), which our findings support. This highlights gendered parental differences and suggests how impactful loneliness could potentially have been for fathers. This is particularly meaningful when considering how men are even less likely to shared feelings of loneliness and isolation with partners due to concerns of burdening them (Mind, 2019). Therefore, although mothers may have been better able to share their concerns with their partner, this was likely to be less of a helpful resource for men to manage these difficult experiences.

The findings suggested that psychological distress decreased for men reporting feeling lonely only some of the time, hardly ever or never. The effect of loneliness did not impact on psychological distress dependant on paternal status, however, the effect was significant when taking into account the overall stage of the pandemic, suggesting that the pandemic may have contributed to differences. Similarly to fathers, loneliness was associated with a decrease in the psychological wellbeing of men without children living at home, with the overall effect compared to pre-pandemic data being greater than fathers. Unlike fathers, the interaction between stage and loneliness significantly affected the psychological wellbeing of men without children living at home when taking into account age, ethnicity and educational attainment, and also when looking at the effects in isolation of other factors, suggesting that the effects were unique to pandemic conditions. As loneliness has been association with increased rates of suicidality (Stickley et al., 2016) and suicide rates are around three times higher for men (Oliffe et al., 2011), the link between loneliness and reduced psychological wellbeing of UK men is an important consideration. Men were less likely to seek help using crisis hotlines both prior and during the pandemic (Zalsman et al., 2021) and men were 5.5 times more likely to come into contact with mental health services in the US (Landi, 2020),

and it is worth noting that restrictions were less severe in the United States compared to the UK.

Interestingly, at the beginning of the pandemic, the effect of loneliness on psychological wellbeing was greater compared to other timepoints for fathers, compared to men without children living at home, potentially due to the experience of social isolation increasing parental stress as a response to reduced support networks and increased parental burn-out, as was found in previous research (Griffith, 2020). Compared to January 2021 when psychological distress peaked, the effect of loneliness on psychological wellbeing was similar for fathers and men without children living at home with scores being progressively lower for those reporting a lesser degree of loneliness. As men are more likely to share feelings of isolation in informal settings such as Barbershops (Ogborn, 2022), the compounding effects of repeated restrictions may have led to feelings of inconsistency with the availability of such outlets. Loneliness appeared to have a greater impact on the psychological wellbeing of men without children living at home overall during the pandemic, however, at the beginning of the pandemic the impact was much greater for fathers, suggesting that were particularly vulnerable at this stage.

Life Satisfaction.

The interaction between parent gender and stage of the pandemic had an effect on psychological wellbeing, meaning there were overall differences according to gender at different stages of the pandemic however, as the fixed effects analyses were not significant, specific comparisons according to stage could not be determined. Overall, compared to parents feeling satisfied with life, psychological wellbeing deteriorated for those who felt neither satisfied nor dissatisfied and further decreased for parents feeling dissatisfied with life. The findings also indicated that the impact of life satisfaction on psychological wellbeing varied according to parent gender, with the effect appearing lower for fathers. This

was additionally observed when comparing the fathers-only model with the mothers-only model. Similarly, the effect of life satisfaction on psychological wellbeing varied according to the paternal status of men and the stage of the pandemic, with psychological distress increasing for those who felt neither satisfied nor dissatisfied and increasing further still for men feeling dissatisfied with life. Compared to men without children living at home, effect sizes were smaller was fathers, suggesting that the role of fatherhood appeared to reduce the effect of life satisfaction on psychological wellbeing. This was further supported when comparing the fathers-only model with the men without children living at home-only model.

The lesser impact on fathers could be conceptualised with identity theory, whereby parenthood moves beyond a social role and becomes integral to one's identity (Stryker, 2007). Therefore, even when social contexts change, the parenting role can give new meaning to actions and the act of caregiving can improve positive self-concept (Roth et al., 2015). Furthermore, parenthood may have moderated any association between emotional stability and symptoms of adjustment disorder in response to the COVID-19 pandemic (Kestler-Peleg et al., 2022). Nevertheless, during the first and third lockdown, fathers were more effected by life satisfaction than mothers, although effects were not significant for mothers. Fathers also experienced a greater increase in psychological distress during the first lockdown compared to men without children living at home and the effect was similar for both during the third and final lockdown. This suggests that life felt particularly adversely effected at the times when resources (e.g., access to childcare and informal leisure-based support) were at their lowest. In accordance with the resilience framework whereby responses to serious threats are dependent on both internal and external resources (Fleming & Legogar, 2008), this suggests that fathers and later, men in general, may have required additional support to enhance the experience of life, to reduce the likelihood of poor mental health outcomes.

Long-term Physical Health Condition.

Having a diagnosed long-term health condition had an impact on the psychological wellbeing of parents. Poor mental health outcomes have been associated with health conditions (Griffiths et al., 2021). This has particularly been reported in parent populations whereby chronic health conditions have been associated with increased parental distress (Bikmazer et al., 2020) and parental burnout, i.e. decreased efficacy in the parental role and increased emotional exhaustion (Mikolajczak & Roskam, 2018).

When looking at the effect of health condition on psychological distress in isolation, this was no longer significant, suggesting that there may have been an interplay with other factors, such as age increasing vulnerability. The interaction between parent gender and health condition effected psychological wellbeing, however, when looking at this interaction in isolation from the demographics within the model, this was not significant, again potentially highlighting the complexity of this effect. When comparing separate models for fathers and mothers, the overall effect was only significant overall for mothers, which could explain why specific significant differences could not be found according to gender. The trend indicated that having a health condition led to a deterioration in mental wellbeing for mothers, however, this was not statistically significant.

Interestingly the stage of the pandemic did not affect outcomes dependant on health condition status for mothers, however, it did for fathers post-lockdown only, at which time psychological wellbeing was higher for fathers with a health condition compared to pre-pandemic levels. This could be explained by a reduction in parenting stress which was found to be higher in fathers during the pandemic compared to mothers (Ben-Yaakov et al., 2022). For example, following the prolonged need to provide care for children whilst concurrently managing a long-term health condition, the return to school and childcare provision may have led to an increased sense of wellbeing.

Living with a diagnosed physical health condition impacted on psychological wellbeing overall for males, with those with a health condition reporting greater psychological distress. The interaction between being a parent and having a health condition impacted on the psychological wellbeing of males, however, when exploring this interaction in isolation of the covariates, significant differences were not found. The separate models identified that for men without children living at home, having a health condition continued to impact psychological wellbeing when taking into account other factors. When including stage in the interaction, the findings suggest that the pandemic effected this relationship in fathers only. When exploring the effects in isolation, the post-lockdown psychological distress increased for men without children living at home with a health condition, compared to scores decreasing for fathers. The transactional model of stress and coping (Lazarus et al., 1984) proposes that an individual responds to stressors in their external environment using individual resources, including psychological and physical abilities. Therefore, following the pandemic, fathers may have had increased resources to cope with ongoing health conditions, leading to a reduction in stress, therefore improving psychological wellbeing.

Social Factors.

Living with a Partner.

Parents who lived with a partner reported less psychological distress compared to those who lived without a significant other, with no significant differences found depending on the stage of the pandemic. Interestingly, PsD scores were higher for fathers who lived with a partner compared to mothers. This is supported by Skrinpkauskaite et al.'s (2023) research whereby stress and depression was higher for parents living with other adults, suggesting gender differences in the response to living with partners. Living with a partner continued to affect psychological wellbeing in the separate models for mothers and fathers, however, the effect in isolation was only significant for mothers, whereby PsD was less for those living

with a partner. This supports previous research by Thomeer et al., (2024) whereby parents living alone reported an increase in low mood. This suggests that other factors may have mediated this effect for fathers. The stage of the pandemic did not have an overall effect on wellbeing for fathers or mothers, with fixed effects only demonstrating one significant time point for fathers, i.e., during the first lockdown distress significantly increased for those living with a partner. As men are less likely to share feelings of loneliness and isolation with partners due to concerns of burdening them (Mind, 2019), the benefits of living with a partner may have been less for fathers, therefore future research into paternal mental health could explore this further by examining the relationship between living with a partner and feelings of loneliness.

The paternal status of men and whether they lived with a partner did not, in combination, have an effect on psychological distress, however, the effect became significant when including the stage of the pandemic into the interaction, suggesting the combined role of parenthood and the pandemic had a nuanced impact on this effect. When comparing separate models, at the beginning men without children living at home had lower PsD scores overall if they were not living with a partner. This contrasts Andrada's et al. (2021) findings, comparing pre-pandemic data to early and mid-pandemic pandemic data, however, again could be explained by a resistance to sharing the psychological impact of the pandemic with another, particularly if partners are struggling with their own mental wellbeing (Molloy et al., 2024). Interestingly, the effect was more pronounced for fathers. Given that research consistently shows the psychological well-being of mothers was significantly impacted by the pandemic, and COVID-related stress has been linked to increased partner conflict (Pietromonaco et al., 2021), this suggests that fathers faced particular challenges during the pandemic. Living with a partner while dealing with potential parental burnout due to

increased child-related caregiving (Mikolajczak & Roskam, 2018) may have been especially difficult for this population.

Happiness with Partner.

For parents who reported less than average happiness with their partner, there was an increase in psychological distress, supporting previous research which found that parents experiencing increased partner conflict had poorer mental health outcomes (Suarez et al., 2023). The effect of the interaction between parent gender and happiness with partner on distress was not significant in the main model, however, the effect in isolation demonstrated that the effect was greater for fathers who reported unhappiness in a relationship compared to mothers. This discrepancy may have been due to fixed effects analyses only demonstrating significance for one rating (i.e., 'less than average' happiness). Perceived social support has been found to have a stronger association between partner relationship and wellbeing in men compared to women (Stronge et al., 2019). The change in expectations of fatherhood (e.g., increased care-giving responsibilities) and increased awareness and worry regarding childrens' needs was found to increase the stress of fathers during the pandemic, of which they were less likely to share with a partner who was also stressed (Molloy et al., 2024). If their emotions aren't perceived as valid as their partners (Mind, 2020) they may be less likely to share their emotions with their partner, increasing distress, which cannot be shared.

