



Parenting, Family Context, Sleep and Psychological Distress During the COVID-19 Pandemic

A thesis submitted in partial fulfilment of the requirements for the award of Doctor of

Clinical Psychology

Caitlin Lastra

School of Psychology

The University of Sheffield

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Declaration

I, the author, declare that this thesis is my own work, and it is submitted for the award of Doctorate in Clinical Psychology at the University of Sheffield. This work has not been submitted to any other institutions or other degrees and qualifications. There are no conflicts of interests, and no funding has been received for this work.

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Lay Summary

The COVID-19 pandemic changed everyday life for many families. School closures, lockdowns, working from home, reduced contact with support networks and ongoing uncertainty placed extra pressure on households. For parents, this often meant managing childcare, schooling, work, household responsibilities and their own wellbeing simultaneously. This thesis explored how parenting, family context and sleep were linked with psychological distress, including stress, anxiety, low mood and reduced wellbeing.

A literature review on family life and parental distress during COVID-19 identified 32 studies examining family processes such as family conflict, coparenting, partner relationship quality, routines, household chaos, family cohesion, family functioning and parent-child relationships. Overall, conflictual, strained or disorganised family processes were consistently linked with poorer parental wellbeing. Supportive family processes were sometimes linked with lower distress or better wellbeing, although these findings were less consistent. Most studies showed associations rather than cause and effect.

A longitudinal analysis examined parenting, sleep and later psychological distress using data from 1,423 adults who took part in two waves of a UK COVID-19 survey. The study tested whether insomnia symptoms helped explain a possible link between being a parent of a child living at home and later depression or anxiety. Higher insomnia symptoms were linked with higher later depressive and anxiety symptoms. However, parents did not report higher insomnia symptoms than non-parents, and insomnia did not explain a link between parenting status and later distress.

Taken together, the findings suggest that broad parenting status alone may not be a useful indicator of sleep-related or psychological burden. Instead, it may be more helpful to consider the specific circumstances in which parenting takes place, including family

relationships, household organisation, caregiving demands and sleep. The findings suggest that professionals supporting parents during periods of major disruption should ask about both individual difficulties, such as sleep, and the wider family context.

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Section One: Literature Review

Family Processes Associated with Parental Psychological Distress During the COVID-19

Pandemic: A Systematic Review and Narrative Synthesis

Abstract

Background: The COVID-19 pandemic disrupted family life through lockdowns, school and childcare closures, remote working, reduced informal support and prolonged uncertainty. Although research has examined family wellbeing during the pandemic, less is known about which relational and organisational family processes were associated with parental psychological distress.

Methods: A systematic review and narrative synthesis was conducted. MEDLINE, PsycINFO and Scopus were searched for peer-reviewed studies published from 2020 onwards. The review was registered on the Open Science Framework. Thirty-two studies were included from 312 screened records. Eligible studies examined family-process variables, including family conflict, coparenting, routines, household chaos, family functioning and parent-child relationship quality, in relation to parental psychological distress or wellbeing during COVID-19. Methodological quality was appraised using the Mixed Methods Appraisal Tool. Findings were synthesised narratively by family-process domain, with attention to study design, COVID-19 context and methodological quality.

Results: Six domains were identified: family conflict and strain; coparenting and interparental relationship quality/conflict; routines, organisation and household chaos; cohesion, togetherness, satisfaction and resilience; parent-child relationship quality, closeness and conflict; and broader family functioning. Conflictual, strained and disorganised family processes were most consistently associated with poorer parental psychological outcomes. Family conflict, coparenting conflict, partner relationship difficulties and household chaos were commonly associated with higher parental stress, burnout, depression, anxiety or broader distress. Supportive processes, including cooperative coparenting, family resilience, togetherness and positive parent-child relationships, were sometimes associated with lower

distress or better wellbeing, but findings were less consistent. Most studies were cross-sectional, parent-reported and based on online convenience samples.

Conclusion: Parental distress during COVID-19 was most consistently associated with family conflict, coparenting/interparental strain and household disorganisation. Clinical assessment and formulation may benefit from attention to family relationships, caregiving roles, routines and household organisation during major disruption. However, the evidence identifies associations rather than causal relationships.

Keywords: COVID-19, parental distress, family functioning, coparenting, household chaos, narrative synthesis

Practitioner Points

- Assessment and formulation with parents during periods of major disruption should consider family conflict, coparenting/interparental strain, household chaos and disrupted routines alongside individual symptoms.
- Family-sensitive support may usefully include discussion of caregiving roles, conflict management, household organisation and access to practical support, while avoiding interpretations that blame families for distress occurring within wider structural constraints.
- Findings should be applied cautiously because most evidence was cross-sectional, parent-reported and based on convenience samples; the review identifies associations rather than causal or intervention effects.

Introduction

The COVID-19 pandemic caused widespread health, social, economic and psychological disruption. Alongside infection and serious illness, people experienced bereavement, employment and financial insecurity, reduced access to services, social isolation and increased exposure to domestic violence, with impacts distributed unevenly across the population (Xiong et al., 2020; OECD, 2021; Piquero et al., 2021; Stroebe & Schut, 2021). The World Health Organization (WHO, 2020) characterised COVID-19 as a pandemic on 11 March 2020. These wider disruptions also shaped the conditions in which family life and parenting took place.

For families with dependent children, school and childcare closures, home confinement, remote working, quarantine and reduced informal support created a particular combination of relational, organisational and caregiving demands (Prime et al., 2020; Shoychet et al., 2023). For many parents, caregiving, employment, domestic labour and children's education occurred within the same environment, potentially intensifying existing pressures and reducing access to support. Parental distress therefore became an important focus within the COVID-19 family literature, not because parents were necessarily the most affected group, but because the pandemic substantially altered the contexts in which parenting occurred.

Parental psychological distress was conceptualised in different ways across the literature, including symptoms of anxiety, depression, stress, parenting stress, parental burnout, caregiver burden and broader mental health difficulties. Although these constructs are not identical, they each reflect aspects of parents' psychological functioning under conditions of increased demand. This was clinically important because parental distress is

relevant not only to parents' own wellbeing, but also to family relationships, parenting capacity and the wider family emotional climate (Prime et al., 2020; Shoychet et al., 2023).

Family systems theory provided the overarching conceptual framework for the review. It conceptualises the family as an interconnected relational system comprising interacting members and subsystems, including parent–child, coparenting and interparental relationships (Cox & Paley, 1997; Minuchin, 1985). From this perspective, individual psychological wellbeing is embedded within family relationships, roles and patterns of interaction, and change or strain in one part of the system may be associated with changes elsewhere.

Family systems theory did not provide a fixed set of categories. In this review, family processes were defined as relational or organisational features of family life, rather than demographic family structure alone, and heterogeneous constructs were organised into six conceptually related domains (see Table 1). These encompassed relationship-specific processes, global family functioning and organisational characteristics of the home, including routines and household chaos.

Table 1*Definitions of family-process concepts used in the review*

Synthesis domain	Concept	Definition used in this review	Relationship to family systems theory
Family conflict and strain	Family conflict and relational strain	General family-level disagreement, hostility, tension or deterioration in relationships that was not limited to a specific dyad or subsystem. This included both overt conflict and broader perceptions of strained family relationships.	Conflict was understood as a relational pattern within the family system rather than solely as an attribute of one individual. Strain within family interactions may be associated with the emotional climate and functioning of other members and relationships.
Coparenting and interparental relationship quality/conflict	Coparenting	The ways in which adults who share responsibility for a child coordinate, support or conflict with one another in their parenting roles. Coparenting was treated as distinct from the broader couple or romantic relationship where studies measured these separately.	Coparenting was treated as a distinct family subsystem. Processes within this subsystem may be associated with parental wellbeing and with relationships elsewhere in the family system.

Cooperative or supportive coparenting	Coparenting characterised by cooperation, coordination, mutual support and shared responsibility in relation to caregiving and parenting decisions.	Cooperative coparenting may support the organisation and stability of the family system by helping adults coordinate roles and respond jointly to family demands.
Conflictual coparenting	Coparenting characterised by disagreement, hostility, criticism or exposure to conflict concerning parenting roles, responsibilities or decisions.	Conflict within the coparenting subsystem may be associated with strain in parental wellbeing and may coincide with difficulties in other family relationships.
Interparental or partner relationship quality	The broader quality of the couple or romantic relationship between parents or caregivers, including relationship satisfaction, support, closeness, conflict and relationship difficulties beyond parenting collaboration.	The interparental relationship was treated as a related but distinct subsystem whose functioning may be associated with coparenting, parent–child relationships and the wider family emotional climate.

Family routines, organisation and household chaos	Family routines and organisation	Repeated and relatively predictable patterns through which families organise everyday activities, schedules and responsibilities. Activity-based measures were included cautiously where they reflected family organisation or routine rather than the frequency of activities alone.	Routines and organisation are processes through which the family system coordinates roles, demands and daily transitions and maintains a degree of stability during changing circumstances.
	Household chaos	A well-established home-environment construct referring to a lack of organisation and stability within the household. It is commonly characterised by disorganisation, environmental confusion, unpredictability, high background stimulation, limited routines and a hurried pace of family life, and is often measured using the Confusion, Hubbub, and Order Scale (CHAOS; Matheny et al., 1995; Marsh et al., 2020). In this review, household chaos was treated as distinct from interpersonal conflict and from the simple absence of individual routines.	Household chaos reflects reduced predictability and organisation within the setting in which family relationships and daily activities occur. It may affect several family members and subsystems simultaneously by making roles, routines and responses to demands harder to coordinate.
Family cohesion, togetherness, satisfaction and resilience	Family cohesion and togetherness	The degree of emotional connection, closeness, belonging and shared involvement experienced among family members.	Cohesion and togetherness represented relational connection within the family system and the extent to which members experienced the family as emotionally connected.

Parent–child relationship quality, closeness and conflict	Family support	Emotional, practical or informational support exchanged or perceived within the family.	Family support represented a relational resource within the system through which demands and distress may be shared or managed.
	Family satisfaction	A global evaluation of satisfaction with family relationships or family life.	Family satisfaction reflected an overall appraisal of the family system but was less specific than measures of particular relationships or processes.
	Family resilience	The capacity of the family system to adapt, reorganise and maintain or regain functioning during adversity. This included family strengths, resilience beliefs and adaptive relational or organisational processes (Walsh, 2016).	Family resilience reflects adaptation at the level of the family system rather than solely within individual members. It may involve changes in roles, organisation, relationships, communication and shared coping during adversity.
	Parent–child relationship quality	The perceived quality of the relationship between a parent or caregiver and child, including warmth, closeness, responsiveness, conflict, strain or perceived deterioration in the relationship.	The parent–child relationship was treated as a distinct family subsystem whose functioning may be associated with parental wellbeing and with other relationships and processes in the wider family system.

Broader family functioning and global family-process constructs	Parent–child closeness or positive relationship quality	A parent–child relationship characterised by emotional closeness, warmth, positive involvement or perceived improvement in relationship quality.	Positive relationship quality represented a supportive relational process within the parent–child subsystem.
	Parent–child conflict or deterioration	Disagreement, tension, conflict or perceived worsening in the relationship between parent and child.	Strain within the parent–child subsystem may be associated with parental distress and with wider difficulties in family functioning.
	Broader family functioning	Multidimensional assessment of how the family system operates across areas such as communication, roles, problem-solving, emotional responsiveness, affective involvement, behavioural control, cohesion and conflict.	These measures most directly represented the functioning of the family system as a whole, but their breadth made it harder to identify which specific processes were most closely associated with parental distress.
	Global family-relationship or family-difficulty composites	Composite measures combining several relational or organisational features, such as family closeness, partner relationship quality, stress at home, conflict, strengths or general family difficulty.	Global composites captured overall family-system functioning but often combined several theoretically distinct processes, reducing conceptual precision.

Family-process variables were conceptualised as potential risk- or resilience-related correlates during the pandemic (Cox & Paley, 1997; Walsh, 2016). Family conflict, household chaos and strained parent–child relationships may have been associated with greater parental distress through higher relational demands and reduced predictability (Marsh et al., 2020; Prime et al., 2020). Conversely, family cohesion, supportive coparenting, effective communication and stable routines may have reflected practical support, emotional connection and family organisation associated with lower distress or better wellbeing (Prime et al., 2020; Walsh, 2016). These processes identify possible areas for family-focused assessment, formulation and support beyond individual symptom reduction.

Importantly, COVID-19 was not a uniform exposure. Government responses varied across countries and over time in the timing, intensity and combination of measures such as school closures, workplace closures, restrictions on gatherings and stay-at-home requirements (Hale et al., 2021). School closures were also embedded within broader social lockdown measures and varied in duration during the first pandemic wave (Viner et al., 2022). Family processes may therefore have varied according to the timing, intensity and type of disruption experienced by families.

Existing reviews have examined COVID-19 and family life, but do not fully answer the present review question. Sentieiro et al. (2025) reviewed couples and parenting dynamics during COVID-19, but did not focus specifically on family-process variables in relation to parental psychological distress. Shoychet et al. (2023) reviewed evidence for the COVID-19 Family Disruption Model, but parental distress was not the primary outcome. Lin et al. (2025) reviewed longitudinal studies of wellbeing in child-rearing families, reporting declines in family functioning and parent-child relationship quality and increases in family chaos and

conflict. However, their focus was family wellbeing before and during COVID-19, rather than family-process correlates of parental psychological distress.

The present review took a narrower clinical focus than previous reviews by examining family processes specifically in relation to parental psychological distress. Identifying whether distress was more consistently associated with conflict, household chaos, disrupted routines, coparenting, family cohesion or parent–child relationship quality may inform family-sensitive assessment and formulation during periods of major disruption.

The aim of this systematic review and narrative synthesis was to identify and synthesise quantitative and qualitative evidence examining family-process variables in relation to parental psychological distress among parents and caregivers of dependent children during the COVID-19 pandemic.

The objectives were to:

- identify which family processes had been examined in relation to parental psychological distress during COVID-19;
- synthesise evidence on the direction and consistency of associations between family processes and parental psychological distress;
- consider how qualitative evidence contextualised parents' experiences of relevant family processes during the pandemic;
- critically evaluate the methodological quality, strengths and limitations of the evidence base;
- consider implications for clinical psychology practice and future research.

Method

Registration

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidance was used to guide reporting of this review (PRISMA 2020; Page et al., 2021). The review protocol was registered on the Open Science Framework on 11 May 2026 (OSF DOI 10.17605/OSF.IO/WYVHU) prior to final searches being run. The Open Science Framework was used because the review did not examine intervention effectiveness and did not clearly fall within the currently available PROSPERO review categories. A PRISMA flow diagram was used to report the study selection process, and the PRISMA checklist was included in Appendix A.