However, when comparing separate models for mothers and fathers, average or less than average degrees of happiness in a relationship with a partner was associated with an increase in psychological distress, with the effect appearing greater for mothers compared to fathers. The characteristics of each sample may have led to the discrepancy in the findings. For example, experiences and responses to relationship satisfaction may have been different, e.g. fathers were on average older than mothers and more likely to be working, which

separate models may not take into account, therefore differences could emerge when including both samples in the same analyses.

Similarly, males who reported less happiness in their relationship reported an increase in psychological distress. COVID-related stress has been associated with lack of responsiveness to partners' needs and hostility, reducing the quality of a relationship (Pietromonaco et al. 2021), subsequently increasing conflict and psychological wellbeing. This did not appear to be impacted by the role of fatherhood and stage of the pandemic when explored in one model. However, when comparing separate models, differences were observed, with the average or below average relationship satisfaction being associated with greater psychological distress for men without children living at home compared to fathers. The stage of the pandemic did not appear to influence the effect of relationship satisfaction in either group, however, it is important to note that this data was captured from September 2020 onwards and was compared to post-pandemic data, suggesting that these relational trends may have continued following the pandemic. As relationship satisfaction has been associated with the perceived fairness of the division of household responsibilities (Ryjova et al., 2022), witnessing another parent providing increased childcare may have mitigated the felt sense of injustice of other responsibilities within the father sample.

Division of Childcare.

Childcare provision effected the psychological wellbeing of parents overall, with those who mostly or always provided childcare demonstrating an increase in psychological distress compared to those primarily relying on others for childcare. Gender differences were not found, however, supports previous findings whereby the increase in childcare responsibilities led to additional stress experienced by parents overall (Fegert et al., 2020). This interaction did not appear to vary according to the stage of the pandemic and therefore may have been a generic response rather than unique to the pandemic. The deterioration in

the psychological wellbeing of the sample for those with increased caregiving responsibilities could be explained by previous research whereby exposure to stress over time led to parental burn-out which was perpetuated by daily care-giving activities (Mikolajczak & Roskam, 2018).

When comparing separate models, the division of home-schooling and childcare responsibilities effected the overall psychological wellbeing of mothers only, potentially due to the greater increase in childcare responsibilities within this group, in line with previous research (Borrescio-Higa et al., 2021), however, when exploring the effect in isolation of covariates, this was no longer significant suggesting that this relationship is likely to complex.

Number of Children.

The number of children living in the household did not affect the psychological wellbeing of parents or interact with the stage and parent gender in the combined model or when comparing the two groups. Previous research found that when parenting three or more children, distress increased for parents at the beginning of the pandemic (Andrada et al., 2021) and for fathers in February 2021 following the third national lockdown (Chen et al., 2022) potentially due to the increased financial and caregiving pressures. In our sample, there was less representation for those parenting three or more children which may have accounted for this finding not being significant.

Age of Children.

The interaction between stage and gender had a significant effect on the psychological wellbeing of parents with a child aged 0-4 years. Although parenting a child of this age did not have a significant main effect, when looking at this effect in isolation of covariates, psychological distress did increase for parents. When looking at separate groups, the effects were no longer significant for fathers, nor for mothers in the main model. However, when not

accounting for covariates, psychological distress decreased for mothers parenting a child aged 0-4 years overall in June 2020 and September 2020 compared to pre-pandemic scores.

Additionally, when examining the impact of having a child under the age of 11 years on parental psychological distress, the interaction between having a younger child, parent gender, and pandemic stage was not significant, nor was the main effect of parenting a younger child. There were no overall effects of the interaction between age of child and stage of the pandemic when running the model for either group, nor was there a main effect of parenting a child aged 11 years and below on psychological distress. Nevertheless, fixed effects indicated trends for observed differences over time for fathers with a child aged 0-11 years living in the household with distress increasing in April 2020 and this effect being higher in September 2020, compared to pre-pandemic scores. Comparatively for mothers, the increase in scores was greater at these time points. Mothers have reported greater burn-out (Zafar et al., 2021; Wiemer et al., 2021), however, parenting stress, as a result of attuning to and meeting the needs of younger children, has been found to be higher for fathers (Ben-Yaakov et al., 2022) which may explain why distress increased for parents. However, despite parenting challenges, the opportunity to spend more time in a caring role may have allowed for men to provide for the family in other ways (Chen et al., 2022), which may have accounted for the lesser impact of parenting this age group for fathers. It is important to note that the impact was greatest during times when restrictions were imposed, aligning with previous research which found that during restrictions in the UK, both stress and symptoms of depression were higher for those parenting a child aged 11 years and below (Skrinpkauskaite et al., 2023) and for fathers of children above the age of 2 years (Chen et al., 2022).

Economic Factors.

Employment Status.

The findings suggest that parents who were employed reported less psychological distress compared to those who were unemployed. Mothers who have less integration of their work-parent identity were found to be more effected by their parental performance whereas findings were inconclusive for fathers in Manzi et al.'s (2022) study. Similarly in our study, gender differences were not found and although the main effect continued to be significant in the separate models, the effect in isolation was no longer significant in the fathers-only model. This suggests that the effect for mothers might have led to the significant finding for parents overall. Earlier findings suggests that mothers in employment are more likely to report increased parenting inequality compared to fathers (Schieman et al., 2018) and women in general are likely to feel less satisfied with their work-family balance compared to men (Mathieu et al., 2023). Our research suggests that there may be other factors impacting on the relationship between employment and psychological wellbeing in fathers, e.g. the increased ability for fathers to engage in child-care and provide for the family in other ways may have reduced the impact of unemployment, which other research could explore.

There has been a discrepancy in this relationship in other research with unemployment being more greatly associated with low mood for fathers compared to mothers in Thomeer et al.'s US-based (2024) research, however, distress was higher for UK-based fathers in employment following restrictions (Chen et al., 2022 research). Furthermore, the balance between home-schooling and employment led to worry in Robert et al.'s (2022) UK-based research and the act of stepping away from work led to a reduction in stress according to Molloy et al.'s qualitative findings. Therefore the non-significant result for fathers might highlight the complexity of navigating employment as a father during the pandemic, e.g.

increased parenting stress due to limited financial stability (Griffith, 2020) versus the increased pressure on time when juggling care needs with work. This suggests that more research is needed to understand the relationship between employment and parental psychological wellbeing at times when care needs are increased for fathers (Dawes et al., 2021).

The findings demonstrated that males in employment had less psychological distress than those not working. The interaction between paternal status and employment effected the psychological wellbeing of males, however, this effect in isolation was not significant. As an increase in sense of shame and lowered self-esteem was reported by men during the pandemic due to reduced financial stability and difficulty providing for the family (Samaritans, 2020), fatherhood potentially brought an opportunity to provide in other ways, potentially mitigating some of the effects of unemployment for this group. Furthermore, the inconclusive findings for fathers could be contextualised within the context of self-efficacy. For example, those in employment may feel greater self-efficacy in the provider role achieved through working (Singley et al, 2015), however, the subsequent reduced involvement with care-giving may decrease parental efficacy and potentially increase parental stress (Murdock, 2013).

Interestingly the effect of employment on distress dependant on stage of the pandemic was significant for men without children living at home only, with distress being higher for men in employment during September 2020 and in January 2021 during the final lockdown, compared to pre-pandemic scores. As associations between suicide and unemployment have been reported to be greater for men (Sher, 2006), this association suggests that those without children were particularly at risk. A previous review by WHO (2020) proposed that low mood can lead increased externalising behaviours, such as overworking, and so when

traditional masculine norms are violated, such as when not working, psychological distress may increase when typical outlets, such as working, cannot be accessed.

The UK Government Furlough Scheme and Working from Home.

Our findings did not yield any significant effects of being placed on furlough on parental or male psychological wellbeing during the pandemic. Previous research found that symptoms of depression and rates of stress increased for parents who worked from home during the pandemic (Skrinpkauskaite et al., 2023), however, our research did not yield any significant findings relating to the impact of working from home on psychological wellbeing.

Income.

Income did not have a significant main effect on the psychological wellbeing of parents nor mothers, nor was there a significant effect of the interaction between stage of the pandemic and income on wellbeing. Income did not have a significant main effect on wellbeing for fathers, nor was there a significant effect of the interaction between stage of the pandemic and income on wellbeing. However, when looking at specific time points without accounting for covariates, fathers reported greater psychological distress post-pandemic for those earning £40001 - £50,000 compared to men without children living at home. If traditional masculine ideologies are threatened, such as the value placed on employment and social status, the subsequent loss of control, purpose and routine can lead to Gender Role Discrepancy Stress (Levant & Richmond, 2016). This is defined as being unable to confirm to perceived gender roles, e.g. as a result of challenges to the need to protect and provide, which can lead to feelings of low mood and helplessness (Andreeva et al., 2015). As the impact of income did not significantly affect paternal wellbeing until post-pandemic, this could suggest that fathers were able to conform with this traditional masculine role in other ways, such as interpersonal means, potential due to the shift in social expectations of fatherhood during the pandemic.

Comparatively, males overall and men without children living at home in the income lower brackets (i.e., less than £30,000) reported greater increase in psychological distress compared to those in the highest bracket (more than £50,001 per annum), supporting previous research whereby lower economic status was associated with an increase in depression (Roberts et al., 2022) and anxiety, potentially due to having less access to resources (Ben-Yaakov et al., 2022). As associations between suicide and low income have historically been greater for men (Sher, 2006) and reduction in status was associated with suicidal ideation and attempts during the pandemic (Walther et al., 2023), this suggests that men without children living at home with lower social status, or changes to this as a result of the pandemic, may have been more at risk to mental health difficulties. As this finding was no longer significant when exploring fathers separately, this suggests that fatherhood may have safeguarded against this effect in the short-term. The significant finding for males overall may have been due to much larger sample of men without children living at home representing this group.