Design

A systematic review with narrative synthesis was conducted to examine family processes associated with parental psychological distress during the COVID-19 pandemic. Narrative synthesis was selected because studies were heterogeneous in their family-process constructs, parental outcomes, measures, designs, analyses and COVID-19 contexts. Meta-analysis was therefore not appropriate because a pooled effect size would not provide a meaningful summary of the evidence (McKenzie & Brennan, 2019). Findings were grouped by family-process domain and interpreted in relation to direction of association, methodological quality, study design and COVID-19 context, following Popay et al. (2006).

Quantitative, qualitative and mixed-methods studies were eligible because the review sought to capture both associations between family processes and parental psychological distress or wellbeing and contextual accounts of how these processes were experienced during the pandemic. Restricting eligibility to quantitative studies could have excluded

relevant contextual evidence from a literature characterised by substantial methodological and conceptual diversity.

Eligibility criteria

Eligibility criteria were structured using an adapted Population, Exposure/Context, Outcome and Study Design framework, appropriate for a non-intervention review. Studies were eligible if they included parents or caregivers of dependent children, examined relational or organisational family-process variables during or in relation to COVID-19, and reported parental psychological distress or wellbeing outcomes. Studies were required to be empirical, peer-reviewed journal articles written in English, prioritising evidence that had undergone formal academic scrutiny and provided sufficient methodological detail for appraisal and data extraction.

Table 2
Eligibility Criteria

Element	Inclusion criteria	Exclusion criteria
Population	Parents, mothers, fathers, caregivers or guardians of dependent children or young people under 18.	Parents of adult children only; samples defined entirely by child chronic illness, disability, neurodevelopmental disorder, cancer, eating disorder, hospitalisation, tertiary mental health care, child welfare involvement, or samples selected because families were receiving a specific clinical, social-care or parenting intervention/support service during COVID-19, unless the analysis addressed general family-process/distress associations rather than intervention effects. Studies focused specifically on pregnancy, birth, neonatal care or perinatal adjustment were excluded unless they examined eligible family processes among parents/caregivers of dependent children beyond the perinatal context.
Exposure/context	Family-process variables examined during COVID-19 or in relation to COVID-19-related disruption.	Studies where COVID-19 was incidental only, or where family structure was the only family-related variable.

Family-process variables	Family functioning, cohesion, conflict, communication, routines, organisation, household chaos, coparenting, interparental relationship quality/conflict, parent-child relationship quality, family satisfaction or family resilience.	Family structure only, financial strain only, work-family conflict only, homeschooling burden only, employment/remote-working stress only, school closure stress only, social support only unless clearly family-based, and child outcomes only.
Outcome	Parent or caregiver psychological distress, including depression, anxiety, perceived stress, parenting stress, parental burnout, caregiver burden or wellbeing.	Studies where parent mental health was reported only as a covariate, background descriptor or predictor of child outcomes, parenting behaviour or family functioning.
Study design	Empirical quantitative, qualitative or mixed-methods studies.	Non-empirical publications, reviews, protocols, correction notices, conference abstracts, book chapters, dissertations/theses and non-peer-reviewed grey literature.
Comparator	Not required.	Not applicable.

Where studies included mixed child-age samples (over and under 18), they were included only if findings for parents/caregivers of dependent children could be identified separately. Studies were required to be explicitly framed in relation to COVID-19 or pandemic-related disruption; data collection during the pandemic alone was not sufficient. Searches were limited to studies published from 2020 onwards, but eligibility was determined by COVID relevance rather than publication year alone.

Family-process eligibility was guided by the definitions in Table 1; demographic family structure alone was not considered a family process. Parent-child activities were included only where clearly conceptualised as family routines, relational quality, interaction quality or family functioning. Coparenting was treated as distinct from romantic or interparental relationship quality where studies measured these separately, although these constructs often overlapped in partnered samples.

Wellbeing outcomes were included where they represented parental psychological functioning during the pandemic and were coded directionally in the synthesis. Exclusion of grey literature and non-English studies is considered in the review limitations.

Search strategy

Table 3
Search Constructs and Terms

Construct	Search terms
Parents/caregivers	parent* OR caregiver* OR mother* OR father*
COVID-19	COVID* OR pandemic* OR coronavirus OR SARS-CoV-2

Parental psychological distress	“parental distress” OR “parental mental health” OR “parent mental health” OR “parent psychological distress” OR “caregiver distress” OR “caregiver mental health” OR “maternal depression” OR “maternal anxiety” OR “paternal depression” OR “paternal anxiety” OR “parenting stress” OR “parental stress” OR “parental burnout” OR “caregiver burden”
Family processes	“family functioning” OR “family process*” OR “family cohesion” OR “family conflict” OR “family communication” OR “family routine*” OR “family organisation” OR “family organization” OR “household chaos” OR “parent-child relationship” OR “parent child relationship” OR “parent-child relation*” OR “parent child relation*” OR coparent* OR co-parent* OR “interparental conflict” OR “interparental relationship”

Search combination 1 AND 2 AND 3 AND 4

Systematic searches were conducted in MEDLINE via Ovid, PsycINFO via Ovid and Scopus on 11th May 2026. These databases were selected to provide medical, psychological and multidisciplinary coverage relevant to parent mental health, family processes and COVID-19.

Search terms were developed around four concepts: parents/caregivers, COVID-19, parental psychological distress and family processes. Terms within each concept were combined using “OR”, and the four concepts were combined using “AND” (Table 3). Searches were limited to studies published from 2020 onwards. Database-specific subject headings were not used because the review prioritised a transparent and consistently reproducible free-text strategy across databases, particularly given heterogeneous terminology around COVID-19-related family disruption and family processes. Automated database expansion functions, such as “include similar terms”, were not used because they would have reduced reproducibility. Full database-specific search strategies, including search dates, search fields, limits and number of records retrieved, are reported in Appendix B. No formal forward or backward citation searching was conducted.

Study selection

All identified records were exported into EndNote. Records from each database were retained in separate groups to allow database-specific search results to be reported.

Duplicates were identified and removed before screening.

Titles and abstracts were screened against the eligibility criteria and categorised as include, exclude or unclear. Records marked as include or unclear were retrieved for full-text screening. Full texts were assessed against the eligibility criteria, with reasons for exclusion recorded in the PRISMA flow diagram. Where close full-text review raised uncertainty about review-question fit, eligibility decisions were rechecked against the inclusion criteria before data extraction was finalised.

Data extraction

A data extraction table was developed and piloted before use. Extracted information included study characteristics, sample details, COVID-19 context, family-process variables and measures, parental psychological outcomes and measures, analytic approach, covariates/confounders, review-relevant findings, study limitations, synthesis domain and MMAT appraisal summary. A proportion of included studies (10/32; 31.3%) were independently checked by a second and third reviewer for extraction accuracy, including study characteristics, family-process variables, parental outcomes, key review-relevant findings and synthesis-domain allocation. Agreement before discussion was complete across all 10 independently checked studies (100%); no discrepancies were identified.

Extraction focused on associations between eligible family-process variables and parental psychological distress or wellbeing. All review-relevant findings were extracted where studies reported multiple eligible processes or outcomes. Child outcomes, parenting

behaviours, employment stressors, school-closure burden, financial strain, broader COVID-19 stressors and family structure were retained as contextual information only.

Potential overlap between samples or shared study infrastructure was checked during full-text screening and recorded during data extraction. This information was considered in the synthesis to avoid double-counting evidence or overstating independence.

Narrative synthesis

A structured narrative synthesis was conducted using Popay et al.'s (2006) guidance, involving development of an initial conceptual model, preliminary synthesis, exploration of relationships within and between studies, and assessment of robustness. The conceptual model drew on family systems and pandemic risk-resilience perspectives. COVID-19 disruption was conceptualised as a contextual stressor shaping family relational and organisational processes potentially associated with parental psychological distress or wellbeing and was therefore treated as a cross-cutting interpretive factor rather than a separate synthesis domain.

Preliminary synthesis involved tabulating study characteristics and findings, developing textual summaries, grouping studies across the six domains defined in Table 1 and coding the direction of review-relevant associations. Studies were coded to each synthesis domain represented by an eligible family-process construct that was explicitly measured and analysed in relation to parental psychological distress or wellbeing. Domain allocation was based on the construct assessed and its definition in Table 1, rather than on the prominence of the finding within the study. Studies could therefore contribute to multiple domains where more than one eligible family-process construct was examined. For readability, studies were organised in Table 4 under the domain to which they made the clearest or most substantial contribution, with all other eligible domain contributions also reported. Rather than relying

on vote-counting, consistency and direction were interpreted alongside study design, measurement quality, analytic adjustment, review-question fit and possible sample overlap.

Relationships within and between studies were explored by comparing findings across domains, COVID-19 phase, study design, measurement approach, sample characteristics, covariate adjustment and methodological quality. Contradictory findings were examined in relation to construct and outcome measurement, pandemic context, sample composition and analytic adjustment. Robustness was assessed using MMAT findings and review-question fit, with greater interpretive weight given to longitudinal or repeated-measures designs, validated measures, appropriate adjustment and clearer analytic direction. Eligible studies with weaker designs, brief or ad hoc measures, limited adjustment or possible sample overlap were retained but interpreted cautiously.

Quality appraisal

Methodological quality was assessed using the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018). The MMAT was selected because the review included qualitative and quantitative empirical studies and allows different study designs to be appraised within a single systematic review framework. Each study was appraised using the MMAT category appropriate to its design. A proportion of included studies (10/32; 31.3%) were independently checked by a second and third reviewer. Before discussion, agreement was reached for 9 of the 10 independently checked studies (90%). One disagreement was resolved through discussion, resulting in consensus for all 10 studies. Quality appraisal was used to assess robustness and guide interpretation rather than determine eligibility; studies were not excluded solely on methodological grounds. In line with MMAT guidance, item-level judgements were reported rather than converted into numerical total scores.

Appraisal findings were used to identify methodological strengths and limitations and to inform the confidence placed in findings within each synthesis domain.

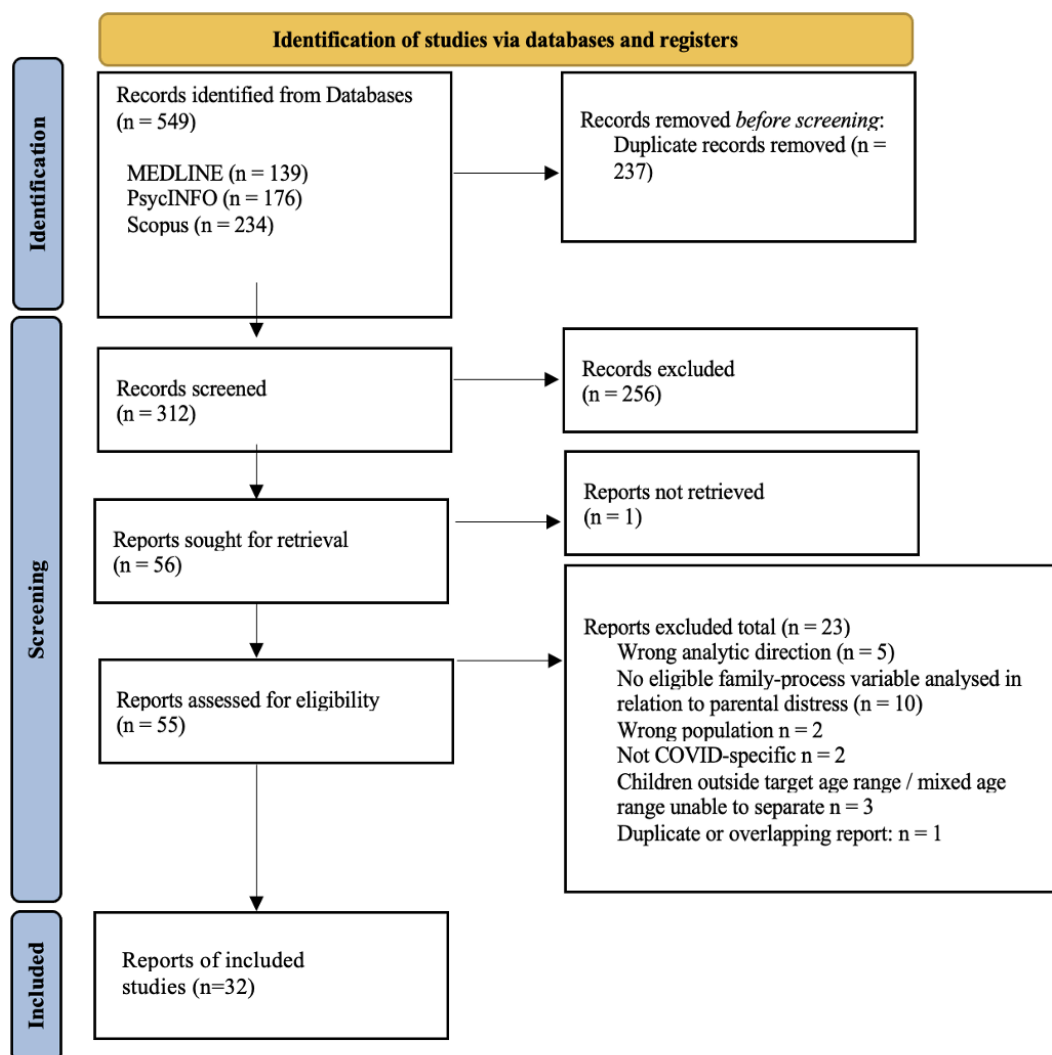
For quantitative non-randomised studies, appraisal considered representativeness, appropriateness of exposure and outcome measurement, completeness of outcome data, adjustment for confounding and whether the family-process exposure was captured as intended. For qualitative studies, appraisal considered the appropriateness of the qualitative approach, adequacy of data collection, derivation of findings from the data, substantiation of interpretations and coherence between data sources, analysis and interpretation.

Results

Study selection

Database searches identified 549 records, of which 237 were duplicates. After duplicate removal, 312 records were screened by title and abstract and 56 reports were sought for retrieval. One report could not be obtained, leaving 55 full-text reports assessed for eligibility. Twenty-three reports were excluded at full-text screening, and 32 studies were included in the review. The study selection process and reasons for full-text exclusion are shown in Figure 1.

Figure 1
PRISMA Diagram



Study characteristics

Study characteristics and synthesis-domain allocations are summarised in Table 4. The 32 included studies were published between 2021 and 2026 and conducted across North America, Europe, South America, Asia and Australia. Studies included single-country, cross-national and multinational samples, and COVID-19 contexts ranged from acute lockdown, home confinement and school closure to later-pandemic strain and repeated assessments across changing restriction phases.

Most studies were quantitative and non-randomised: 23 were cross-sectional, six used repeated or temporally separated measurement and one was repeated cross-sectional; two were qualitative interview studies. Sample sizes ranged from small qualitative, dyadic and ecological momentary assessment studies to large national or multinational surveys. Samples were frequently predominantly mother-reported, recruited online, and skewed towards relatively educated or socioeconomically advantaged families.

Family-process constructs included conflict, household chaos, routines, family functioning, resilience, cohesion, coparenting, interparental relationship quality and parent-child relationship quality. Parental psychological outcomes included parenting stress, perceived stress, depression, anxiety, psychological distress, parental burnout, hostility, emotional distress, loneliness and wellbeing.

Table 4*Characteristics of Included Studies and Synthesis Domain Allocation*

Study/ country	Design, sample and COVID context	Family-process variable(s)	Parent outcome(s)	Main review-relevant finding	Synthesis domain(s)
Family conflict and strain					
Albright et al. (2026) United States	Longitudinal SEM/latent change study. Pre-pandemic assessment Jan 2019-Feb 2020; pandemic follow-up May-June 2020 during early U.S. stay-at-home orders. N = 204 parents/caregivers of children aged 1-10 years; caregivers mostly female and White/Caucasian.	Family cohesion, conflict and routines. Measures: shortened Family Environment Scale; Self-Expressiveness in the Family Questionnaire; Child Routines Inventory.	Parent depression, anxiety and hostility. Measures: CES-D short form; Penn State Worry Questionnaire; SCL-90-R hostility items.	Pre-COVID conflict predicted increases in depression, anxiety and hostility; increases in conflict predicted increases in hostility. Cohesion showed limited evidence; routines were not significant.	Family conflict and strain; Family cohesion, togetherness, satisfaction and resilience - limited; Family routines, organisation and household chaos - null
Friedman n et al. (2025) Germany	Cross-sectional online secondary analysis from CoronabaBY. Feb 2021-Mar 2022 during pandemic restrictions in Southern Germany. N = 368 parents of children aged 0-3 years; fathers and mothers analysed separately.	Increased family conflict during the pandemic; pandemic-specific item.	Parenting stress; German Parenting Stress Index, parent domain.	Increased family conflict was the strongest predictor of parenting stress for both fathers and mothers.	Family conflict and strain

Friedman et al. (2023) Germany	Repeated cross-sectional study across three pandemic phases in Bavaria, Germany. N = 2,940 parent-child dyads, mostly mothers, with children aged 0-3 years.	Increased family conflicts during the pandemic; pandemic-specific item.	Parenting stress and parental depression/anxiety symptoms; German Parenting Stress Index and State-Trait Anxiety-Depression Inventory.	Increased family conflict had the strongest predictive effect on parenting stress and maternal depression/anxiety symptoms.	Family conflict and strain
Gong et al. (2025) United States	Longitudinal study with pre-pandemic baseline and early-pandemic follow-up. N = 76 mother-child dyads; preschool-aged children. Follow-up during early U.S. stay-at-home period.	Household disagreements, relational tensions, family togetherness and childcare difficulty; adapted pandemic home-life measures.	Maternal pandemic-focused emotional distress; adapted 12-item General Health Questionnaire.	Household disagreements were associated with higher maternal distress; family togetherness was associated with lower distress. Relational tensions and childcare difficulty were not unique adjusted predictors.	Family conflict and strain; Family cohesion, togetherness, satisfaction and resilience
Zalewski et al. (2023) United States	Longitudinal cohort using repeated surveys, Apr-Nov 2020. N = 3,085 parents of children aged 0-5 years from RAPID-EC.	Increased family conflict since COVID-19; parent-reported COVID-specific risk item.	Parent mental-health symptoms including depression, anxiety, stress and loneliness; composite symptom score.	Increased family conflict predicted poorer and worsening parent mental-health trajectories.	Family conflict and strain

Coparenting and interparental relationship quality/conflict

Aldoney et al. (2023) Chile	Longitudinal ecological momentary assessment over 29 days during first Santiago lockdown, May-June 2020. 68 cohabiting families; up to 131 parents; child aged 5-6 years.	Coparenting support and exposure to coparenting conflict; adapted Co-parenting Relationship Scale subscales.	Parental daily stress; adapted DASS-21 Stress subscale.	Exposure to coparenting conflict was associated with higher parental stress at within- and between-person levels. Coparenting support was not significant in the main model.	Coparenting and interparental relationship quality/conflict
Araya-Rojas et al. (2024) Chile	Cross-sectional online survey during Chilean lockdown, Jun-Aug 2020. N = 599 parents; 78.5% mothers; single-parent families excluded.	Coparental cooperation; Cooperation dimension of Coparenting Inventory.	Parental burnout/exhaustion; Parental Burnout Assessment.	Lower coparental cooperation was associated with higher parental burnout after adjustment.	Coparenting and interparental relationship quality/conflict
Bastiaansen et al. (2021) 21 countries	Cross-sectional International Investigation of Parental Burnout Wave 2 survey during COVID-19 lockdowns. N = 4,587 parents from two-parent families.	Co-parental cooperation; Co-parenting Inventory for Parents and Adolescents.	Parental burnout; Parental Burnout Assessment.	Higher co-parenting was associated with lower parental burnout for mothers and fathers. Moderation of lockdown-burnout association was mixed and gender-specific.	Coparenting and interparental relationship quality/conflict

Cruciani et al. (2024) Italy	Cross-sectional dyadic questionnaire study during first/second Italian lockdowns. N = 120 parents nested within 60 lesbian mother or gay father families; children aged 6-10 years.	Coparenting quality; brief Coparenting Relationship Scale.	Parental burnout; Parental Burnout Assessment.	Lower coparenting quality was associated with greater parental burnout.	Coparenting and interparental relationship quality/conflict
Giannotti et al. (2022) Italy	Cross-sectional online survey with retrospective pre-lockdown comparison during strict Italian lockdown. N = 602 parents, mostly mothers, of children aged 3-17 years.	Coparenting quality; brief Coparenting Relationship Scale. Parent-child shared activity/time measured contextually.	Parental stress; shortened Parental Stress Scale.	Higher-quality coparenting predicted lower parental stress. More time doing activities with the child also predicted lower stress, but this is activity-based evidence.	Coparenting and interparental relationship quality/conflict; Family routines, organisation and household chaos - limited/activity-based
Giraldo et al. (2022) Chile	Cross-sectional online survey, May-Aug 2020. N = 651 parents; coparental cooperation analysis n = 561 after excluding those not living as a couple.	Coparental cooperation; Coparental Cooperation Scale.	Parental burnout; Parental Burnout Assessment.	Higher coparental cooperation was associated with lower parental burnout, especially among parents with a child aged 0-4 years.	Coparenting and interparental relationship quality/conflict

He et al. (2021) United States	Cross-sectional survey nested within existing longitudinal intervention study, Jul-Sep 2020. N = 247 low-income parents from 142 families; children aged 22-55 months.	Coparenting support; brief Coparenting Relationship Scale. Parent engagement/activity measured but not coded as a secondary domain.	Maternal and paternal mental health difficulties; adapted PHQ-4 and Perceived Stress Scale items.	Coparenting support had no clear direct association with parent mental health but buffered fathers from economic-stressor effects.	Coparenting and interparental relationship quality/conflict
Li et al. (2022) China	Cross-sectional online survey during Lanzhou lockdown/school closures, Nov 2021. N = 7,314 parents of kindergarten/primary-school children.	Family support and coparenting; MSPSS family subscale and four-item coparenting measure. Daily parenting hassles treated as contextual parenting strain.	Depression, anxiety and stress symptoms; DASS-21.	Family support and coparenting were directly and indirectly associated with lower parent mental health symptoms through reduced daily parenting hassles.	Coparenting and interparental relationship quality/conflict; Family cohesion, togetherness, satisfaction and resilience
Thomson et al. (2023) Canada	National cross-sectional survey nearly two years into the pandemic, Nov-Dec 2021. N = 553 parents/guardians with children under 18 at home.	Relationship challenges with partner; pandemic-related stressor item.	Parent psychological distress; Kessler-6.	Partner relationship challenges were associated with higher odds of moderate/severe psychological distress. Parent-child interaction findings were mainly wrong-direction for this review.	Coparenting and interparental relationship quality/conflict

Westrupp et al. (2022) Australia	Longitudinal repeated-assessment study with 14 time-points, Apr 2020-May 2021. N = 2,004 parents of children aged 0-18 years; compared strict Victoria regional lockdown with other Australian contexts.	Couple verbal conflict; Argumentative Relationship Scale.	Parent depression, anxiety and stress trajectories; DASS-21.	Couple conflict predicted higher trajectories of parent depression and stress across locked-down and non-locked-down groups.	Coparenting and interparental relationship quality/conflict; Family conflict and strain
Family routines, organisation and household chaos					
Hood et al. (2021) Australia	Qualitative semi-structured interview study during the first pandemic wave in Western Australia. N = 30 mothers of infants aged 9-15 months, some with older children.	Family routines/schedules, family relationships, mother/father-infant relationship, whole-family togetherness, support networks and technology-mediated interaction.	Parental stress, isolation, loneliness, emotional strain and wellbeing; qualitative self-report.	Mothers described both improved family time/togetherness and strain from disrupted routines, isolation and childcare/work disruption. Qualitative evidence only.	Family routines, organisation and household chaos; Family cohesion, togetherness, satisfaction and resilience - qualitative only; Parent-child relationship quality, closeness and conflict - qualitative only
Idsoe et al. (2021) Norway	Cross-sectional survey nested in BONDS cohort during first Norwegian lockdown. N = 147 couples/294 parents of adolescents aged 11-13 years.	Family activities/routines during lockdown; researcher-constructed activity/routine index.	Pandemic-related stress symptoms; modified Impact of Event Scale-6.	Family activities/routines were not significantly associated with pandemic-related stress symptoms.	Family routines, organisation and household chaos

Li et al. (2024) China	Cross-sectional path-modelling study after Zhengzhou reopening, Jun-Jul 2020, referring to early outbreak period. N = 504 primary caregivers of preschool children.	Household chaos; Chinese CHAOS scale.	Parental worry, anxiety, depression and loneliness; OSU social needs item, GAD-7, CESD-R10 and UCLA Loneliness Scale.	Higher household chaos was associated with higher parental worry, anxiety, depression and loneliness.	Family routines, organisation and household chaos;
McGoron et al. (2022) United States	Cross-sectional survey during remote schooling and shelter-in-place orders, Apr-Jun 2020. N = 152 mostly mothers; racially marginalised urban sample; children preschool to middle school.	Household chaos and daily routines; modified CHAOS and routine items.	Parental depression and anxiety symptoms; PROMIS scales.	Lower chaos and stronger routines were associated with fewer parental depression and anxiety symptoms and partly accounted for the school support-parent mental health association.	Family routines, organisation and household chaos
Spinelli et al. (2021) Italy	Cross-sectional online survey during first Italian lockdown, Apr 2020. N = 810 parents, mostly mothers, of children aged 2-14 years.	Household chaos; shortened CHAOS scale. Parent involvement measured but treated cautiously as downstream/contextual.	Parenting stress; Parent-Child Dysfunctional Interaction subscale of PSI-SF.	Household chaos significantly predicted higher parenting stress across socioeconomic risk groups.	Family routines, organisation and household chaos

Tan et al. (2022) China	Cross-sectional retrospective survey after Wuhan's 76-day lockdown. N = 130 parents of preschool children aged 2.16-6.57 years.	Children's routines and parent-grandparent relationship quality/change; routine-change items and relationship-change categories.	Parenting stress; Chinese Parenting Stress Index Short Form.	Decreased learning time and deterioration in parent-grandparent relationships predicted higher parenting stress; improved parent-grandparent relationships appeared buffering.	Family routines, organisation and household chaos; Family conflict and strain - intergenerational relationship strain
Vaydich et al. (2023) United States	Qualitative interview study during the second pandemic year, Jan-May 2021. N = 20 parents of children from newborn to 18 years.	Family routines, parent-child quality time, coparenting, extended-family relationships and social support; semi-structured interviews.	Parental stress and emotional burden; qualitative themes.	Parents described stress from altered routines, parenting/work demands, isolation, strained relationships and reduced child engagement, alongside quality time, gratitude and improved coparenting. Qualitative evidence only.	Family routines, organisation and household chaos; Family cohesion, togetherness, satisfaction and resilience; Coparenting and interparental relationship quality/conflict; Parent-child relationship quality, closeness and conflict
Family cohesion, togetherness, satisfaction and resilience					
Everri et al. (2022) Italy and Republic of Ireland	Cross-sectional online survey during first lockdown/home confinement, Apr-Jun 2020. N = 579 parents with at least	Family resilience, parental couple conflict over digital media use and parent-child conflict	Parental wellbeing; Warwick-Edinburgh Mental Well-being Scale.	Family resilience predicted higher wellbeing; parental couple conflict over digital media predicted	Family cohesion, togetherness, satisfaction and resilience;

one child under 18; mostly mothers.

over digital media use; Walsh Family Resilience Questionnaire and adapted conflict items.

lower wellbeing. Parent-child conflict over digital media was not significant in the final model.

Coparenting and interparental relationship quality/conflict; Parent-child relationship quality, closeness and conflict - null/limited

Parent-child relationship quality, closeness and conflict

Bai et al. (2022)
China

Cross-sectional online survey after first COVID-19 peak in China, May-Jun 2020. N = 746 parents of children aged 10-18 years.

Parent-child relationship quality and marital relationship quality; brief Co-SPACE relationship items.

Parental psychological distress/mental health symptoms; DASS-21 total.

Better parent-child and marital relationships were associated with fewer parental mental health symptoms.

Parent-child relationship quality, closeness and conflict; Coparenting and interparental relationship quality/conflict

Brik and Wang (2025b)
United States

Cross-sectional survey with moderated mediation analysis, Sep-Oct 2020. N = 1,386 married/cohabiting American parents with children under 18.

Parent-child relationship quality, romantic relationship quality and family resilience beliefs; Parent-Child Relationship Inventory, ENRICH, CD-RISC family resilience beliefs.

Parent stress symptoms/psychological distress; DASS-21 total.

Parent-child relationship and romantic relationship quality mediated the stressor pile-up-parent stress association; higher quality was linked with lower stress.