4.1.3 RQ3 – Paternal Psychological Wellbeing and Associated Factors as a Response to the COVID-19 Pandemic

When combing all significant factors into a final model for fathers, only loneliness and life satisfaction remained significant. With regards to loneliness, fathers who experienced a degree of loneliness demonstrated a deterioration in their psychological wellbeing, with psychological distress being less for those who felt lonely hardly ever or never. Overall, the stage of the pandemic did not appear to further compound this effect, however, a single time point was significant; January 2021. During this period, when the third national lockdown was introduced in the UK, psychological distress reduced for those who experienced loneliness some of time compared to pre-pandemic scores. As modern ideals of parenting position the father as providing and protecting through increased involvement with their

children (Dollahite, 1997), the increased restrictions may have led to a greater ability to connect with these values, despite having less connection with the outside world.

Life satisfaction continued to affect the psychological wellbeing of fathers, with those who were ambivalent (i.e., neither dissatisfied or satisfied) reporting increased psychological distress, and distress was even higher for those reporting feeling dissatisfied with life. This effect did not significantly vary according to the stage of the pandemic, suggesting that the pandemic did not compound this interaction. The same model with mothers could explore if differences remain in accordance with the initial models, to ascertain if fatherhood continued to safeguard against the extent of this effect.

The stressors of having a health condition, living with a partner, happiness with partner, having a child aged 0-11 years in the household and employment status no longer significantly affected the psychologically wellbeing of fathers overall, even when accounting for stage of the pandemic. This suggests that the variables may play a role in moderating the relationship between loneliness and life satisfaction on psychological distress, which further analyses could explore. Additionally, the loss of significance for the variables may suggest that there were moderating effects when considering the additional complexity of the model. For example, as current social ideals position the fathers as being a role model (Singley et al., 2015), unemployment may have been more meaningful for fathers with older children. Therefore, future research could explore the age of a child as a potential moderator in the relationship between unemployment and the psychological wellbeing of fathers.

4.2 Critique of Study

4.2.1. Sample

A common limitation of the current literature into paternal mental health is the underrepresentation of male caregivers in family research studies (Phares et al., 2005), which this study addresses. In line with previous research, this study found the secondary data was

collected from participants with similar characteristics, e.g. predominantly mothers, mostly identifying as from a white ethnic background, employed and of higher educational attainment. Although the UKHLS was designed to be representative of the UK, the exclusion of participants due to missing outcome data may have led to less diverse perspectives. This may have resulted from certain sub-groups having less capacity to contribute to the research. For example, the representation of those in the sample with a diagnosed health condition reduced over time, which suggests there may have been difficulties in engagement with the research in accordance with pandemic impacts.

Previous research had not always considered ethnicity within the analyses, however, due to considerations of diversity within the UK, the ethnic background of our sample was included and reported in the initial findings. As this was not specifically explored in later analyses, nuances regarding psychological wellbeing underpinned by ethnicity, such as the impact of social injustices at the time, could not be considered as additional potential stressors on paternal mental health (Thomeer at al., 2020). This may have reduced the validity of the findings to certain ethnic groups. It is also acknowledged that ethnicity does not necessarily account for cultural differences.

When considering economic factors, employment and changes in social status (e.g. job loss) have been associated with poorer mental health outcomes, particularly in men (Andreeva et al., 2015) and this was associated with higher rates of suicide during the pandemic in England (Griffith et al., 2021). To identify if fathers were at an increased risk, further manipulation of the data to create a variable representing job loss would have been useful, however, due to the sample size of fathers this would have carried insufficient power to conduct appropriate analyses.

There are also considerations around the definition and recruitment of parents within this study. Participants were defined as a parent only if they had a child residing in their

household, therefore mothers with a child living in an alternative home would not have been included in the research and similarly, fathers would have been recorded as 'men without children'. Nevertheless, this allowed for the term 'parent' to be considered in a broader sense and therefore may have allowed for more representation from parents who reside outside of traditional family structure, e.g. step, foster, adoptive parents. Additionally, as parenting dyads were not recruited, this allows for representation of same-sex parents, although we acknowledge that the findings were interpreted within the context of previous research which is predominantly grounded within same-sex couples' experiences. It is also important to note from Wave 12 onwards of the UKHLS study, participants were able state their gender identity. Although this study was unable to do so, future research could explore parental psychological wellbeing from a transgender perspective, widening the scope of the human experience by transcending heteronormative research. Furthermore, it is important to consider the impact of gender identity and sexuality on parental wellbeing due potential additional complexities, e.g. stressors associated with discrimination (Farr et al., 2020).

With regards to age, participants were only considered a parent if they were aged 18 years and above, therefore younger parents were not represented in this study. Furthermore, no cut-offs were specified for parent age as we could not assume one's role dependant on age, therefore the maximum age for fathers was 81 years and for mothers this was 99 years. As grandparents may have had parental responsibility or assumed a parenting role, the term 'parent' could be considered an action rather than a legal status. However, due to the wide recognition that age is likely to be associated with COVID-related stress (Fong et al., 2020), this study ensured that the impact of age was explored in initial analyses and was included as a covariate in subsequent models, to account for differences.

Previous research had often included children in the 0-11 years age range, therefore this study used the same grouping for comparative purposes. However, it was acknowledged

the children in this group were heterogenous and ranged from infants to school-age children, therefore likely to exhibit a range of developmental abilities, requiring different needs. Therefore an additional group of 0-4 years (pre-school) was created, however, this still did not identify children who were born during the pandemic. As previous research suggested that the perinatal stage of parenting can bring additional challenges and differences in psychological wellbeing, parenting a child aged 4 years may have been vastly different from parenting a newborn, therefore findings in this group may be less representative to the population and may have accounted for the inconclusive findings.

4.2.2. Methodology

In contrast to a previous study which used retrospective data (Yang et al., 2023), the use of an established dataset in this research allowed for changes over time to be explored using the same participants. This enabled the use of clustering within the chosen analyses to account for the variability within each participant, i.e., allowing for individual differences, which is important in mental health research (Gibbons, 2000), therefore increasing the reliability and robustness of the results. Another strength of our data collection is that the measures were administered at each time point, minimising recollection error. By using a longitudinal design, this also allowed for nuanced changes throughout the pandemic to be captured, in order to identify which stages of the pandemic were most impactful on mental health outcomes and the stressors that interacted most with these timepoints. It is important to note the pre- and post-lockdown data, i.e. timepoints T1 and T5, was collected within a year before and after the pandemic to allow for as many parents who contributed to the COVID-19 study to be included in the study (as participants were excluded if they did not have PsD scores at each timepoint). The stability of scores at these time points may have varied, however, as significant results were still found, this suggests that there were discrete differences in psychological wellbeing as a result of the pandemic.

It could be argued that the validity of outcomes may have been better captured using qualitative research methods. For example, the use of a Likert scale, as administered in this study, limits the description of experience and ratings are subjective, therefore two of the same ratings may reflect disparate experiences. They can also be subject to several biases, including central tendency bias, i.e. avoiding extreme ratings, which may increase the likelihood of underreporting. The surveys were completed online or via telephone, however, adapting the environment within which data was collected, e.g., as part of established groups (e.g., gyms, Men Sheds), may have led to more open responses. Nevertheless, being a female researcher, perhaps this would have increased social desirability bias, e.g., if participants responded in a way perceived as more socially acceptable, reducing the validity of the findings. By using a quantitative design, this allowed for a large amount of data to be gathered across the country over a short space of time, with reduced costs and enabled the navigation of venue closures. Due to limiting certain biases, such as confirmation bias, the reliability of findings are likely to be increased due to this design and remain consistent with findings from qualitative studies in this area, e.g. the impact of loneliness on mental wellbeing (Ogborn et al., 2022).

As fathers have been suggested to underreport psychological distress (Berger et al., 2012*)* and depression may not be as validly captured for men as it is women with current diagnostic criteria (Berger et al., 2012), this study explored changes in wellbeing scores as opposed to using a diagnostic cut-off using the GHQ. As previously mentioned, participants were only included if they had a GHQ score at each time point. Although the analyses allowed for missing data, this study was exploring nuanced changes in psychological wellbeing, therefore, by avoiding inputting data or making statistical adjustments for this outcome measure, this likely improved the statistical power of the data and increased the reliability, validity and robustness of the findings. It could be argued that those who did not

complete all of the surveys may have experienced greater difficulties with their psychological wellbeing, or ability to complete additional tasks, which may have reduced their ability to engage in the research. Therefore, the data may not be fully representative of those who were potentially of greater need, which the research had aimed identify. This was originally considered during the design of the study, as respondents had been asked if they accessed mental health services or if they were diagnosed with mental health difficulties. However, as the representation of this group within the fathers sample was too small (n = 24), this could not be meaningfully included in the analyses.

Studies conducted at the beginning of the pandemic often measured parenting stress as an indicator of psychological distress (Hellend et al., 2021), however, the GHQ, as utilised in this research, has demonstrated good reliability and validity in capturing many common mental disorders (Goldberg et al., 1997; King et al., 2021). It is worth considering that one of the initial studies exploring the pandemic's effect on psychological wellbeing in the UK revealed that men reported greater traumatic stress symptoms compared to females during the early stages of the pandemic (Shevlin et al., 2020). As the GHQ does not specifically measure trauma symptoms, a nuanced measure such as the Impact of Events Scale (IES) may have enhanced our understanding of the psychological need. This tool measures the distress associated with stressful life events, compared to the GHQ which is a broader measure of common mental health disorders. Therefore future research should consider this due to clinical implications, e.g. considering treatment options for psychological distress. Furthermore, when considering the broader impact of the pandemic on wellbeing, such as on quality of life, a measure such as the COV19-QoL scale could have been useful due to its high internal consistency, good construct validity and reliability in clinical and non-clinical populations (Repišti et al., 2020). However, measures designed specifically for the pandemic would not have allowed pre and post experiences to be considered.