Parent-child relationship quality, closeness and conflict; Coparenting and interparental relationship quality/conflict; Family cohesion, togetherness, satisfaction and resilience

Trumello et al. (2022) Italy	Cross-sectional online survey during first Italian lockdown, Apr-May 2020. N = 102 fathers with children aged 0-18 years.	Worsening father-child relationship during the pandemic; ad hoc relationship-change measure.	Paternal parenting stress; Parent-Child Dysfunctional Interaction subscale of PSI-SF.	Worsening father-child relationship predicted higher paternal parenting stress.	Parent-child relationship quality, closeness and conflict
Broader family functioning/global family-process constructs Brik and Wang (2025a) Europe: 23 countries	Cross-sectional survey with moderated mediation analysis, Apr-Sep 2020. N = 37,421 married/cohabiting parents with children under 18 from a larger European sample.	Family satisfaction, romantic relationship satisfaction and family resilience beliefs; Family Satisfaction Scale, ENRICH, CD-RISC family resilience beliefs.	Parent stress symptoms/psychological distress; DASS-21 total.	Family satisfaction and relationship satisfaction did not mediate stressor pile-up and parent stress; family resilience did not moderate indirect effects. Adjusted findings were mixed/unexpected.	Broader family functioning/global family-process constructs; Coparenting and interparental relationship quality/conflict - mixed/null; Family cohesion, togetherness, satisfaction and resilience - mixed/null

Fogarty et al. (2024) Australia	Longitudinal cohort with COVID-19 sub-study during Victoria regional lockdown, Jun-Oct 2020. N = 418 mothers; first-born children aged 14-17 years.	Family relationships composite including closeness with child/family, partner quality, stress at home and family conflict; adapted COVID-19 CRISIS family relationships subscale.	Maternal depressive and anxiety symptoms; CES-D and GAD-7.	Better family relationships were associated with lower maternal depression and anxiety and mediated associations between pre-pandemic adversity and maternal mental health.	Broader family functioning/global family-process constructs; Family conflict and strain; Parent-child relationship quality, closeness and conflict; Coparenting and interparental relationship quality/conflict
Jetiyanuwat et al. (2024) Thailand	Cross-sectional online survey during Thai lockdown, Jun 2020. N = 942 caregivers of school-aged children in Grades 1-6.	Family functioning: family strengths/adaptability, family difficulty and communication; Thai SCORE-15. Family time treated cautiously.	Parental stress; ST-5.	Family difficulty was associated with higher parental stress; family strength and communication were not direct adjusted predictors.	Broader family functioning/global family-process constructs; Family routines, organisation and household chaos - contextual/limited
Li, Tan, and Wang (2022) China	Cross-sectional survey with moderated mediation analysis after Wuhan lockdown. N = 130 families; mostly married two-parent families with children aged 2-6 years.	General family functioning, parent-child conflict/closeness and change in parenting time; McMaster FAD and Child-Parent Relationship Scale.	Parenting stress; Chinese Parenting Stress Index Short Form.	Poorer family functioning and greater parent-child conflict were linked with higher parenting stress; parent-child closeness was significant in correlations but not final model.	Broader family functioning/global family-process constructs; Parent-child relationship quality, closeness and conflict

Moscardino et al. (2021) Italy	Cross-sectional correlational survey during strict Italian lockdown/school closure, Apr-Jun 2020. N = 89 mostly mothers of first-grade children.	Family functioning; General Functioning subscale of McMaster Family Assessment Device.	Perceived parental stress; Perceived Stress Scale.	Healthier family functioning predicted lower perceived parental stress in the final regression model.	Broader family functioning/global family-process constructs
Pereira et al. (2024) Portugal	Cross-sectional survey during later pandemic/post-confinement period, Jun 2021-Jan 2022. N = 253 parents/legal guardians/primary caregivers of children aged 0-6 years.	Family functioning; General Functioning scale of Family Assessment Device.	Parental burnout; anxiety/depression also measured. Measures: Parental Burnout Assessment and HADS.	Poorer family functioning correlated with higher burnout but did not remain an independent direct predictor in the full regression. Family functioning moderated some burnout-related associations.	Broader family functioning/global family-process constructs

Note. Studies are organised under the synthesis domain to which they made their clearest or most substantial contribution, to support readability.

This organisational placement does not indicate that a study contributed only to that domain. The final column lists all additional eligible family-process domains examined in relation to parental psychological distress or wellbeing. Qualifiers such as limited, null, mixed, contextual or qualitative only indicate the nature of the evidence contributed. Constructs used only as covariates, contextual variables or downstream outcomes, or not analysed in relation to parental outcomes, were not coded as contributing to a synthesis domain.

Methodological quality

Detailed item-level MMAT ratings are summarised in Table 5, with full appraisal rationale, quality concerns and synthesis implications reported in Appendix C. Overall, most studies had clear research questions and collected data relevant to the review question. Quantitative studies generally used appropriate analytic approaches and many used validated parental distress measures. However, the evidence base was limited by the predominance of cross-sectional designs, online convenience sampling, parent self-report, under-representation of fathers, variable covariate adjustment and inconsistent measurement of family-process constructs. Several studies measured family processes using brief, adapted or pandemic-specific items rather than validated family-functioning or relationship scales.

Longitudinal, repeated-measures and pre-pandemic-to-pandemic studies were given greater interpretive weight than single-time-point surveys, while recognising their remaining limitations. Qualitative studies were used to contextualise family experiences rather than as evidence of statistical association.

Possible sample overlap or shared study infrastructure was considered when interpreting independence of evidence. Tan et al. (2022) and Li, Tan, and Wang (2022) appeared to draw on a similar or overlapping Wuhan lockdown sample and were not treated as fully independent. Brik and Wang (2025a, 2025b) analysed distinct geographical samples from the wider COVID-19 Family Life Study, but their shared authorship, study infrastructure and ABC-X analytic framework were considered when judging independence.

Table 5*Simplified MMAT Methodological Quality Ratings*

Author/year	MMAT category	S1 Clear research question?	S2 Do data address research question?	3.1 Participants representative ?	3.2 Measurement s appropriate?	3.3 Complete outcome data?	3.4 Confounders accounted for?	3.5 Exposure occurred as intended?
Quantitative								
Albright et al. (2026)	Quantitative non-randomised	Yes	Yes	No	Yes	Yes	Yes	Yes
Aldoney et al. (2023)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Araya-Rojas et al. (2024)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Bai et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Bastiaansen et al. (2021)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes
Brik & Wang (2025b) - American-family study	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes

Brik & Wang (2025a) — European-family study	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Cruciani et al. (2024)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Everri et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Fogarty et al. (2024)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes
Friedmann et al. (2025)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Friedmann et al. (2023)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Giannotti et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Giraldo et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Gong et al. (2025)	Quantitative non-randomised	Yes	Yes	No	Yes	Yes	Yes	Yes
He et al. (2021)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes

Idsoe et al. (2021)	Quantitative non-randomised Yes	Yes	Can't tell	Yes	Can't tell	No	Yes
Jetiyanuwat et al. (2024)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
Li et al. (2022) — parenting daily hassles	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
Li, Tan & Wang (2022)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
Li et al. (2024)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
McGoron et al. (2022)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
Moscardino et al. (2021)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
Pereira et al. (2024)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
Spinelli et al. (2021)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes
Tan et al. (2022)	Quantitative non-randomised Yes	Yes	No	Yes	Can't tell	Yes	Yes

Thomson et al. (2023)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes
Trumello et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes
Westrupp et al. (2022)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes
Zalewski et al. (2023)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes

Qualitative

Author/year	MMAT category	S1 Clear research question?	S2 Do data address research question?	1.1 Qualitative approach appropriate?	1.2 Qualitative data collection methods adequate?	1.3 Findings adequately derived from the data?	1.4 Interpretation sufficiently substantiated by data?	1.5 Coherence between data sources, collection, analysis and interpretation?
Hood et al. (2021)	Qualitative	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vaydich et al. (2023)	Qualitative	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note. Ratings are based on the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018). For readability, this table reports simplified item-level ratings as Yes, No or Can't tell. Full appraisal rationale, quality concerns and synthesis implications for each study are reported in Appendix C. Studies were not excluded on the basis of methodological quality.

Narrative synthesis

Table 6 summarises the pattern and weighting of evidence across the six family-process domains. COVID-19 context was treated as a cross-cutting interpretive factor, and findings were interpreted in relation to study design, measurement quality, analytic adjustment, review-question fit and possible sample overlap.

Table 6*Synthesis-Level Domain Summary Map*

Domain and Scope	Main pattern	Evidence weighting	Key synthesis conclusion
<i>Family conflict and strain</i> Scope - General family-level conflict, household disagreements, relational tension or deterioration in family relationships not limited to a specific dyad.	Family conflict, household disagreements and strained family relationships were consistently associated with higher parental stress, depression, anxiety, hostility, burnout or broader psychological distress.	One of the strongest domains. Supported by longitudinal, repeated-measures and repeated cross-sectional evidence, although conflict was often measured briefly or with pandemic-specific items.	Conflictual or strained family processes were among the most consistent risk-related correlates of poorer parental psychological outcomes during COVID-19.
<i>Coparenting and interparental relationship quality/conflict</i> Scope - Processes between parents or parental figures, including coparenting cooperation/support/conflict, partner relationship challenges and couple conflict.	Coparenting conflict, poorer partner relationship quality and relationship challenges were generally associated with higher distress. Cooperative coparenting was often associated with lower distress or burnout, although support effects were not always direct or robust.	Large domain, mainly quantitative and often cross-sectional, with some stronger repeated or longitudinal evidence. Many studies focused on partnered/cohabiting parents, limiting relevance to single, separated or wider caregiving arrangements.	Coparenting/interparental strain appeared more consistently associated with distress than coparenting support was associated with lower distress.
<i>Family routines, organisation and household chaos</i> Scope - Organisational features of family life, including predictability, routines, activities, household order/disorder and chaos.	Household chaos was consistently associated with higher parental distress. Evidence for routines, activities and structured time was more mixed, including null findings.	Stronger evidence for household chaos than for routines. CHAOS-type measures were used in several studies; routines and activities were more variably measured and may reflect child age, socioeconomic context, opportunity or parental capacity.	Disorganised home environments and household chaos were consistently linked with poorer parental outcomes, whereas routines and activities appeared more context-dependent.

<i>Family cohesion, togetherness, satisfaction and resilience</i> Scope - Supportive or resource-oriented family processes, including emotional connection, togetherness, perceived family support, satisfaction and resilience.	Supportive processes such as family resilience, togetherness, family support and satisfaction were sometimes associated with lower distress or better wellbeing, but findings were less consistent.	Mostly secondary or mixed evidence, with some qualitative support. Constructs were diffuse and measured in varied ways; some associations attenuated in adjusted models or were not replicated.	Supportive family processes may be associated with lower distress, but the evidence was less consistent and less specific than for conflict, coparenting conflict and household chaos.
<i>Parent-child relationship quality, closeness and conflict</i> Scope - Relational quality between parent and child, including closeness, warmth, conflict, deterioration and perceived quality of interaction.	Better parent-child relationship quality was generally associated with lower distress, while conflict, worsening relationship quality or parent-child strain was associated with higher stress.	Moderate evidence, mainly cross-sectional, plus qualitative evidence. Directionality is a particular caveat because some studies modelled parental distress as a predictor of parent-child interaction rather than the reverse.	Parent-child relationship quality appears relevant to parental distress, but the evidence is more vulnerable to reverse causality and measurement caveats than conflict or household chaos domains.
<i>Broader family functioning/global family-process constructs</i> Scope - Global measures combining multiple aspects of family functioning, such as communication, roles, problem-solving, affective involvement, cohesion and conflict.	Poorer global family functioning or greater family difficulty was generally associated with higher parental distress, although findings were sometimes mixed or attenuated in adjusted models.	Useful but less precise evidence. Global measures can combine communication, roles, affective involvement, problem-solving, cohesion and conflict, making it harder to identify specific mechanisms.	Global family functioning was relevant to parental distress, but specific processes such as conflict, coparenting conflict and household chaos provided clearer explanatory value.

Note. Domains are not mutually exclusive. Table 6 reports individual study characteristics and primary/secondary domain allocation. This table summarises the synthesis-level pattern across domains. Evidence weighting reflects study design, measurement quality, analytic direction, adjustment for confounding, review-question fit and possible sample overlap.

Family conflict and strain

Family conflict and strain emerged as one of the most consistent risk-related domains. Across longitudinal, repeated and cross-sectional studies, higher family conflict, household disagreements or relationship strain were generally associated with poorer parental psychological outcomes, including parenting stress, depression, anxiety, hostility and broader mental-health symptoms.

The strongest evidence came from studies with longitudinal or repeated designs. Albright et al. (2026) found that pre-pandemic family conflict predicted increases in parental depression, anxiety and hostility during the early pandemic, while Zalewski et al. (2023) found that increased family conflict predicted poorer parental mental-health trajectories across the first eight months of COVID-19. Westrupp et al. (2022) similarly found that couple verbal conflict, an interparental form of family strain, was associated with worse parent depression and stress trajectories across repeated assessments in Australia. Gong et al. (2025) found that household disagreements were associated with higher maternal pandemic-focused emotional distress during the early US stay-at-home period.

This pattern was also evident in later-pandemic studies. Friedmann et al. (2023) found that increased family conflict was one of the strongest predictors of parenting stress and maternal depression/anxiety symptoms across different pandemic phases in Bavaria. Friedmann et al. (2025) similarly found that increased family conflict was the strongest predictor of parenting stress for both mothers and fathers of very young children. Together, these findings suggest that family conflict was relevant not only during acute home confinement but also during prolonged pandemic strain.

Related evidence from partner relationship challenges, parent-grandparent relationship deterioration and technology-related couple conflict further supported the

broader pattern that relational strain was associated with poorer parental outcomes. However, in several studies, family conflict was assessed using brief pandemic-specific items rather than detailed family-process scales. This limits precision, as such measures may capture broad perceptions of household strain rather than specific relational processes. Nevertheless, the consistency of findings across countries, COVID-19 phases, outcome types and stronger study designs suggests that conflictual family processes were among the most robust family-level correlates of parental distress during the pandemic.

Coparenting and interparental relationship quality/conflict

Coparenting and interparental relationship quality formed one of the largest relational domains. The overall pattern suggested that poorer or more conflictual coparenting and partner relationships were associated with higher parental distress, while cooperative coparenting was associated with lower stress or burnout in several studies. However, associations with lower distress were less consistent than risk-related findings and were not always direct or robust in adjusted models.

This domain included both coparenting processes, such as cooperation, support, conflict and division of caregiving, and broader interparental or partner relationship quality. These constructs were treated separately where studies distinguished them, although they often overlapped because many studies focused on cohabiting or partnered parents.

Several studies suggested that coparenting conflict was particularly important under acute lockdown conditions. Aldoney et al. (2023) used ecological momentary assessment during Chile's first lockdown and found that exposure to coparenting conflict was associated with parental stress at both within-person and between-person levels. Giannotti et al. (2022) found that higher-quality coparenting predicted lower parental stress during Italy's strict lockdown. Cruciani et al. (2024) similarly found that lower coparenting quality was

associated with greater parental burnout among lesbian mothers and gay fathers during Italian lockdowns.

Studies of parental burnout also supported an association between coparental cooperation and lower distress. Araya-Rojas et al. (2024) found that lower coparental cooperation was associated with higher parental burnout during lockdown in Chile. Giraldo et al. (2022) found that coparental cooperation was especially associated with lower parental burnout among parents with a child aged 0–4 years, suggesting that cooperative coparenting may be particularly relevant when caregiving demands are high. Bastiaansen et al. (2021), using a large multinational sample, found that higher coparenting was associated with lower parental burnout for both mothers and fathers, although coparenting did not consistently moderate the relationship between lockdown stringency and burnout in the whole sample.

Evidence for coparenting support was less consistent and appeared more dependent on family context and analytic model. He et al. (2021), in a sample of economically vulnerable families, found that coparenting support did not show a clear direct association with maternal or paternal mental-health difficulties. However, it buffered fathers from the negative mental-health effects of economic stressors. Li et al. (2022) also found that family support and coparenting were associated with lower depression, anxiety and stress, both directly and indirectly through reduced daily parenting hassles, but the cross-sectional design limits causal interpretation.

Overall, coparenting conflict and partner relationship difficulties appeared more consistently associated with parental distress than coparenting support was associated with lower distress. This domain indicates that coparenting and interparental strain were important relational correlates of parental distress during periods of family stress. However, the evidence is limited by the predominance of cross-sectional designs and by the frequent

exclusion or under-representation of single parents, separated parents and non-cohabiting caregiving arrangements.

Family routines, organisation and household chaos

Family routines, organisation and household chaos formed a distinct organisational domain. The clearest pattern was for household chaos, which was consistently associated with poorer parental psychological outcomes. Evidence for routines, shared activities and family schedules was more mixed and appeared more dependent on COVID-19 context, child age and how routines were measured.

Several quantitative studies found that greater household chaos or disorganisation was associated with higher parental distress. Li et al. (2024) found that household chaos was associated with higher parental worry, anxiety, depression and loneliness among caregivers of preschool children in China. Spinelli et al. (2021) similarly found that household chaos predicted higher parenting stress during the first Italian lockdown, including across socioeconomic-risk groups. McGoron et al. (2022) found that lower household chaos and stronger routines were associated with fewer parental depression and anxiety symptoms during remote schooling in the United States. These findings suggest that the organisation and predictability of the home environment were relevant correlates of parental distress when school, childcare, work and family life were concentrated within the household.

Qualitative studies helped explain how organisational disruption was experienced by parents. Hood et al. (2021) described how disrupted routines, loss of external activities, cancelled infant groups, isolation and altered childcare contributed to maternal stress during the first wave of the pandemic. Vaydich et al. (2023) similarly described parental stress during the second year of the pandemic in relation to altered routines, working and parenting at home, reduced childcare, parental guilt and reduced engagement with children. These

studies did not test statistical associations, but they provided contextual support for the quantitative pattern that disrupted home organisation and routines were experienced as stressful.

Evidence for routines and family activities was less consistent than evidence for household chaos. Idsoe et al. (2021) found no significant association between family activities/routines and pandemic-related stress symptoms among Norwegian parents of early adolescents. Albright et al. (2026) also found that family routines did not significantly predict parent mental-health outcomes once other factors were considered. Tan et al. (2022) found that decreased child learning time and deterioration in parent-grandparent relationships predicted higher parenting stress during Wuhan's lockdown, although the study relied on retrospective reporting and may overlap with Li, Tan, and Wang (2022).

Overall, this domain suggests that household chaos was a more consistent correlate of parental distress than the absence of specific routines or activities. Findings for routines appeared stronger where measures captured predictability and manageable caregiving demands, rather than activities alone. In contrast, activity-based measures may have been shaped by parental resources, employment demands, housing, child age and access to childcare, making them harder to interpret as family-process indicators in isolation.

Family cohesion, togetherness, satisfaction and resilience

Family cohesion, togetherness, satisfaction and resilience represented a more diffuse supportive domain. These constructs were sometimes associated with lower parental distress or better wellbeing, but the pattern was less consistent than for conflict, coparenting conflict or household chaos. Findings were also more likely to be secondary to the main study aims, attenuated in adjusted models or measured using broad constructs.

Everri et al. (2022) provided the clearest primary evidence in this domain. Family resilience was a strong positive predictor of parental wellbeing during home confinement in Italy and Ireland, while parental couple conflict over digital media predicted poorer wellbeing. Gong et al. (2025) also found that greater family togetherness was associated with lower maternal pandemic-focused emotional distress during the early US stay-at-home period. As secondary evidence, Fogarty et al. (2024) found that better family relationships during the Victoria (Australia) lockdown were associated with lower maternal depressive and anxiety symptoms and mediated associations between pre-pandemic adversity and pandemic maternal mental health.

However, supportive family-process findings were not uniform. Albright et al. (2026) found that family cohesion predicted lower parental depression in an initial model, but this association did not remain significant in the final integrated model. Brik and Wang's American sample (2025b) suggested that parent-child relationship quality, relationship quality and family resilience beliefs were relevant to parent stress, whereas Brik and Wang's European sample (2025a) did not support the expected protective model. In that study, family satisfaction and relationship satisfaction did not mediate the association between stressor pile-up and parent stress in the expected direction, and family satisfaction was unexpectedly positively associated with stress in adjusted models. Pereira et al. (2024) also found that family functioning was associated with parental burnout in bivariate analyses and moderation models, but it was not an independent direct predictor in the full regression model.

The mixed findings may reflect the conceptual breadth of this domain. Family resilience, cohesion, satisfaction, support and togetherness are related but not equivalent constructs. Qualitative findings suggested that increased time at home was experienced

differently across families, with some parents describing greater connection and others describing intensified caregiving demands, reduced privacy and relational strain.

Overall, supportive family processes appeared to be associated with lower distress or better wellbeing for some parents, but the evidence was less robust and less specific than the evidence for conflict and chaos as risk-related processes. This domain should therefore be interpreted cautiously: family cohesion, resilience and togetherness appear potentially important, but their associations with parental distress were context-dependent and sensitive to measurement and adjustment.

Parent-child relationship quality, closeness and conflict

Parent-child relationship quality was a moderately represented domain. Overall, better parent-child relationship quality, closeness or positive interaction tended to be associated with lower parental distress, while parent-child conflict, deterioration or worsening relationship quality was associated with higher parental stress. This domain also required careful boundary-setting because some included studies reported parent-child interaction findings in the reverse direction, with parental distress modelled as the predictor rather than the outcome; these findings were not treated as evidence for the present synthesis.

Bai et al. (2022) found that better parent-child relationship quality was associated with fewer parental mental-health symptoms after the first COVID-19 peak in China. Brik and Wang (2025b) reported a statistical mediation model in which parent-child relationship quality mediated the association between pandemic stressor pile-up and parent stress; however, the cross-sectional design means this should not be interpreted as causal mediation. Trumello et al. (2022) provided father-specific evidence, finding that worsening father-child relationship during the first Italian lockdown predicted higher paternal parenting stress.

Evidence from Li, Tan, and Wang (2022) suggested that parent-child conflict may have been more robustly linked with parenting stress than parent-child closeness. In their Wuhan lockdown sample, poorer general family functioning was associated with higher parenting stress, and this association was mediated by child mental-health problems and parent-child conflict. Parent-child closeness was negatively correlated with parenting stress but did not remain a significant predictor in the final model. This pattern is consistent with the broader synthesis, in which conflictual or strained family processes were more consistently associated with parental distress than positive relational processes were associated with lower distress.

Qualitative findings highlighted the varied nature of parent-child relationships during the pandemic. Hood et al. (2021) reported that some mothers experienced enhanced mother-infant, father-infant and whole-family relationships during early restrictions, while others described isolation, stress and loss of usual support. Vaydich et al. (2023) similarly described both increased family quality time and reduced parental engagement due to stress, guilt and altered routines.

Overall, parent-child relationship quality appears relevant to parental psychological distress, but the cross-sectional nature of much of this evidence means that directionality between parental distress and parent-child relationship quality could not be established. For this reason, findings from this domain should be interpreted as evidence of association rather than clear evidence that parent-child relationship quality predicts parental distress.

Broader family functioning and global family-process constructs

Broader family functioning and global family-process constructs were generally associated with parental distress, but they were less precise than domain-specific processes. These measures could combine communication, roles, affective involvement,

problem-solving, cohesion, conflict and overall family difficulty. As a result, they were useful for identifying whether family systems were relevant to parental distress, but less useful for identifying which specific processes were most important.

Several studies found that poorer family functioning or greater family difficulty was associated with higher parental distress. Jetiyanuwat et al. (2024) found that higher family difficulty was associated with higher parental stress during lockdown in Thailand, although family strength and communication were not directly associated with parental stress in the adjusted path model. Moscardino et al. (2021) found that healthier family functioning predicted lower parental perceived stress during school closure in Italy. Li, Tan, and Wang (2022) found that poorer general family functioning was correlated with higher parenting stress during Wuhan's lockdown, with parent-child conflict and child mental-health problems mediating this association.

Fogarty et al. (2024) provided relatively stronger evidence because it drew on longitudinal cohort data. Better family relationships during the Victoria (Australia) lockdown were associated with lower maternal depressive and anxiety symptoms and mediated the association between pre-pandemic adversity and pandemic maternal mental health. However, family relationships and maternal mental health were measured concurrently during the COVID-19 sub-study, so causal direction remains uncertain.

Other studies showed more mixed findings. Pereira et al. (2024) found that poorer family functioning was associated with parental burnout in bivariate analyses, but family functioning did not remain an independent direct predictor in the full regression model once child age, parental stress and depression were included. Brik and Wang (2025a) also provided important mixed evidence, as family satisfaction and relationship satisfaction did not operate as expected protective mediators between stressor pile-up and parent stress.

Overall, global family functioning was generally relevant to parental psychological distress, but the findings were less consistent and less mechanistically clear than those for family conflict, coparenting conflict and household chaos. Broad family-functioning measures may obscure whether distress is most closely linked to conflict, communication, emotional closeness, role strain, routines or general family difficulty. Therefore, this domain supported the broader pattern that family-system variables were associated with parental distress, while more specific constructs provided clearer explanatory value.

Taken together, the narrative synthesis indicated that parental psychological distress during the COVID-19 pandemic was most consistently associated with family processes characterised by conflict, strain and disorganisation. Evidence was strongest for family conflict, coparenting conflict, partner relationship difficulties and household chaos. Supportive processes, including coparental cooperation, family resilience, togetherness and positive parent-child relationships, were also identified, but findings were less consistent and more sensitive to study design, measurement, adjustment and COVID-19 context.

Discussion

Summary of findings

This review synthesised 32 studies examining family processes associated with parental psychological distress during COVID-19. The clearest pattern was that conflictual, strained and disorganised family processes were associated with higher distress, while supportive family processes were associated with lower distress or better wellbeing less consistently. Evidence was strongest for family conflict and strain, coparenting/interparental conflict and household chaos. Findings were more tentative for family cohesion, togetherness and resilience, parent-child relationship quality and broader family functioning. Because much of the evidence was cross-sectional and based on self-report, the synthesis identifies patterns of association rather than causal relationships.

Interpretation of findings

The findings are consistent with a family systems understanding of parental psychological distress during COVID-19. Family systems theory emphasises that individual wellbeing is embedded within relational patterns, family roles and patterns of interaction (Cox & Paley, 1997; Minuchin, 1985). During the pandemic, usual external structures, such as schools, childcare, extended family support, workplaces and community activities, were disrupted, reduced or relocated into the home (Prime et al., 2020; Shoychet et al., 2023). This interpretation is consistent with pandemic risk-resilience accounts, which suggest that family adaptation depends not only on exposure to stressors but also on relational, practical and contextual resources (Prime et al., 2020; Walsh, 2016).

These conditions may have increased the relevance of the household as a relational and organisational system, as families had reduced access to external structure, practical

support and respite during periods of restriction (Prime et al., 2020; Shoychet et al., 2023). One possible interpretation is that conflict and household chaos showed clearer associations with parental distress because they represented immediate relational strain and reduced predictability within everyday family life (Marsh et al., 2020). By contrast, supportive processes such as cohesion, resilience and togetherness may have depended on families' wider relational, practical and contextual resources (Prime et al., 2020; Walsh, 2016). The qualitative studies illustrated that increased time at home could be experienced as greater family connection, but also as strain where routines, support and caregiving arrangements were disrupted (Hood et al., 2021; Vaydich et al., 2023). This may help explain why supportive family-process findings varied across studies. Much of the coparenting and interparental relationship evidence came from partnered or cohabiting parents, meaning that less is known about coparenting outside romantic relationships, including separated parents, kinship caregiving, grandparent involvement or other non-romantic caregiving arrangements.

The synthesis also suggested that specific family-process constructs were more informative than global family-functioning measures. Broad measures used in the included studies combined processes such as communication, roles, problem-solving, emotional responsiveness, cohesion and conflict (Fogarty et al., 2024; Jetiyanuwat et al., 2024; Li, Tan, & Wang, 2022). They were therefore useful for identifying associations between overall family functioning and parental distress, but less able to show which processes were most relevant. In contrast, constructs such as family conflict, coparenting conflict and household chaos provided greater conceptual specificity.

These findings extend previous COVID-19 family reviews by addressing a more specific clinical question. Sentieiro et al. (2025) reviewed couple and parenting dynamics during COVID-19, Shoychet et al. (2023) examined evidence for the COVID-19 Family

Disruption Model, and Lin et al. (2025) reviewed longitudinal evidence on wellbeing in child-rearing families. In contrast, the present review focused specifically on parental psychological distress as the outcome and synthesised which family-process domains were most clearly associated with it. The findings are broadly consistent with pandemic family-disruption and family-resilience accounts, but add specificity by identifying conflict, coparenting/interparental strain and household chaos as clearer correlates of parental distress than broader or more diffuse family-functioning constructs.

COVID-19 context may help interpret variation across studies. Studies conducted during acute lockdown or home confinement more often examined household chaos, routines, coparenting, partner conflict and disrupted family organisation, in a context where work, education, childcare and leisure had frequently moved into the home (Prime et al., 2020; Shoychet et al., 2023). Later-pandemic studies more often examined burnout, sustained relationship difficulties and adaptation. These apparent differences should be interpreted cautiously because studies did not directly compare family-process associations across pandemic phases, and restriction timing and intensity varied substantially across countries (Hale et al., 2021).

Child age also appeared relevant. Studies involving infants, toddlers and preschool children often focused on coparenting, routines, household organisation and intensive caregiving demands, whereas studies involving older children more often examined parent–child relationship quality, home schooling, family functioning or adolescent mental health. Some included evidence suggested that coparenting may be especially relevant among parents of younger children (Giraldo et al., 2022). However, firm conclusions could not be drawn because many studies used broad child-age ranges or did not test age-specific associations.

Although COVID-19 was a distinctive context, the findings may be relevant to other periods of disruption where external structures and supports are reduced and caregiving, work, schooling or illness-related pressures become concentrated within the household. This is consistent with family resilience frameworks, which conceptualise family adaptation as shaped by adversity, family organisation, communication, relational resources and wider social context (Walsh, 2003, 2016), and with broader evidence linking household chaos and reduced predictability with adverse parent, child and family outcomes beyond the pandemic (Marsh et al., 2020). However, generalisability should be treated cautiously because COVID-19 involved a particular combination of infection threat, restrictions, school closures, social isolation and prolonged uncertainty.