The UKHLS is an extensive dataset with several hundred potential variables however, the ‘stressor variables’ selected for this study most commonly featured in the existing literature. When considering the variables selected, ‘degrees of happiness’ in a relationship was only applicable to those also residing in the household. If a partner had been living outside of the home, including healthcare workers who were shielding their family members from the risk of contracting COVID-19, this may have had an additional impact on parenting pressures. Further variables could have offered additional insights in parental mental health and overall family psychological wellbeing, such as ‘warm, happy times with child’, whether family was important to one’s sense of identity and job security, however, due to extensive missing data for these variables in the dataset, the sample sizes were too small for fathers to carry sufficient statistical power, i.e. the ability to detect an effect.

4.2.3. Analyses

In this study, there was some disparity in the significance of results between tests. For instance, there were some factors which had a significant effect on psychological wellbeing in the fixed effects analysis but not in the main model, as mentioned earlier in the discussion. This indicated a trend, however, was not statistically significant, potentially due to taking into account other factors such as age and ethnicity, sample variability, or even the reduction of statistical power within the complex models. Additionally, some of the interactions between several factors and the stage of the pandemic may have had a significant effect on psychological distress as assessed in fixed effects models, however, at times this interaction no longer reached statistical significance in the main model. Again, this suggests that while there may be a relationship between these factors and distress in accordance with specific stages of the pandemic, this relationship becomes less clear or is influenced by other factors when accounting for the entire model.

Similarly in our analysis, at times the main models indicated a significant relationship between certain factors and the psychological wellbeing of parents. However, the effect fell short of statistical significance when adjusting for other factors in the model (e.g., covariates), as the factors no longer had a significant effect on psychological wellbeing. Potential reasons for this could include the sample size, i.e. there may have been insufficient power to detect associations, the effect may have been dependant on other factors, or the strength and direction may have been influenced by other variables. Future research could explore potential moderating effects to further enhance our understanding of the complexity of the relationship between the variables included within this research.

Previous research has often used regression analyses (e.g., Thomeer, 2024), however, the extent of the missing data within each individual dataset would not allow for this analysis to be conducted without assumptions being made about the distribution of the data. Due to the additional non-normative distribution of the data, linear mixed models were selected as the most appropriate statistical analyses. Linear mixed models have been recommended for handling the complexity and multidimensionality of mental health data, allowing for fixed effects, accounting for population-level trends and random effects, allowing for individual differences (Gibbons, 2000). This dual capability enabled the modelling of diverse trajectories of psychological well-being during the pandemic, where different individuals may experience varying levels of distress.

As previous research often grouped samples into males or parents in general and offered generalised claims based on the results, we were interested if there may have been particular groups (i.e., mothers versus fathers, and fathers versus men without children living at home) driving the significance. Therefore we chose to develop separate linear regression models for parents and males, in addition to mothers, fathers, and men without children, to compare the findings and highlight the importance of looking at individual groups so not to

miss nuanced effects. Additionally, each model included a different stressor variable. Similar to Ausin et al's (2021) research, this methodological choice was guided by the aim to explore the unique impact of a stressor variable that might be experienced by each group. By conducting separate models with a focused examination on each stressor, we aimed to provide a nuanced understanding of the distinct relationships between these stressors and the outcome variable within each group. This approach also allowed us to avoid the potential issue of multicollinearity.

As this research was predominantly interested in the experience of fathers, the additional linear regression model for fathers only was developed, including all the stressor variables which had demonstrated significance within the father-only models. This provided a focused examination of the stressors and the interactions that were most influential for fathers during the time of the pandemic, in order to offer a comprehensive understanding of the complex relationships between these variables and outcomes for fathers. Alternatively, we could have developed less models by combining stressors, however, the models would have been different for fathers and men without children living at home due to the additional childcare-related variables. Had these only been included in the mother and father models, the results would not have been directly comparable to men without children living at home as the variables may have interacted differently with the inclusion of additional factors, complicating interpretation.

Finally, it was observed that often the interaction between stage of the pandemic and the stressor variables did not significantly impact on psychological distress in the main model, however, at T2 and T4 fixed effect analyses were significant. If data was collected at different timepoints, this may have led to additional significant results, however, this research demonstrates similar trends to research which utilised data gathered at similar stages and guided the development of these timepoints.

4.3 Implications of Study

The present study highlights the gender and parental differences in wellbeing, social and economic impacts on psychological wellbeing during the COVID-19 pandemic in the UK. The resilience framework provides a lens to understand how the risk of mental health outcomes can be increased or reduced by our adaptation to significant threats dependant on a multitude of factors, including individual, cultural, family and community attributes (Fleming & Ledogar, 2008). Therefore it is important to understand internal and external factors which may indicate a greater need for resources to safeguard against such events.

With regards to demographics, significant differences in psychological wellbeing according to educational attainment were only found within the male sample, with psychological distress being greatest for fathers with a degree and for men without children living at home with an A-Level or higher. As the UK was facing significant economic threats as a consequence of the pandemic, this research suggests that males most likely to be in professional positions were likely to experience the greatest toll on their mental health, therefore employee wellbeing programmes could potentially be most beneficial to these groups in times of economic change.

Additionally, significant differences were found according to ethnic background. For example, compared to those from a white ethnic background, fathers and men without children living at home from a mixed or multiple ethnic background reported greater distress, whereas the distress was lower for mothers from a black, black British, Caribbean or African background. Therefore, when the effects of specific stressor variables on psychological distress did not yield statistical significance, this may have been due the potential complexities, e.g., intersectionality, in the response to variables dependant on ethnicity. For example, Parent et al. (2018) reported that there were discrepancies in help-seeking behaviour according to ethnic group, e.g., men from a black ethnic background with lower income were

less likely to seek help, potentially due to the social and cultural contexts leading to the stigmatisation of psychological difficulties, therefore future research could create models for each ethnic group to explore further nuances. Differences in psychological responses to certain factors are also important to consider when ensuring that staff within mental healthcare settings are culturally competent and are representative of those who require support, in order to minimise barriers to accessing services. Furthermore, consideration should be given to ensuring policies and procedures are gender-sensitive and gender-transformative (WHO, 2010). For example, positioning 'help-seeking' behaviour as 'action-taking' and prioritising goal-setting and practical therapeutic activities for men (Seidler et al., 2016) challenges traditional masculine ideals relating to self-reliance and strength, which are associated with men who are less likely to share mental health difficulties (Gough et al., 2020).

During two periods of increased restrictions in the UK, factors with the greatest significant impact on fathers' psychological wellbeing included parenting a child aged 0-11 years. Currently the NICE (National Institute for Health and Care Excellence, 2020) guidelines recognise that maternal and subsequent child mental health is particularly at risk during the transition into parenthood, at a time when external and internal resources are strained. Future guidelines could consider how male mental health could be affected at similar times, or when parenthood increases in complexity, such as when resources are limited. This is particularly important considering that when internal resources are depleted, men are more likely to underreport mental health challenges, seek support and are three times more likely to take their own life (Oliffe et al., 2011).

In accordance with the literature, fathers experienced greater psychological distress during the pandemic compared to men, therefore the increase in distress as a result of parenthood provides a justification for further analysis, to establish the factors which may

have contributed to these differences. This is important to offer guidance for policies and interventions to support the psychological wellbeing of fathers, particularly as there are no gender-specific NICE guidelines for common mental health disorders, such as depression, in the UK (NICE, 2022). Feminist psychology highlights the double bind experienced by mothers when a situation (e.g. working) conflicts with societal expectations (e.g. being the primary caregiver for children), therefore positioning men as the primary 'breadwinners'. This research demonstrated that fathers experienced less psychological distress during the pandemic compared to mothers, suggesting that time with family may have safeguarded the psychological wellbeing of fathers. Over the past few decades, fathers have spent more time providing care for their children and engaging in play (Bianchi & Milkie, 2010). Therefore, by accelerating this shift in fathering through the contextual event of the pandemic which allowed more time for fathers to engage in 'proximal parenting', may have served as a protective factor for paternal psychological wellbeing.

Subsequently, the creation of a society whereby it was accepted and, at times, expected that fathers must remain at home, may have challenged patriarchal narratives of gendered parenting norms, e.g., fathers going out to work. This highlights the importance of fostering positive narratives of fathering through employment policies. This can be applied to current policies which may currently prioritise a female presence, such as the length of maternity versus paternity leave. For example, longer paternity leave has been associated with increased engagement of fathers in both developmental and caregiving interactions in early childhood (Petts & Knoester, 2018). Subsequently, by increasing time at home and having longer periods of leave, this could enhance contemporary fathering approaches and defend against life stressors, such as job loss, which may have previously threatened masculinity and led to poor mental health outcomes previously (Molloy, 2024). Additionally, this can be applied to current therapeutic modalities, e.g., therapeutic spaces where the

mother-child relationship is the primary focus, such as perinatal services or in psychoanalysis where theory and technique are primary grounded in the mother-child relationship (Diamond, 2017).

Research has suggested that parental burn-out was more common during the pandemic as a response to exhaustion and a lack of confidence in one's ability to parent, which can in turn lead to emotional distancing (Roskam et al., 2017). This may have had a systemic impact on the family if parents are less available to attend to their child's emotional needs. It has been proposed that parent and child mental health have a bi-directional relationship (ONS, 2019), i.e. as parental stress increases, the ability to meet increased demands reduces, increasing the child's distress and leading to parental stress (Marchetti et al., 2020). As our research found that parents reported increased childcare responsibilities, this suggests that there may have increased psychological distress within more households, which parent-dyad research could explore to ascertain which families may require additional resources.