Methodological considerations within the evidence base

Several limitations in the included studies affect confidence in the synthesis. Most studies were cross-sectional, meaning that causal direction could not be established. This is particularly important for parent–child relationship and global family-functioning findings, where parental distress may influence perceptions of family relationships as well as family processes potentially influencing distress. The evidence therefore could not distinguish directional from reciprocal associations.

The evidence base also relied heavily on parent self-report. Because many studies used single-informant self-report designs, associations may partly reflect shared reporter effects, including the possibility that parents' current distress influenced their reports of family interactions, routines and relationships (Podsakoff et al., 2003). Parents experiencing high distress may perceive family interactions, routines or relationships more negatively. Few studies included multiple informants, observational data or partner/child reports. This limits

confidence that measured family processes reflected shared family dynamics rather than individual perceptions.

Measurement heterogeneity was another important limitation. Some studies used validated family-process measures, whereas others used brief, adapted or pandemic-specific items, limiting comparability. Brief measures of “family conflict” or “partner relationship challenges” may capture broad subjective strain rather than clearly defined relational processes. Similarly, family routines and activities were not always clearly distinguished from opportunities, resources or parenting behaviours. Because of this heterogeneity effect sizes were not pooled and a quantitative comparison of the relative magnitude of associations across domains or cultural contexts was not possible.

The samples also limit generalisability. Many studies that recruited their participants online were predominantly mother-reported, and over-represented relatively educated or socioeconomically advantaged families. Fathers, single parents, separated parents, kinship carers, minoritised ethnic groups, lower-income families and families with complex caregiving arrangements were often under-represented. Some coparenting studies excluded single-parent families by design, which means findings from this domain should not be generalised to all families. This under-representation limits understanding of family processes among groups who may have experienced different caregiving, material and support contexts during the pandemic. Although studies were conducted across several world regions, the evidence base did not allow systematic comparison by cultural context. The review could not determine whether family-process constructs operated equivalently across cultural contexts, which is important because the conceptualisation and measurement of family dynamics may vary across cultural settings (Moussa Rogers et al., 2024).

There was also considerable variation in COVID-19 context. Studies took place across different countries, public health policies, welfare systems, lockdown intensities and time points. Some studies captured acute home confinement, while others captured reopening, later-pandemic strain or retrospective accounts of earlier disruption. This variation is a strength in terms of breadth, but it complicates synthesis because “COVID-19 context” was not a uniform exposure (Hale et al., 2021).

Finally, possible overlap between some datasets, particularly Tan et al. (2022) and Li, Tan, and Wang (2022), means that some findings should not be treated as fully independent. This was considered in the synthesis, but it remains a limitation when interpreting the apparent consistency of findings from specific contexts.

Strengths and limitations of the review

A strength of this review is that it addressed a clinically relevant and psychologically informed question about family processes and parental psychological distress during COVID-19. The review used systematic methods, PRISMA-guided reporting, predefined eligibility criteria, structured data extraction and MMAT quality appraisal. The use of Popay et al.’s (2006) narrative synthesis guidance supported a transparent and domain-led synthesis rather than a paper-by-paper summary.

The inclusion of quantitative and qualitative studies allowed statistical associations to be considered alongside contextual accounts of family life. Qualitative findings illustrated how disrupted routines, isolation, altered support and changed family roles were experienced by parents (Hood et al., 2021; Vaydich et al., 2023). The synthesis also considered COVID-19 phase and restriction context as interpretive factors, rather than treating the pandemic as a single uniform exposure.

However, the review has limitations, including several review-level risks of bias. Restricting inclusion to peer-reviewed journal articles prioritised formally scrutinised and sufficiently reported evidence, but peer review does not guarantee methodological quality. Excluding grey literature, dissertations and reports may also have increased publication bias and omitted relevant evidence not published in academic journals. The search strategy relied on free-text terms rather than database-specific subject headings. Although this improved consistency and transparency across databases, it may have reduced sensitivity to studies indexed under narrower or alternative terminology. Formal forward and backward citation searching was not conducted, which may have further limited retrieval. Finally, eligibility and synthesis decisions required judgement around the boundaries of “family process”, although predefined criteria, independent checking of a proportion of studies and transparent domain allocation were used to reduce this risk.

The scope of the review was intentionally focused on family processes, meaning that other important determinants of parental distress, such as financial strain, employment insecurity, housing, social isolation, infection risk, child mental health and school support, were not synthesised as primary domains. These factors were considered where they helped interpret family-process findings, but they were outside the main review question. Similarly, potentially relevant constructs such as work-family conflict, homeschooling burden or childcare loss were excluded unless they clearly reflected relational or organisational family processes. This focus strengthened conceptual clarity but may have understated how closely family processes were intertwined with wider structural, practical and contextual stressors during the pandemic.

Clinical implications

The findings suggest that parental psychological distress during large-scale crises can be usefully considered in relation to family systems, not only individual vulnerability. Assessment and formulation may benefit from attention to family conflict, coparenting strain, partner relationship challenges, household chaos, disrupted routines, caregiving roles, reduced respite and wider material pressures.

These findings should not be interpreted as showing that family processes caused parental distress, or that families were responsible for distress occurring within exceptional and structurally constrained conditions. Clinical use should therefore avoid blame and attend to wider practical and social contexts.

Services responding to future public health crises or other periods of family disruption may need to include family-sensitive support alongside individual parent mental health provision. This could include support around routines, conflict management and coparenting under stress, alongside practical support for families with fewer material resources.

Implications for future research

Future research should prioritise longitudinal and repeated measures designs to clarify whether family conflict, coparenting strain and household chaos predict later distress, whether distress predicts deterioration in family processes, or whether associations are reciprocal. More precise and validated measures are needed to distinguish between conflict, coparenting, chaos, routines, cohesion, relationship satisfaction and global family functioning. Samples should better represent fathers, single parents, separated and blended families, kinship carers, minoritised ethnic communities, lower-income families and families living in overcrowded or insecure housing. Future studies should also test moderators such as child age, family structure, socioeconomic status, cultural context and restriction intensity,

and evaluate whether systemic, family-based or coparenting interventions reduce parental distress during periods of heightened family stress.

Conclusion

This review found that relational and organisational family processes were important correlates of parental psychological distress during the COVID-19 pandemic. The clearest evidence concerned family conflict, coparenting conflict, partner relationship difficulties and household chaos. Supportive family processes were also relevant, but associations were less consistent and more context dependent. Overall, the findings support the value of considering parental distress within family-system and wider contextual conditions, while highlighting the need for longitudinal, diverse and methodologically robust research to clarify how specific family processes relate to parental mental health during periods of major disruption.

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Appendices

Appendix A: PRISMA Checklist

 **PRISMA 2020 Checklist**

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Section One title page
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Abstract
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction: aim and objectives
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Method: Eligibility criteria; Tables 1–2; Method: Narrative synthesis
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Method: Search strategy; Appendix B
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Method: Search strategy; Table 3; Appendix B
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Method: Study selection
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Method: Data extraction
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Method: Eligibility criteria and Data extraction; Table 2
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Method: Data extraction; Table 4
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Method: Quality appraisal; Table 5; Appendices C–D
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Not applicable
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Method: Eligibility criteria, Data extraction and Narrative synthesis; Tables 1 and 4
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Not applicable
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Method: Data extraction and Narrative synthesis; Tables 4 and 6
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Method: Design and Narrative synthesis

Section and Topic	Item #	Checklist item	Location where item is reported
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Method: Narrative synthesis
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Not applicable
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Not applicable
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Not applicable
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Results: Study selection; Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Figure 1
Study characteristics	17	Cite each included study and present its characteristics.	Results: Study characteristics; Table 4
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Results: Methodological quality; Table 5; Appendix C
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect <u>estimate</u> and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Table 4; Results: Narrative synthesis
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Results: Methodological quality; Table 6; domain-specific synthesis sections
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Not applicable
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Results: domain-specific synthesis sections; Discussion: Interpretation of findings
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Not applicable
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Not applicable
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Not applicable
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion: Summary of findings and Interpretation of findings
	23b	Discuss any limitations of the evidence included in the review.	Discussion: Methodological considerations within the evidence base
	23c	Discuss any limitations of the review processes used.	Discussion: Strengths and limitations of the review

Section and Topic	Item #	Checklist item	Location where item is reported
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion: Clinical implications; Implications for future research; Conclusion
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Method: Registration
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Method: Registration; OSF DOI 10.17605/OSF.IO/WYVYHU
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Thesis Declaration
Competing interests	26	Declare any competing interests of review authors.	Thesis Declaration
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Not applicable

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. This work is licensed under CC BY 4.0. To view a copy of this license, visit <https://creativecommons.org/licenses/by/4.0/>

Appendix B: Full Database-Specific Search Strategies

Appendix B1. Search Summary

Database	Platform	Search date	Search fields	Limits applied	Records retrieved
MEDLINE	Ovid	11 May 2026	Title/abstract/keyword/free text as applicable	2020 onwards	139
PsycINFO	Ovid	11 May 2026	Title/abstract/keyword/free text as applicable	2020 onwards	176
Scopus	Elsevier	11 May 2026	Title, abstract and keywords	2020 onwards	234
Total					549

Appendix B2

MEDLINE via Ovid search strategy

Database: Ovid MEDLINE(R), Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily

Coverage: 1946 to 30 April 2026

Search date: 11th May 2026

Search field: Multi-purpose field .mp.

Limit applied: Publication year 2020 to current

Records retrieved: 139

1. ((parent* or caregiver* or mother* or father*)

AND (COVID* or pandemic* or coronavirus or SARS-CoV-2)

AND ("parental distress" or "parental mental health" or "parent mental health" or "parent psychological distress" or "caregiver distress" or "caregiver mental health" or "maternal depression" or "maternal anxiety" or "paternal depression" or "paternal anxiety" or "parenting stress" or "parental stress" or "parental burnout" or "caregiver burden")

AND ("family functioning" or "family process*" or "family cohesion" or "family conflict" or "family communication" or "family routine*" or "family organisation" or "family organization" or "parent-child relationship" or "parent child relationship" or "parent-child relation*" or "parent child relation*" or coparent* or co-parent* or "interparental conflict" or "interparental relationship" or "household chaos"))).mp.

Appendix B3

PsycINFO via Ovid search strategy

Database: APA PsycInfo

Coverage: 1806 to May 2026 Week 2

Search date: 11th May 2026

Search field: Multi-purpose field .mp.

Limit applied: Publication year 2020 to current

Records retrieved: 176

1. parent* OR caregiver* OR mother* OR father*
2. COVID* OR pandemic* OR coronavirus OR SARS-CoV-2
3. "parental distress" OR "parental mental health" OR "parent mental health" OR "parent psychological distress" OR "caregiver distress" OR "caregiver mental health" OR "maternal depression" OR "maternal anxiety" OR "paternal depression" OR "paternal anxiety" OR "parenting stress" OR "parental stress" OR "parental burnout"
4. "family functioning" OR "family process*" OR "family cohesion" OR "family conflict" OR "family communication" OR "family routine*" OR "family organisation" OR "family organization" OR "household chaos" OR "parent-child relationship" OR "parent child relationship" OR "parent-child relation*" OR "parent child relation*" OR coparent* OR co-parent* OR "interparental conflict" OR "interparental relationship" OR "family relationship*" OR "family satisfaction"
5. 1 AND 2 AND 3 AND 4
6. Limit 5 to English language, humans and publication year 2020 onwards

Appendix B4

Scopus search strategy

Database: Scopus

Platform: Elsevier

Search date: 11th May 2026

Search fields: Title, abstract and keywords

Limit applied: Publication year 2020 onwards

Records retrieved: 234

TITLE-ABS-KEY(

(parent* OR caregiver* OR mother* OR father*)

AND (COVID* OR pandemic* OR coronavirus OR SARS-CoV-2)

AND ("parental distress" OR "parental mental health" OR "parent mental health"

OR "parent psychological distress" OR "caregiver distress"
 OR "caregiver mental health" OR "maternal depression" OR "maternal anxiety"
 OR "paternal depression" OR "paternal anxiety" OR "parenting stress"
 OR "parental stress" OR "parental burnout" OR "caregiver burden")
 AND ("family functioning" OR "family process*" OR "family cohesion"
 OR "family conflict" OR "family communication" OR "family routine*"
 OR "family organisation" OR "family organization"
 OR "parent-child relationship" OR "parent child relationship"
 OR "parent-child relation*" OR "parent child relation*"
 OR coparent* OR co-parent* OR "interparental conflict"
 OR "interparental relationship" OR "household chaos")
)
 AND PUBYEAR > 2019

Everri et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Clear COVID home-confinement context with appropriate measures of family resilience, couple conflict over digital media and parental wellbeing.	Cross-sectional; predominantly mothers; uneven country representation; self-report only; parent-child conflict measure is technology-specific.	Moderate weight, especially for family resilience and couple conflict findings.
Fogarty et al. (2024)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes	Relatively strong longitudinal cohort with pre-pandemic data, baseline covariates, path analysis and FIML missing-data handling.	COVID sub-study was a selective subset; family relationships measured briefly and concurrently with pandemic mental health, self-report.	Higher weight, particularly for broader family relationship quality and maternal depression/anxiety.
Friedmann et al. (2025)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Clear COVID context, validated parenting stress measure and separate father/mother analyses.	Family conflict measured with a brief pandemic-specific item; cross-sectional; advantaged sample; single parents excluded.	Moderate weight for family conflict and parenting stress.
Friedmann et al. (2023)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Large repeated cross-sectional study with validated parenting stress and affective symptom measures and clear pandemic phase comparison.	Mostly mothers; relatively advantaged sample; family conflict measured briefly; repeated cross-sectional rather than longitudinal.	Moderate/high weight for family conflict and parental stress/maternal symptoms.
Giannotti et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Strong fit for coparenting and parental stress during lockdown, using relevant measures and regression analyses.	Cross-sectional; retrospective pre-lockdown ratings; online/snowball sample; mostly mothers; shortened stress measure.	Moderate weight for coparenting and parental stress.
Giraldo et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Clear coparenting and parental burnout focus, with useful moderation by young child age.	Cross-sectional; online recruitment; mostly mothers; high SES/education; coparenting analysis limited to couple households.	Moderate weight, especially for coparental cooperation among parents of young children.
Gong et al. (2025)	Quantitative non-randomised	Yes	Yes	No	Yes	Yes	Yes	Yes	Stronger design with pre-pandemic data and adjustment for pre-pandemic maternal depressive symptoms and parenting stress.	Small sample; mostly White, highly educated, middle-class mothers; maternal self-report only; early-pandemic snapshot.	Higher weight for household disagreements and family togetherness findings, with generalisability caveat.
He et al. (2021)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Valuable study including both mothers and fathers from economically vulnerable families, with a relevant coparenting support measure and path analysis.	Sample drawn from an existing intervention study rather than representative population sample; several measures were shortened/adapted; confounder adjustment was somewhat limited.	Moderate weight, especially for coparenting support buffering fathers under economic stress.