Overall, our findings indicated a trend towards fathers experiencing greater psychological distress compared to men without children living at home, suggesting additional complexities for mental health outcomes due to parenthood. The increase in distress during the periods when restrictions were introduced may have been due to an increased awareness of and subsequent worry for childrens' developmental needs, arising from increased father-child interactions at home, e.g. home-schooling and the provision of childcare (Molloy, 2024). Therefore, interventions could consider remote sources for parenting, mental health, and social support during social restrictions. A social media-based parenting support group providing advice relating to child development and mental health found that only 6% of members were fathers (Hooper et al., 2023). Therefore, as fathers are reported to be less likely to discuss worries, spaces specifically for men to normalise the

challenges of parenthood may be more appropriate, potentially incorporating these interventions into already established spaces, such as Men's Sheds.

The findings could also be considered within the context of existing research which suggests that paternal stress was greater during the pandemic for fathers with early adverse life experiences, with mental health symptoms deteriorating most for those with pre-existing vulnerabilities (Wade et al., 2021). A stress sensitisation model could conceptualise male caregivers' mental health responses to the COVID-19 pandemic within the context of early adverse experiences (Wade et al., 2021), therefore, interventions to reduce stress could be particularly useful for this group, e.g., mindfulness interventions have proven effective in alleviating parental stress, which subsequently leads to improved outcomes for children (Burgdorf et al., 2019). This could inform current policies such as demands of employment (e.g. working hours) during times of increased stress, mental health interventions that consider past trauma within the context of current difficulties and increasing access to resources that support with stress reduction.

The study found that those reporting higher than average happiness with a partner had increased psychological wellbeing during the pandemic. As COVID-related stress led to maladaptive processes which increased relational discord and reduced psychological wellbeing. (Pietromonaco et al. 2021) resources to improve relationship quality and reduce conflict could be helpful. For example, strategies to regulate emotions could be beneficial, particularly when other external resources are limited. Furthermore, providing supportive spaces to allow experiences to be shared, this could challenge any current beliefs held by men that their experience is less valid which may increase their help-seeking behaviour when overwhelmed by life's demands (Hernandez at el., 2014). This finding is also important when considering family interventions which are typically focused on maternal provision and responsibility, e.g., by using a parent-dyad in these interventions, this may increase the self-

efficacy of fathers in the parent role and improve positive self-concept (Roth et al., 2015). Furthermore, the act of enhancing parenting roles can guide beliefs and behaviours in changing social contexts (Keslter-Peleg et al., 2022), such as the role of the father in child psychopathology, improving family outcomes.

Interestingly, this research proposes that distress was higher for fathers who lived with a partner, which contrasts current literature whereby fathers living alone reported low mood (Roberts et al., 2022). Mothers may have been better able to share their difficult experiences with others, therefore residing with a partner may have felt more helpful, whereas as men report not wanting to add to the burden of their partner (Mind, 2019), this may have increased feelings of isolation. As fathers have reported that they feel unable to discuss their emotions with their partner when their partner was stressed (Molloy et al., 2024), by exploring ways to strengthen the caregiving roles of fathers, this may reduce mothers' childcare burden and subsequent parental stress (Zafar et al., 2021), therefore increasing the emotional availability of mothers, allowing a space for paternal concerns to be shared.

This study concluded that feelings of loneliness were associated with increased psychological distress during the pandemic, in line with the current literature. As men were less likely to reach out to family and friends via technology (Fancourt et al., 2020), this suggests that activity-based means of connecting with others may have been more appropriate for this population. As rates of loneliness during the pandemic for 'Shedders' were similar to non-members pre-pandemic, this further suggests that shared spaces could reduce the effects of social isolation (McGrath et al., 2020) and provide opportunity to gain informal support from peers (Wilson et al., 2013), which should be held in mind for future responses.

Similarly to previous research, men without children living at home in the lower income brackets reported a greater increase in psychological distress compared to those in the

higher brackets. Comparatively fathers earning £40,001 to £50,000 had increased psychological distress post-lockdown, suggesting that aspects of the restrictions had safeguarded this sub-group against psychological distress. This may have been due to fathers fulfilling traditional masculine roles in additional ways, e.g., protecting and providing through engaging with childcare or home-schooling. This highlights the need for policies to be mindful of the potential benefits of fathers being at home as means to maintain psychological wellbeing, e.g. increased working from home opportunities for those in higher income roles. Additionally, a UK government strategy prioritised supporting vulnerable families to access mental health support, improve parents' access to employment and reintegrate children back to school (Ministry of Housing, Communities and Local Government, 2021). However, this research highlights the importance of targeting support for the appropriate groups. For example, only mothers and parents overall in employment reported lower levels of psychological distress. No significant effects were found for fathers when this analysis was conducted separately, perhaps due to potential mediating effects when providing for the family in other ways (e.g. increased caregiving). This highlights the importance of recruiting a representative sample of males and females in parent research and exploring associations separately, in order to identify those for whom strategies, e.g. prioritising returning to work, may be beneficial.

Finally, when considering the UK Government's response to the pandemic, it is important to note that an increase in psychological distress was observed for all groups during the first national lockdown in April 2020 and the third national lockdown in January 2021. These stages of the pandemic therefore appeared the most salient for mental health outcomes and would have likely required the most resources to safeguard the nation against psychological distress.

4.4 Conclusion

In conclusion, the findings of this research provide a narrative within which to better understand the psychological impact of the COVID-19 pandemic, with an emphasis on paternal mental health. The implications underpin the need for gender-inclusive policies, interventions and strategies within the changing landscape of fatherhood and masculinity. It is also important to note that despite this research being grounded within a specific global health crisis, the significant wide-spread implications for mental health outcomes can also result from economic crises, political upheavals, environmental disasters and war or conflict, which exist within our current time. As stated by Yang et al., (2023, p.568), "on a theoretical level, the COVID-19 pandemic provided an unfortunate opportunity of a natural experiment on how families function under pressure". Therefore, rather than this research simply contributing to a body of research which may be considered historic, in reality, this period in time provided an important learning opportunity to ensure adequate support is available to those most vulnerable when families are placed in situations when individual and external resources simply are not enough.

4.5 Self-Reflexivity

After navigating the highs and lows of parenting throughout the COVID-19 pandemic in the UK, I approached my thesis with a real motivation to contribute to the growing body of research into parental experiences. My privilege, awarded by the ability to contribute to the research in this field, left me with a sense of responsibility and passion to guide future thinking relating to parental support, particularly when considering potential impacts on children's mental health outcomes. My doctoral training led to an increased awareness of the often overlooked experiences of paternal mental health, perpetuated by public discourse. Therefore, after witnessing my husband also navigating the complexities of parenting during

the pandemic, I felt compelled to dedicate my curiosities and subsequent project to these experiences.

The research journey felt cathartic and reparative at times, due to the validation of our own experiences. Post-lockdown, my husband was able to share the extent of the impact on maintaining his role as a 'provider and protector' for our family, within a country with significant economic and social restrictions, amidst real threat to life. The dual pressure of working from home and balancing increased caregiving responsibilities, without his usual means of normalising parental experiences and managing stress was clearly impactful. These conversations came to life through the data and theoretical frameworks, alongside new perspectives and insights.

The experience of completing this research enriched my understanding of the complexities of fatherhood. It both reinforced the importance of advocating for gender-inclusive mental health support and highlighted the need for further research to explore the unique challenges faced by fathers in different socio-cultural contexts. I was mindful to remain curious throughout my analyses and not assume that there was one 'truth' or single experience. From a methodological perspective, I felt conflicted at times using quantitative data, due to the value I place on capturing the human experience through storytelling, which features heavily in my work with individuals with mental health difficulties. Nevertheless, I acknowledged the importance of using an established dataset to be curious on a larger scale, with the hope of this somehow being more impactful in relation to policy change.

It's important to note that there was a sense of irony in how the demands of this research, both in time and energy, created additional challenges in my own functioning within a family system. This juxtaposition highlighted the complex relationship between intense demands with little means for support, and the pull to maintain assumed roles as a parent and spouse. Nevertheless, the research area allowed for the integration of my own

values and professional endeavours, and so I held in mind the sense of importance of my work when my capacity felt stretched to its limit.

Consequently, this research felt like a meaningful endeavour, beyond the purpose of academic contribution, reminding me of the privilege I hold as a scientist practitioner as a means to inspire the curiosity of researchers, and to advocate for the well-being of fathers and families, alongside whom I raise my own family within the UK.

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Appendices

Appendix A. Mixed Methods Appraisal Tool (MMAT), version 2018

Screening questions (for all types)
S1. Are there clear research questions?
S2. Does the collected data allow to address the research questions?

1. Qualitative
1.2. Are the qualitative data collection methods adequate to address the research question?
1.3. Are the findings adequately derived from the data?
1.4. Is the interpretation of results sufficiently substantiated by data?
1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?

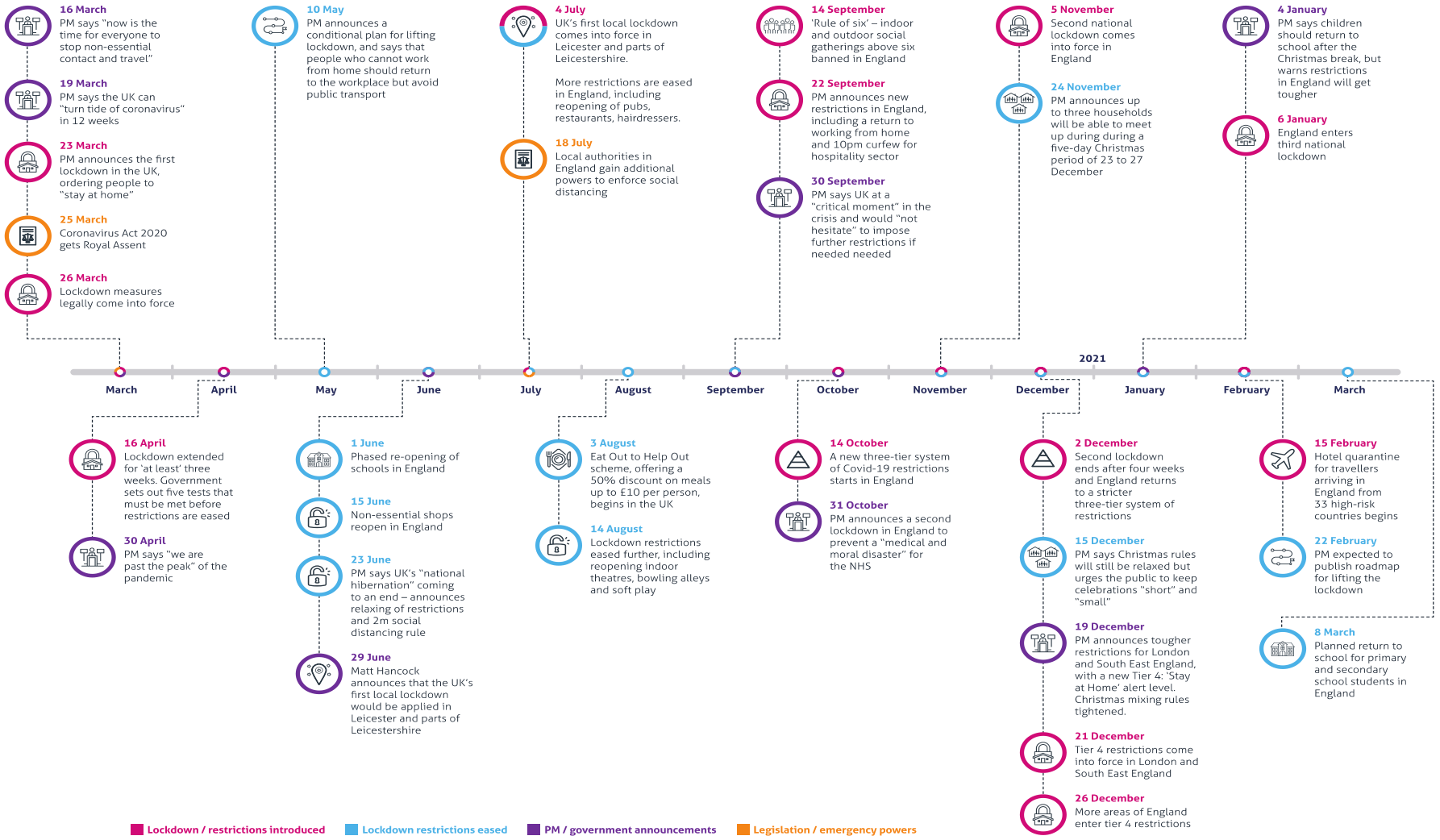
2. Quantitative randomized controlled trials
2.1. Is randomization appropriately performed?
2.2. Are the groups comparable at baseline?
2.3. Are there complete outcome data?
2.4. Are outcome assessors blinded to the intervention provided?
2.5 Did the participants adhere to the assigned intervention?

3. Quantitative non- randomized
3.1. Are the participants representative of the target population?
3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?
3.3. Are there complete outcome data?
3.4. Are the confounders accounted for in the design and analysis?
3.5. During the study period, is the intervention administered (or exposure occurred) as intended?

4. Quantitative descriptive
4.1. Is the sampling strategy relevant to address the research question?
4.2. Is the sample representative of the target population?
4.3. Are the measurements appropriate?
4.4. Is the risk of nonresponse bias low?
4.5. Is the statistical analysis appropriate to answer the research question?

5. Mixed methods
5.1. Is there an adequate rationale for using a mixed methods design to address the research question?
5.2. Are the different components of the study effectively integrated to answer the research question?
5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?
5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?
5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?

Appendix B. A timeline of UK responses to the COVID-19 pandemic (Institute for Government Analysis, 2024)



Appendix C. General Health Questionnaire (GHQ-12)

The next questions are about how you have been feeling over the last few weeks.

Have you recently been able to concentrate on whatever you're doing?

1. Better than usual
2. Same as usual
3. Less than usual
4. Much less than usual

Have you recently lost much sleep over worry?

1. Not at all
2. No more than usual
3. Rather more than usual
4. Much more than usual

Have you recently felt that you were playing a useful part in things?

1. More so than usual
2. Same as usual
3. Less so than usual
4. Much less than usual

Have you recently felt capable of making decisions about things?

1. More so than usual
2. Same as usual
3. Less so than usual
4. Much less capable

Have you recently felt constantly under strain?

1. Not at all
2. No more than usual
3. Rather more than usual
4. Much more than usual

Have you recently felt you couldn't overcome your difficulties?

1. Not at all
2. No more than usual
3. Rather more than usual
4. Much more than usual

Have you recently been able to enjoy your normal day-to-day activities?

1. More so than usual
2. Same as usual
3. Less so than usual
4. Much less than usual

Have you recently been able to face up to problems?

1. More so than usual
2. Same as usual
3. Less able than usual
4. Much less able

Have you recently been feeling unhappy or depressed?

1. Not at all
2. No more than usual
3. Rather more than usual
4. Much more than usual

Have you recently been losing confidence in yourself?

1. Not at all
2. No more than usual
3. Rather more than usual
4. Much more than usual

Have you recently been thinking of yourself as a worthless person?

1. Not at all
2. No more than usual
3. Rather more than usual
4. Much more than usual

Have you recently been feeling reasonably happy, all things considered?

1. More so than usual
2. About the same as usual
3. Less so than usual
4. Much less than usual

Appendix D. Development of variables

Variable created	Dataset origin	Main survey (waves 10/11/12)	COVID-19 Survey (waves 1, 3, 5)			Main survey (waves 10/11/12)
		T1	T2	T3	T4	T5
Age	indresp_t, indresp_w	age_dv	age	age	age	age_dv
Ethnicity	indresp_t, xsample, indresp_w	Racel_dv	Racel_dv	Racel_dv	Racel_dv	Racel_dv
Gender	indresp_t, indresp_w	sex_dv	sex_dv	*	*	sex_dv
Educational attainment	indresp	hiqual_dv	*	*	*	hiqual_dv
PsD	indresp	scghq1_dv	scghq1_dv	scghq1_dv	scghq1_dv	scghq1_dv
Wellbeing factors						
Loneliness	indresp_t, indresp_w	sclonely	sclonely_dv	sclonely_dv	sclonely_dv	sclonely
Life satisfaction	indresp_t, indresp_w	sclfsato		sclfsato_dv	sclfsato_dv	sclfsato
Health condition	indresp_w, indresp_t	hcondcode1 hcondcode3 hcondcode4 hcondcode5 hcondcode6 hcondcode7 hcondcode8 hcondcode10 hcondcode11 hcondcode12 hcondcode15 hcondcode16 hcondcode19 hcondcode20 hcondcode21	hcond_cv1 hcond_cv2 hcond_cv3 hcond_cv4 hcond_cv5 hcond_cv6 hcond_cv7 hcond_cv8 hcond_cv10 hcond_cv11 hcond_cv12 hcond_cv13 hcond_cv14 hcond_cv15 hcond_cv16 hcond_cv18 hcond_cv19 hcond_cv21 hcond_cv23 hcond_cv24 hcond_cv27 hcondnew_cv1 hcondnew_cv2 hcondnew_cv3 hcondnew_cv4 hcondnew_cv5 hcondnew_cv6 hcondnew_cv7 hcondnew_cv8 hcondnew_cv10 hcondnew_cv11 hcondnew_cv12 hcondnew_cv13 hcondnew_cv14 hcondnew_cv15 hcondnew_cv16 hcondnew_cv18 hcondnew_cv19 hcondnew_cv21 hcondnew_cv23 hcondnew_cv24 hcondnew_cv27			hcondcode1 hcondcode3 hcondcode4 hcondcode5 hcondcode6 hcondcode7 hcondcode8 hcondcode10 hcondcode11 hcondcode12 hcondcode15 hcondcode16 hcondcode19 hcondcode20 hcondcode21

		hcondcode23 hcondcode24 hcondcode25 hcondcode26 hcondcode27 hcondcode28 hcondcode29 hcondcode30 hcondcode31 hcondcode32 hcondcode33 hcondcode34 hcondcode35 hcondcode36 hcondcode97 hcondncode1 hcondncode3 hcondncode4 hcondncode5 hcondncode6 hcondncode7 hcondncode8 hcondncode10 hcondncode11 hcondncode12 hcondncode15 hcondncode16 hcondncode19 hcondncode20 hcondncode21 hcondncode23 hcondncode24		hcondcode23 hcondcode24 hcondcode25 hcondcode26 hcondcode27 hcondcode28 hcondcode29 hcondcode30 hcondcode31 hcondcode32 hcondcode33 hcondcode34 hcondcode35 hcondcode36 hcondcode97 hcondncode1 hcondncode3 hcondncode4 hcondncode5 hcondncode6 hcondncode7 hcondncode8 hcondncode10 hcondncode11 hcondncode12 hcondncode15 hcondncode16 hcondncode19 hcondncode20 hcondncode21 hcondncode23 hcondncode24

		hcondncode25 hcondncode26 hcondncode27 hcondncode28 hcondncode29 hcondncode30 hcondncode31 hcondncode32 hcondncode33 hcondncode34 hcondncode35 hcondncode36				hcondncode25 hcondncode26 hcondncode27 hcondncode28 hcondncode29 hcondncode30 hcondncode31 hcondncode32 hcondncode33 hcondncode34 hcondncode35 hcondncode36
Social factors						
Living with a partner	indresp_t, indresp_w	cohab_dv mastat_dv	couple	couple	couple	cohab_dv mastat_dv
Happiness with partner	indresp_w			screlhappy_dv	screlhappy_dv	screlhappy
Division of childcare	indresp_w	husits		Husits_cv	Husits_cv	
No. of children	hhresp	nkids_dv	*	*	*	nkids_dv
Child 0-4yrs	Hhresp/ indresp_w,	Nkis05	*	parent0plus	parent0plus	Nkis05
Child 0-11yrs	Hhresp/ indresp_w, indresp_t	Nkis05 / nch511_dv	*	parent0plus / parent511/	parent0plus / parent511/	Nkis05 / nch511_dv
Economic factors						
Employment status	indresp_t, indresp_w	employ	Sempderived	Sempderived	Sempderived	employ
Access to Furlough	indresp_w		furlough			
Ability to work from home	indresp_w	jbfxuse7		jbflex_cv7	jbflex_cv7	jbfxuse7

Personal yearly income	indresp	fimnnet_dv				fimnnet_dv

Note: Variables names as originally recorded within the dataset; *Imputed; Dataset origin refers to source of data as either face-to-face interview (indresp), telephone interview (indresp_t) or web-based survey (indresp_w).