Idsoe et al. (2021)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	No	Yes	Useful null evidence from both mothers and fathers on family activities/routines and pandemic-related stress symptoms.	Family-process measure was broad and activity-based; analyses mainly bivariate; no multivariate confounder adjustment; sample relatively high SES.	Low/moderate weight; use cautiously as null evidence around family activities/routines.
Jetyenwat et al. (2024)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Good fit for broader family functioning, using SCORE-15 and a parental stress measure in a clear COVID lockdown context.	Cross-sectional; online recruitment, likely educated/middle-to-higher SES sample; parent-report only; child outcomes prominent.	Moderate weight, especially for family difficulty predicting higher parental stress.
Li et al. (2022) — parenting daily hassles	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Large study with relevant family support, coparenting and parental distress measures, plus path analysis in a clear school-closure context.	Cross-sectional; online convenience sampling; self-report only; daily parenting hassles are rather than a pure family-process construct.	Moderate/high weight for coparenting and family support as protective family-based processes.
Li, Tan & Wang (2022)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Strong conceptual fit with validated family functioning, parent-child relationship and parenting stress measures during Wuhan lockdown.	Small sample; cross-sectional; parent-report only; limited confounder control; retrospective elements around parenting time.	Moderate weight for family functioning and parent-child conflict findings.
Li et al. (2024)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Strong fit for household chaos, with validated CHAOS and parental distress measures and multivariable path modelling.	Cross-sectional; retrospective reporting about early outbreak period; one-city sample; parent-report only.	Moderate/high weight for household chaos and parental psychological distress.
McGeon et al. (2022)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Good fit for household chaos/routines, with PROMIS depression/anxiety outcomes and a modified CHAOS measure.	Small geographically specific sample; cross-sectional; parent self-report; routines measure brief; school support is external rather than family process.	Moderate/high weight for household chaos/routines and parent mental health.
Moscardino et al. (2021)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Small but relevant study using recognised family functioning and perceived stress measures with hierarchical regression.	Small sample; mostly mothers; first-grade children only; cross-sectional; no pre-pandemic baseline.	Moderate weight for family functioning and parental perceived stress.
Pereira et al. (2024)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Relevant family functioning and parental burnout study using appropriate measures and moderation analyses.	Cross-sectional; self-report; relatively small and gender-mixed sample; later pandemic period; family functioning not a clear independent predictor in full regression.	Moderate weight; useful for family functioning as possible moderator/resource.
Spinelli et al. (2021)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Strong fit for household chaos and parenting stress, with large sample and socioeconomic-risk comparison.	Cross-sectional; online convenience sample; mostly mothers; parent self-report; parent involvement may be downstream of parenting stress.	Moderate/high weight for household chaos and parenting stress.

Tan et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Yes	Useful for routine, household organisation and intergenerational family relationships during Wuhan lockdown, with relevant covariate adjustment.	Small sample; retrospective reporting; parent-grandparent relationship measured with simple change category; possible overlap with Li, Tan & Wang (2022).	Moderate weight, with overlap and recall-bias caveats.
Thomson et al. (2023)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Can't tell	Yes	Yes	Yes	Useful national Canadian survey with validated parent psychological distress measure and adjusted models.	Key review-relevant family-process variable is a brief partner relationship challenge item; parent-child interaction findings are mostly wrong-direction; cross-sectional.	Moderate weight, but extract narrowly for partner relationship challenges to parent distress.
Trumello et al. (2022)	Quantitative non-randomised	Yes	Yes	No	Yes	Can't tell	Yes	Yes	Yes	Useful father-specific study with appropriate parental distress/stress measures and regression analysis.	Small online sample; relatively advantaged fathers; ad hoc father-child relationship measure; cross-sectional and retrospective elements.	Moderate weight, especially as father-specific parent-child relationship evidence.
Westrupp et al. (2022)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes	Yes	Strong longitudinal repeated-measures design with 14 assessments, large sample, DASS-21 parent mental health outcomes, recognised couple conflict measure and extensive predictor adjustment. The natural comparison between strict Victorian lockdown and non-Victorian "COVID-normal" conditions strengthens the COVID-context relevance.	Online recruitment, under-representation of fathers and less advantaged families; informant participation over time; parent-report only; couple conflict measured at baseline as a time-invariant predictor, so changes in conflict over the pandemic were not captured.	Higher weight for COVID-context and couple conflict/interparental conflict findings, with caveats about representativeness and the fact that couple conflict was one predictor rather than the central focus.
Zalewski et al. (2023)	Quantitative non-randomised	Yes	Yes	Can't tell	Yes	Yes	Yes	Yes	Yes	Strong longitudinal study with large sample, repeated assessments, growth mixture and latent growth curve modelling, and adjustment for pre-pandemic and pandemic-specific risks.	Convenience sample; mostly mothers; retrospective pre-pandemic mental-health report; mental-health composite rather than diagnostic outcome; family conflict measured with broad COVID-risk item.	Higher weight for family conflict predicting worsening parental mental-health trajectories.

Appendix D: MMAT Tool: Hong et al. (2018)

Part I: Mixed Methods Appraisal Tool (MMAT), version 2018

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow to address the research questions?				
	<i>Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.</i>				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	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?				

2

Part II: Explanations

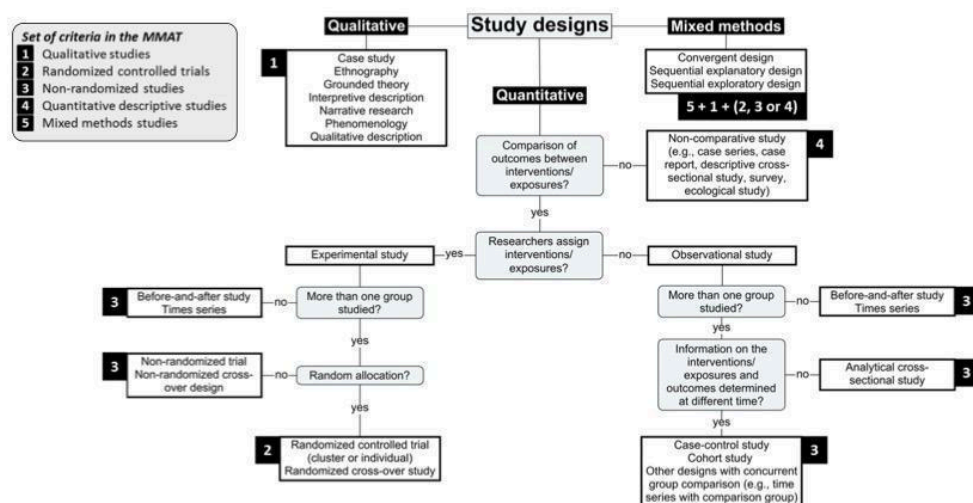
1. Qualitative studies	Methodological quality criteria
"Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Creswell, 2013b, p. 3). Common qualitative research approaches include (this list is not exhaustive): Ethnography The aim of the study is to describe and interpret the shared cultural behaviour of a group of individuals. Phenomenology The study focuses on the subjective experiences and interpretations of a phenomenon encountered by individuals. Narrative research The study analyzes life experiences of an individual or a group. Grounded theory Generation of theory from data in the process of conducting research (data collection occurs first). Case study In-depth exploration and/or explanation of issues intrinsic to a particular case. A case can be anything from a decision-making process, to a person, an organization, or a country. Qualitative description There is no specific methodology, but a qualitative data collection and analysis, e.g., in-depth interviews or focus groups, and hybrid thematic analysis (inductive and deductive). Key references: Creswell (2013a); Sandelowski (2010); Schwandt (2015)	1.1. Is the qualitative approach appropriate to answer the research question? Explanations The qualitative approach used in a study (see non-exhaustive list on the left side of this table) should be appropriate for the research question and problem. For example, the use of a grounded theory approach should address the development of a theory and ethnography should study human cultures and societies. This criterion was considered important to add in the MMAT since there is only one category of criteria for qualitative studies (compared to three for quantitative studies). 1.2. Are the qualitative data collection methods adequate to address the research question? Explanations This criterion is related to data collection method, including data sources (e.g., archives, documents), used to address the research question. To judge this criterion, consider whether the method of data collection (e.g., in depth interviews and/or group interviews, and/or observations) and the form of the data (e.g., tape recording, video material, diary, photo, and/or field notes) are adequate. Also, clear justifications are needed when data collection methods are modified during the study. 1.3. Are the findings adequately derived from the data? Explanations This criterion is related to the data analysis used. Several data analysis methods have been developed and their use depends on the research question and qualitative approach. For example, open, axial and selective coding is often associated with grounded theory, and within- and cross-case analysis is often seen in case study. 1.4. Is the interpretation of results sufficiently substantiated by data? Explanations The interpretation of results should be supported by the data collected. For example, the quotes provided to justify the themes should be adequate. 1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation? Explanations There should be clear links between data sources, collection, analysis and interpretation.

3

3. Quantitative non-randomized studies	Methodological quality criteria
Non-randomized studies are defined as any quantitative studies estimating the effectiveness of an intervention or studying other exposures that do not use randomization to allocate units to comparison groups (Higgins and Green, 2008).	3.1. Are the participants representative of the target population? Explanations Indicators of representativeness include: clear description of the target population and of the sample (inclusion and exclusion criteria), reasons why certain eligible individuals chose not to participate, and any attempts to achieve a sample of participants that represents the target population.
Common designs include (this list is not exhaustive): Non-randomized controlled trials The intervention is assigned by researchers, but there is no randomization, e.g., a pseudo-randomization. A non-random method of allocation is not reliable in producing alone similar groups. Cohort study Subsets of a defined population are assessed as exposed, not exposed, or exposed at different degrees to factors of interest. Participants are followed over time to determine if an outcome occurs (prospective longitudinal). Case-control study Cases, e.g., patients, associated with a certain outcome are selected, alongside a corresponding group of controls. Data is collected on whether cases and controls were exposed to the factor under study (retrospective). Cross-sectional analytic study At one particular time, the relationship between health-related characteristics (outcome) and other factors (intervention/exposure) is examined. E.g., the frequency of outcomes is compared in different population subgroups according to the presence/absence (or level) of the intervention/exposure. Key references for non-randomized studies: Higgins and Green (2008); Porta et al. (2014); Sterne et al. (2016); Wells et al. (2000)	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? Explanations Indicators of appropriate measurements include: the variables are clearly defined and accurately measured; the measurements are justified and appropriate for answering the research question; the measurements reflect what they are supposed to measure; validated and reliability tested measures of the intervention/exposure and outcome of interest are used, or variables are measured using 'gold standard'. 3.3. Are there complete outcome data? Explanations Almost all the participants contributed to almost all measures. There is no absolute and standard cut-off value for acceptable complete outcome data. Agree among your team what is considered complete outcome data in your field (and based on the targeted journal) and apply this uniformly across all the included studies. For example, in the literature, acceptable complete data value ranged from 80% (Thomas et al., 2004; Zaza et al., 2000) to 95% (Higgins et al., 2016). Similarly, different acceptable withdrawal/dropouts rates have been suggested: 5% (de Vet et al., 1997; MacLachose et al., 2000), 20% (Sindhu et al., 1997; Van Tulder et al., 2003) and 30% for follow-up of more than one year (Viswanathan and Berkman, 2012). 3.4. Are the confounders accounted for in the design and analysis? Explanations Confounders are factors that predict both the outcome of interest and the intervention received/exposure at baseline. They can distort the interpretation of findings and need to be considered in the design and analysis of a non-randomized study. Confounding bias is low if there is no confounding expected, or appropriate methods to control for confounders are used (such as stratification, regression, matching, standardization, and inverse probability weighting). 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? Explanations For intervention studies, consider whether the participants were treated in a way that is consistent with the planned intervention. Since the intervention is assigned by researchers, consider whether there was a presence of contamination (e.g., the control group may be indirectly exposed to the intervention) or whether unplanned co-interventions were present in one group (Sterne et al., 2016). For observational studies, consider whether changes occurred in the exposure status among the participants. If yes, check if these changes are likely to influence the outcome of interest, were adjusted for, or whether unplanned co-exposures were present in one group (Morgan et al., 2017).

5

Algorithm for selecting the study categories to rate in the MMAT*



*Adapted from National Institute for Health Care Excellence. (2012). *Methods for the development of nice public health guidance*. London: National Institute for Health and Care Excellence; and Scottish Intercollegiate Guidelines Network. (2017). *Algorithm for classifying study design for questions of effectiveness*. Retrieved December 1, 2017, from http://www.sign.ac.uk/assets/study_design.pdf.

8

Section Two: Empirical Study

Sleep Quality as a Longitudinal Mediator Between Parenting Status and Psychological
Distress During the COVID-19 Pandemic: A Secondary Analysis of C19PRC Waves 5 and 6
Data

Abstract

Objectives: To examine whether insomnia symptoms mediated the association between parenting status and later psychological distress during the COVID-19 pandemic, using longitudinal data from the COVID-19 Psychological Research Consortium study.

Design and Method: A quantitative longitudinal secondary analysis was conducted using UK C19PRC Wave 5 and Wave 6 survey data. Parenting status at Wave 5 was coded as having a child under 18 years primarily living in the household. Wave 5 insomnia symptoms were entered as the mediator. Psychological distress was operationalised as depressive and anxiety symptoms at Wave 6, examined in separate models using the PHQ-9 and GAD-7. Mediation models were estimated using PROCESS Model 4 with 5,000 bias-corrected bootstrap samples. Adjusted analyses controlled for age, gender and the corresponding Wave 5 symptom score.

Results: The analytic sample comprised 1,423 participants; adjusted mediation models included 1,419 complete cases because four participants had missing data on the binary gender covariate. In adjusted analyses, higher Wave 5 insomnia symptoms were associated with higher Wave 6 depressive symptoms, $b = 0.20$, $p < .001$, and anxiety symptoms, $b = 0.06$, $p = .028$. Parenting status was not significantly associated with insomnia symptoms in either model. Total and direct effects of parenting status on later depressive and anxiety symptoms were also non-significant. Indirect effects via insomnia symptoms were non-significant for depressive symptoms, $b = -0.07$, 95% BCa CI $[-0.17, 0.003]$, and anxiety symptoms, $b = -0.02$, 95% BCa CI $[-0.07, 0.001]$.

Conclusions: Insomnia symptoms were associated with later depressive and anxiety symptoms, supporting their relevance to subsequent psychological distress. However, findings did not support the hypothesised model that parenting status would be associated

with greater later distress via higher insomnia symptoms. Broad resident-parent status may not adequately capture the caregiving demands most relevant to sleep disruption.