Appendix E. Results for changes in factors over time for each group

Table E1.

Descriptives of Fixed Factors for Fathers at Each Stage of the Pandemic

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
	Wellbeing factors							
Loneliness						4	5.42	.25
Hardly ever/ Never	317 (71.7)	800 (73.5)	843 (71.7)	671 (67.4)	482 (67.2)			
Some of the time	110 (24.9)	247 (22.7)	284 (21.2)	283 (28.4)	212 (29.6)			
Often	15 (3.4)	41 (3.8)	48 (4.1)	41 (4.2)	23 (3.2)			
Life satisfaction						3	11.06	<.05
Dissatisfied	78 (13.2)	-	193 (17.3)	220 (22.8)	86 (12.0)			
Neither	73 (12.4)	-	107 (9.6)	100 (10.4)	87 (12.2)			
Satisfied	438 (74.4)	-	817 (73.1)	643 (66.8)	542 (75.8)			
Health condition						4	111.18	<.001
Reported	113 (19.6)	363 (32.9)	187 (15.4)	150 (14.8)	48 (6.6)			
Not reported	463 (80.4)	742 (67.1)	993 (84.6)	852 (85.2)	678 (93.4)			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
Social factors								
Living with a partner						4	40.62	<.001
No	477 (80.0)	353 (90.7)	373 (88.4)	324 (88.5)	612 (84.4)			
Yes	119 (20.0)	45 (9.3)	49 (11.6)	42 (11.5)	113 (15.6)			
Happiness with partner						2	1399.55	<.001
More than average	-	-	614 (55.5)	513 (54.9)	296 (57.1)			
Average	-	-	325 (29.4)	270 (28.9)	147 (28.4)			
Less than average	-	-	168 (15.1)	151 (16.2)	75 (14.5)			
Who provides childcare						2	13.61	.001
Always/usually me	17 (4.3)	-	53 (5.3)	55 (6.6)	-			
Shared	152 (38.4)	-	566 (56.7)	379 (45.4)	-			
Other	227 (57.3)	-	379 (38.0)	400 (48.0)	-			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
No. of children								
1	217 (41.9)	404 (42.5)	401 (42.2)	365 (44.6)	263 (43.1)	4	62.85	<.001
2	233 (44.4)	439 (46.2)	447 (47.1)	370 (45.2)	276 (45.2)			
3+	75 (14.3)	108 (11.3)	102 (10.7)	84 (10.2)	71 (11.7)			
Child aged 0-4yrs						4	70.54	<.001
No	355 (59.6)	764 (69.1)	829 (70.3)	708 (70.7)	506 (69.7)			
Yes	241 (40.4)	341 (30.9)	351 (29.7)	294 (29.3)	220 (30.3)			
Child aged 0-11yrs						4	64.91	<.001
No	142 (27.8)	358 (25.7)	396 (33.6)	351 (35.0)	244 (33.6)			
Yes	454 (76.2)	747 (74.3)	784 (66.4)	651 (65.0)	482 (66.4)			
	Economic factors							
Employment status						4	5.80	.22
Employed	558 (93.6)	1007 (93.7)	1088 (92.8)	928 (93.3)	656 (90.7)			
Not employed	38 (6.4)	68 (6.3)	85 (7.2)	67 (6.7)	67 (9.3)			
Access to Furlough						-	-	-
Yes	-	133 (12.9)	-	-	-			
No	-	763 (87.1)	-	-	-			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
Working from home						3	4.14	.25
Mentioned	70 (21.4)	-	244 (37.1)	178 (31.8)	24 (27.0)			
Not mentioned	257 (78.6)	-	414 (62.9)	382 (68.2)	65 (73.0)			
Annual personal income						25	199.00	<.001
£0-10,000	61 (10.3)	-	-	-	78 (10.8)			
£10,001-20,000	98 (16.5)	-	-	-	90 (12.4)			
£20,001-30,000	192 (32.3)	-	-	-	202 (27.9)			
£30,001-40,000	122 (20.4)	-	-	-	166 (22.9)			
£40,001-50,000	56 (9.4)	-	-	-	84 (11.6)			
£50,001 +	66 (11.1)	-	-	-	105 (14.4)			

Note. Pre-pandemic, post-lockdowns. T1 = March 2019 - March 2020; T2 = April 2020; T3 = September 2020; T4 = January 2021; T5 = August 2021 – August 2022. COVID-19 waves defined as T2-T4. Test statistics for Friedman's test, Cochran's Q test or Pearson Chi-Square.

Table E2.

Descriptives of Fixed Factors for Mothers at Each Stage of the Pandemic

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
	Wellbeing factors							
Loneliness						4	22.23	<.001
Hardly ever/ Never	391 (54.9)	1012 (57.5)	1166 (61.3)	864 (52.0)	656 (56.6)			
Some of the time	264 (37.1)	602 (34.2)	638 (33.5)	636 (38.3)	399 (34.4)			
Often	57 (8)	146 (8.3)	98 (5.2)	160 (9.7)	104 (9.0)			
Life satisfaction						3	9.73	<.05
Dissatisfied	142 (15.4)	-	336 (18.9)	394 (24.9)	170 (14.6)			
Neither	112 (12.1)	-	149 (8.4)	176 (11.1)	149 (12.8)			
Satisfied	668 (72.5)	-	1290 (72.7)	1012 (64.0)	844 (72.6)			
Health condition						4	166.19	<.001
Reported	228 (24.3)	602 (33.6)	268 (14.0)	205 (12.3)	94 (8.0)			
Not reported	712 (75.7)	1188 (66.4)	1642 (86.0)	1463 (87.7)	1078 (92.0)			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
				Social factors				
Living with a partner						4	4.93	.29
No	660 (70.3)	481 (66.0)	532 (65.3)	454 (64.7)	860 (73.6)			
Yes	279 (29.7)	248 (34.0)	283 (34.7)	248 (35.3)	309 (26.4)			
Happiness with partner						2	2353.02	<.001
More than average	-	-	277 (17.4)	238 (17.2)	117 (15.7)			
Average	-	-	487 (30.6)	430 (31.1)	183 (24.6)			
Less than average	-	-	828 (52.0)	715 (51.7)	445 (59.7)			
Who provides childcare						2	61.65	<.001
Always/usually me	287 (50.3)	-	768 (54.0)	679 (60.6)	-			
Shared	23 (45.7)	-	557 (39.2)	434 (38.8)	-			
Other	261 (5.0)	-	96 (6.8)	107 (9.6)	-			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
No. of children						4	102.58	<.001
1	367 (42.8)	640 (42.0)	679 (44.4)	620 (45.5)	425 (42.6)			
2	382 (44.6)	710 (46.6)	686 (44.8)	606 (44.5)	465 (46.6)			
3+	108 (12.6)	173 (11.4)	165 (10.8)	137 (10.0)	108 (10.8)			
Child aged 0-4yrs						4	104.51	<.001
No	560 (59.6)	1278 (71.4)	1399 (73.2)	1224 (73.4)	840 (71.7)			
Yes	380 (40.4)	512 (28.6)	511 (26.8)	444 (26.6)	332 (28.3)			
Child aged 0-11yrs						4	117.39	<.001
No	236 (25.1)	600 (33.5)	654 (34.2)	580 (34.8)	381 (32.5)			
Yes	704 (74.9)	1190 (66.5)	1256 (65.8)	1088 (65.2)	791 (67.5)			
	Economic factors							
Employment status						4	5.44	.25
Employed	762 (81.2)	1405 (81.1)	1529 (80.6)	1339 (80.7)	947 (80.9)			
Not employed	176 (18.8)	328 (18.9)	368 (19.4)	320 (19.3)	223 (19.1)			
Access to Furlough						-	-	-
Yes	-	198 (15.6)	-	-	-			
No	-	1078 (84.4)	-	-	-			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
Working from home						3	1.44	.70
Mentioned	90 (14.8)	-	203 (18.2)	192 (19.2)	39 (23.4)			
Not mentioned	516 (85.2)	-	913 (81.8)	810 (80.8)	128 (76.6)			
Annual personal income						25	385.52	<.001
£0-10,000	34 (3.6)	-	-	-	35 (3.0)			
£10,001-20,000	158 (16.8)	-	-	-	206 (17.6)			
£20,001-30,000	341 (36.3)	-	-	-	369 (31.5)			
£30,001-40,000	249 (26.5)	-	-	-	323 (27.6)			
£40,001-50,000	95 (10.1)	-	-	-	145 (12.4)			
£50,001 +	63 (6.7)	-	-	-	94 (7.9)			

Note. Pre-pandemic, post-lockdowns. T1 = March 2019 - March 2020; T2 = April 2020; T3 = September 2020; T4 = January 2021; T5 = August 2021 – August 2022. COVID-19 waves defined as T2-T4. Test statistics for Friedman's test, Cochran's Q test or Pearson Chi-Square.

Table E3.

Descriptives of Fixed Factors for Men Without Children at Each Stage of the Pandemic

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
	Wellbeing factors							
Loneliness						4	20.21	<.001
Hardly ever/ Never	2623 (66.0)	4402 (72.3)	3016 (72.9)	2656 (67.9)	3792 (66.9)			
Some of the time	1081 (27.2)	1378 (22.6)	911 (22.0)	1012 (25.9)	1529 (27.0)			
Often	269 (6.8)	306 (5.1)	211 (5.1)	241 (6.2)	345 (6.1)			
Life satisfaction						3	77.94	<.001
Dissatisfied	770 (15.1)	-	851 (20.9)	943 (24.6)	721 (12.7)			
Neither	586 (11.6)	-	373 (9.1)	412 (10.8)	701 (12.4)			
Satisfied	3728 (73.3)	-	2855 (70.0)	2473 (64.6)	4246 (74.9)			
Health condition						4	663.74	<.001
Reported	1952 (35.3)	3220 (51.0)	1178 (28.4)	1034 (26.3)	747 (4.6)			
Not reported	3578 (64.7)	3086 (49.0)	2975 (71.6)	2892 (73.7)	5066 (95.4)			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
				Social factors				
Living with a partner						4	259.72	<.001
No	3017 (54.8)	1518 (46.4)	962 (43.9)	925 (44.3)	3257 (56.2)			
Yes	2490 (45.2)	1754 (53.6)	1230 (56.1)	1165 (55.7)	2541 (43.8)			
Happiness with partner						2	5478.33	<.001
More than average	-	-	317 (10.7)	314 (11.5)	312 (11.9)			
Average	-	-	781 (26.8)	785 (28.6)	687 (26.3)			
Less than average	-	-	1816 (62.3)	1644 (59.9)	1616 (61.8)			
				Economic factors				
Employment status						4	19.69	<.001
Employed	2939 (55.4)	3340 (56.2)	1931 (46.7)	1807 (46.2)	3098 (53.9)			
Not employed	2370 (44.6)	2602 (43.8)	2204 (53.3)	2103 (53.8)	2645 (46.1)			
Access to Furlough						-	-	-
Yes	-	631 (23.1)	-	-	-			
No	-	2097 (76.9)	-	-	-			

Factors	Pre	COVID-19 waves			Post			
	T1	T2	T3	T4	T5			
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*df*	χ^2	*p*
Working from home						3	6.04	.110
Mentioned	203 (13.1)	-	245 (25.2)	225 (24.7)	98 (25.8)			
Not mentioned	1344 (86.9)	-	728 (74.8)	687 (75.3)	282 (74.2)			
Annual personal income						25	756.46	<.001
£0-10,000	370 (6.7)	-	-	-	404 (7.0)			
£10,001-20,000	812 (14.6)	-	-	-	785 (13.5)			
£20,001-30,000	1785 (32.3)	-	-	-	1690 (29.1)			
£30,001-40,000	1352 (24.5)	-	-	-	1503 (25.9)			
£40,001-50,000	622 (11.3)	-	-	-	760 (13.1)			
£50,001 +	585 (10.8)	-	-	-	668 (11.4)			

Note. Men without children defined as men without children living at home. Pre-pandemic, post-lockdowns. T1 = March 2019 - March 2020; T2 = April 2020; T3 = September 2020; T4 = January 2021; T5 = August 2021 – August 2022. COVID-19 waves defined as T2-T4. Test statistics for Friedman's test, Cochran's Q test or Pearson Chi-Square.

Appendix F. Tables demonstrating results from initial linear mixed models

Table F1.

Results of a linear mixed model to explore the effects of stage of the pandemic and covariates on psychological distress in parents

Factor	*F*	*p*
Intercept	831.79	<.001
Stage	13.23	<.001
Parent gender	74.29	<.001
Stage*parent gender	.32	.87
Age	12.11	<.001
Ethnicity	3.31	.01
Education	3.78	.01

Note. Results following Bonferroni correction.

Table F2.

Results of a linear mixed model to explore the estimate of effects of stage of the pandemic and covariates on psychological distress for parents

				95% *CI*		
	Estimate	*SE*	*t*	Lower	Upper	*p*
Parent gender	-1.41	.31	-4.55	-2.02	-.80	<.001

Note. Results following Bonferroni correction.

Table F3.

Results of a linear mixed model to explore the effects of stage of the pandemic and covariates on psychological distress in males

Factor	*F*	*p*
Intercept	5451.17	0.00
Stage	14.20	<.001
Paternal status	1.50	.22
Stage*parent gender	1.11	.35
Age	166.98	<.001
Ethnicity	3.64	.01
Education	1.57	.20

Note. Results following Bonferroni correction. Non-fathers defined as men without children living at home.

Table F4.

Results of a linear mixed model to explore the estimate of effects of stage of the pandemic and covariates on psychological distress for males

				95% *CI*		
	Estimate	*SE*	*t*	Lower	Upper	*p*
Paternal status	-.19	.23	-.81	-.64	.27	.42

Note. Note. Results following Bonferroni correction. Non-fathers defined as men without children living at home.

Table F5.

Results of a linear mixed model to explore the estimate of effects of stage of the pandemic and covariates on psychological distress for fathers

				95% *CI*		
	Estimate	*SE*	*t*	Lower	Upper	*p*
T2	1.04	.33	3.10	.38	1.69	.00
T3	.45	.33	1.39	-.19	1.09	.17
T4	1.55	.34	4.54	.88	2.22	<.001
T5	.62	.29	2.15	.06	1.19	.03
Age	-.12	.01	-.15	-.04	.01	.25
Ethnicity1	.31	.29	1.04	-.27	.88	.30
Ethnicity2	.47	.53	.88	-.58	1.52	.38
Ethnicity3	1.46	.70	2.07	.08	2.83	.04
Ethnicity4	-.13	1.121	-.12	-2.33	2.07	.91
Education1	1.61	.76	-2.12	.04	-3.10	-.11
Education2	-1.01	.79	-1.28	-2.56	.55	.20
Education3	-1.21	.79	-1.53	-2.75	.34	.13

Note: Note. Results following Bonferroni correction. Stages T2, April 2020; T3, September 2020; T4, January 2021; T5, 08/2021 – 08/2022. Ethnicity1, Asian or Asian British; Ethnicity2, Black, Black British, Caribbean or African; Ethnicity3, Mixed or multiple; Ethnicity4, other. Education1, degree or higher; Education2, A-Level of equivalent; Education3, GSCE or lower.

Table F6.

Results of a linear mixed model to explore the estimate of effects of stage of the pandemic and covariates on psychological distress for mothers

				95% *CI*		
	Estimate	*SE*	*t*	Lower	Upper	*p*
T2	1.06	.32	3.28	.43	1.69	.001
T3	.07	.32	.22	-.55	.69	.83
T4	1.69	.33	5.13	<.001	1.04	2.33
T5	.54	.28	1.96	.000	1.09	.05
Age	-.05	.01	-3.50	-.07	-.02	<.001
Ethnicity1	1.20	.32	-.34	-1.72	-.47	<.001
Ethnicity2	-2.08	.56	-3.70	-3.19	-.98	<.001
Ethnicity3	.20	.64	.31	-1.05	1.45	.75
Ethnicity4	.57	.99	.58	-1.37	2.52	.56
Education1	.10	.85	.11	-1.57	1.76	.91
Education2	.22	.87	.25	-1.49	1.92	.80
Education3	.83	.87	.95	-.88	2.53	.34

Note: Results following Bonferroni correction. Stages T2, April 2020; T3, September 2020; T4, January 2021; T5, 08/2021 – 08/2022. Ethnicity1, Asian or Asian British; Ethnicity2, Black, Black British, Caribbean or African; Ethnicity3, Mixed or multiple; Ethnicity4, other. Education1, degree or higher; Education2, A-Level of equivalent; Education3, GSCE or lower.

Table F7.

Results of a linear mixed model to explore the estimate of effects of stage of the pandemic and covariates on psychological distress for men without children

				95% *CI*		
	Estimate	*SE*	*t*	Lower	Upper	*p*
T2	.61	.14	4.39	.34	.88	<.001
T3	.28	.16	1.79	-.03	.59	.07
T4	1.20	.16	6.79	.78	1.42	<.001
T5	.02	.10	.20	-.18	.22	.84
Age	-.03	.00	-12.94	-.04	-.03	<.001
Ethnicity1	.13	.15	.92	-.15	.42	.36
Ethnicity2	-.45	.25	-1.78	-.94	.05	.36
Ethnicity3	.78	.33	2.36	.13	1.43	.02
Ethnicity4	.98	.55	1.80	-.09	2.05	.07
Education1	-.26	.18	-1.41	-.62	.10	.16
Education2	-.39	.20	-2.00	-.77	-.01	.05
Education3	-.24	.19	-1.27	-.61	.13	.20

Note: Results following Bonferroni correction. Men without children defined as men without children living at home. Stages T2, April 2020; T3, September 2020; T4, January 2021; T5, 08/2021 – 08/2022. Ethnicity1, Asian or Asian British; Ethnicity2, Black, Black British, Caribbean or African; Ethnicity3, Mixed or multiple; Ethnicity4, other. Education1, degree or higher; Education2, A-Level of equivalent; Education3, GSCE or lower.