Keywords: insomnia symptoms, parenting, psychological distress, depression, anxiety, longitudinal mediation, COVID-19

Practitioner Points

- Assess sleep directly when adults, including parents, present with emotional distress, rather than assuming parenting status alone captures sleep-related burden.
- Consider child age, night-time caregiving demands, and household context in sleep-related formulations.
- Differentiate insomnia symptoms from caregiving-related sleep fragmentation where possible.
- Avoid assuming that parenting status alone captures clinically meaningful sleep burden.

Introduction

The COVID-19 pandemic was associated with substantial disruption to daily life and widespread deterioration in psychological wellbeing. In the United Kingdom, longitudinal evidence indicated elevated symptoms of depression and anxiety during the pandemic, alongside reduced overall wellbeing for many adults relative to pre-pandemic baselines (O'Connor et al., 2021; Pierce et al., 2020). Although population responses to the pandemic were heterogeneous, many adults experienced sustained stress in relation to health concerns, uncertainty, social restrictions, altered routines, and economic pressures (O'Connor et al., 2021; Shevlin et al., 2023). Understanding the processes that may have contributed to this distress is important for informing both clinical practice and psychological models of adjustment under prolonged stress.

One process of particular relevance is sleep. Sleep plays a central role in emotional, cognitive, and physiological regulation, and disturbed sleep is consistently associated with poorer mental health (Harvey, 2011). Insomnia symptoms, including difficulties initiating sleep, maintaining sleep, early morning awakening, and associated daytime fatigue, are especially important in this regard because they represent a clinically meaningful form of sleep disturbance (Harvey, 2011). Sleep difficulties are not only distressing in their own right, but are also associated with impaired concentration, reduced coping capacity, heightened emotional reactivity, and poorer daytime functioning (Harvey, 2011; Palmer & Alfano, 2017). Sleep may therefore represent more than a co-occurring symptom of distress; it may also be one process through which stress becomes embedded in everyday psychological functioning (Harvey, 2011).

Sleep difficulties may also function as a transdiagnostic process implicated in the onset, maintenance, and exacerbation of depression and anxiety (Harvey, 2011; Palmer &

Alfano, 2017; Dolsen et al., 2014). This is especially relevant during prolonged disruption, when sleep may be affected by both internal processes such as worry and externally imposed changes to routine, environment, and daily demands. In this sense, sleep can be understood as both an outcome of stress and a mechanism through which stress exerts downstream effects on wellbeing (Harvey, 2011).

During the pandemic, many individuals reported changes in sleep quality and sleep timing, with increased insomnia symptoms and irregular sleep routines during periods of lockdown and social restriction (Alfonsi et al., 2021; Blume et al., 2020; Cellini et al., 2020). Disruption to work and daily routines, increased screen time, reduced social contact, uncertainty, and heightened stress are likely to have contributed to these changes (Alfonsi et al., 2021; Blume et al., 2020). In this context, sleep disturbance may represent one mechanism through which wider environmental and interpersonal stressors contributed to depression and anxiety during the pandemic (Alfonsi et al., 2021; Franceschini et al., 2020).

Parents may have been especially vulnerable to these processes, particularly where caregiving demands were high. During the pandemic, school closures, reduced childcare provision, and restrictions on informal support networks increased the demands placed on many parents (Prime et al., 2020). Parents were often required to balance children's practical, emotional, and educational needs alongside employment, household responsibilities, and their own wellbeing (Prime et al., 2020). This may have increased vulnerability to psychological distress directly, but it may also have affected more proximal behavioural processes, including sleep. In this sense, parenting status may be associated with later mental health not only as a demographic characteristic, but also through its relationship with daily rest and recovery (Prime et al., 2020). Evidence from lockdown studies also suggests that parenting-related burden during the pandemic was heterogeneous rather than uniformly

experienced across all parents (Xue & McMunn, 2021). This highlights the importance of distinguishing broad parenting status from more specific caregiving contexts, while also supporting the rationale for testing whether a broad indicator of co-residing parenting was associated with insomnia symptoms and later psychological distress.

There is reason to think that this association may extend beyond the pandemic context. Outside COVID-19, disrupted or shortened sleep has been linked to heightened symptoms of anxiety and depression among parents, particularly where caregiving demands are high (Meltzer & Mindell, 2007; Richter et al., 2019). Parenting younger children may involve repeated night waking, early rising, fragmented sleep, and reduced opportunity for consolidated rest, while broader caregiving responsibilities may limit recovery time even where night waking is less prominent (Meltzer & Mindell, 2007; Richter et al., 2019). More recent evidence also suggests that child sleep disturbances are associated with sleep disturbance and poor mood among parents, reinforcing the view that parenting-related sleep burden may operate through multiple family processes rather than through caregiving status alone (Varma et al., 2020). The pandemic may therefore have intensified an already meaningful area of vulnerability, rather than creating an entirely new one.

The relationship between parenting and sleep is unlikely to be uniform across all parents or caregiving stages. Pronounced sleep disruption is often documented in the postpartum period, infancy, or early childhood, where night waking and overnight care are especially prominent (Meltzer & Mindell, 2007; Richter et al., 2019). Broader parenting roles may involve more varied demands, such as early rising, emotional labour, practical organisation, reduced recovery time, and competing work and household responsibilities. These effects may be harder to detect when parents are grouped into a single broad category. The present study therefore did not assume equivalent sleep burden across all parents, but

tested whether co-residing parenting status was sufficient to detect an association with insomnia symptoms in a large community sample.

Sleep is a plausible mediator of the relationship between parenting and later psychological distress for both theoretical and clinical reasons. Increased caregiving demands, particularly in contexts involving younger children or frequent night-time care, may reduce opportunities for consolidated and restorative sleep, while poor sleep may in turn impair emotional regulation and increase vulnerability to low mood and anxiety (Meltzer & Mindell, 2007; Harvey, 2011; Palmer & Alfano, 2017). Longitudinal work suggests that insomnia symptoms are associated with later depression, and intervention research indicates that improving sleep may lead to improvements in mental health (Baglioni et al., 2011; Freeman et al., 2020). Sleep may therefore represent a potentially modifiable pathway through which prolonged stress and caregiving burden could contribute to later distress.

At the same time, it is important to define the sleep construct carefully. Insomnia symptoms capture one clinically meaningful aspect of sleep disruption, including difficulties initiating sleep, wakefulness during the night, early morning awakening, and daytime fatigue. These domains overlap with constructs commonly assessed in self-report sleep research, including sleep latency, wakefulness, sleep timing, and daytime dysfunction. However, sleep measurement varies considerably across studies, with measures differing in how they define sleep duration, bedtime, wake time, sleep latency, context, and timeframe (Robbins et al., 2021). Even widely used measures such as the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989) assess related domains, including sleep latency, actual sleep duration, usual bed and wake times, and daytime dysfunction, without capturing the number or cause of night-time disruptions. This is particularly relevant in parenting research, where sleep disruption may be externally driven by child night waking, early rising, or reduced

opportunity for sleep. For example, Meltzer and Mindell (2007) assessed maternal sleep using sleep onset latency, night wakings, duration of awakenings, wake time, sleep quality, and whether awakenings were child-related, highlighting the contextual nature of parenting-related sleep disruption. In the present study, insomnia symptoms were therefore considered a defensible but specific indicator of sleep difficulty: clinically meaningful and relevant to parenting, but not a complete measure of caregiving-related sleep burden.

Despite the plausibility of this pathway, relatively few studies have examined parenting, sleep disruption, and psychological distress together within a longitudinal framework. Much of the existing literature has focused on parenting and sleep, or sleep and mental health, in isolation, and studies examining these constructs together have often been cross-sectional, concentrated on narrower periods such as the postpartum stage, or focused on pandemic-related stress rather than broader parenting status. This matters because mediation models imply temporal ordering, with the proposed mediator preceding the outcome (Cole & Maxwell, 2003). Longitudinal data therefore provide a stronger framework for examining whether insomnia symptoms are associated with later distress in a way that is consistent with a mediating role, while also clarifying the limits of what can be inferred from broad parenting and sleep measures in secondary analysis. Clinically, this is important because sleep may be more modifiable than many broader contextual stressors and may therefore offer a useful focus for assessment, formulation, and intervention (Freeman et al., 2020).

The COVID-19 Psychological Research Consortium (C19PRC) study provides an opportunity to examine these relationships within a large UK longitudinal sample (McBride et al., 2021). In the present study, parenting status was operationalised as having a child under 18 years living primarily in the household, reflecting co-residing parenting of dependent minors. Sleep was indexed using the insomnia subscale of the Sleep Disorders Symptom

Checklist-17 (Klingman et al., 2017), and psychological distress was operationalised through depressive and anxiety symptoms measured separately using the PHQ-9 and GAD-7 (Kroenke et al., 2001; Spitzer et al., 2006). Examining depressive and anxiety symptoms separately was important because, although they are closely related, they are conceptually and clinically distinct constructs rather than interchangeable indicators of a single form of distress. Both may be associated with sleep disturbance, but not necessarily in identical ways over time. Combining them into a single distress construct may therefore have obscured meaningful differences in how parenting status and insomnia symptoms relate to later emotional outcomes. Accordingly, depressive and anxiety symptoms were examined in separate models.

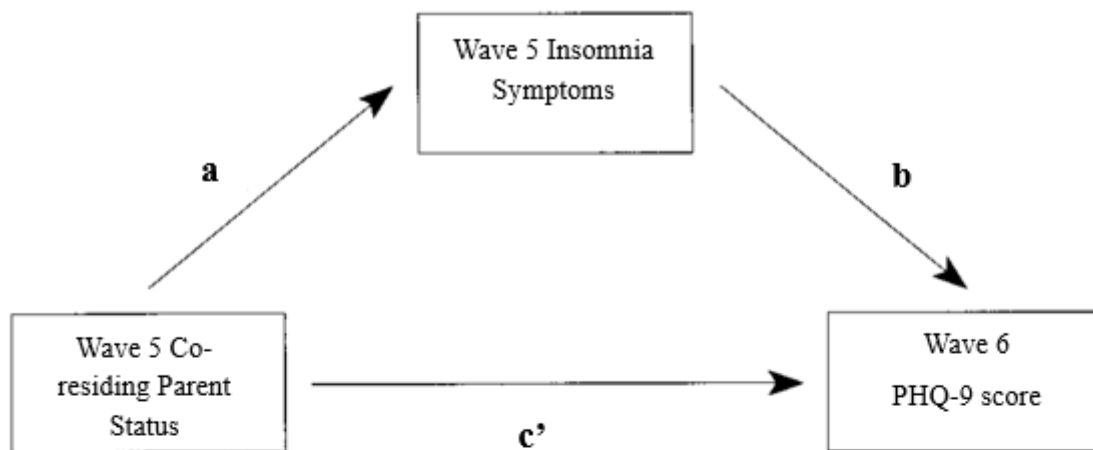
The present study aimed to examine whether Wave 5 insomnia symptoms mediated the association between Wave 5 parenting status and Wave 6 psychological distress, operationalised as depressive and anxiety symptoms in separate models. Participant age and gender were included as additional covariates, alongside the relevant baseline symptom score, because caregiving demands, sleep disruption and psychological distress may differ by gender. During the COVID-19 pandemic, women generally undertook more unpaid childcare and housework than men, and greater unpaid care was associated with higher psychological distress (Xue & McMunn, 2021). It was hypothesised that parents would report higher insomnia symptoms than non-parents, that greater insomnia symptoms would predict higher later depressive and anxiety symptoms, and that insomnia symptoms would mediate the association between parenting status and subsequent psychological distress. By testing this model, the study sought to examine whether insomnia symptoms were consistent with a possible pathway linking co-residing parenting responsibilities with later psychological distress, while recognising that insomnia may capture only part of the wider sleep burden associated with caregiving. Intervention research showing that behavioural sleep approaches

can improve both child and parent outcomes further underlines the clinical relevance of clarifying this pathway (Park et al., 2022).

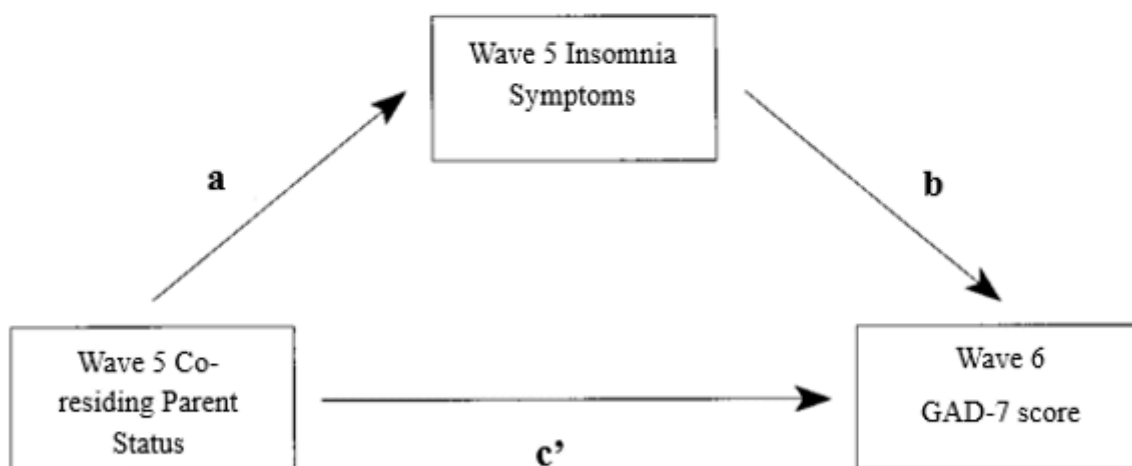
Figure 1

Hypothesised longitudinal mediation models.

Panel A: Depressive Symptoms (PHQ-9)



Panel B: Anxiety Symptoms (GAD-7)



Note. Panel A represents the depressive-symptom model and Panel B the anxiety-symptom model. Path *a* represents the association between parenting status and insomnia symptoms,

path b the association between insomnia symptoms and the Wave 6 outcome, and path c' the direct effect of parenting status on the Wave 6 outcome after accounting for insomnia symptoms. Adjusted models controlled for age, binary gender and the corresponding Wave 5 baseline symptom score.

Method

Design

The present study employed a quantitative longitudinal design using secondary data from the COVID-19 Psychological Research Consortium (C19PRC) Study, a longitudinal online panel study established in March 2020 to monitor the psychological, social and economic impact of the COVID-19 pandemic. UK fieldwork was conducted online by Qualtrics across repeated survey waves (McBride et al., 2021, 2022).

The present analysis used Wave 5, conducted in March/April 2021, and Wave 6, conducted in August/September 2021. Wave 5 provided parenting status, insomnia symptoms and baseline depressive and anxiety symptoms, while Wave 6 provided later depressive and anxiety outcomes. The study examined whether Wave 5 insomnia symptoms mediated the association between Wave 5 parenting status and Wave 6 psychological distress (McBride et al., 2022; McBride et al., 2023). Psychological distress was operationalised as depressive and anxiety symptoms examined in separate models. Given the observational design, findings were interpreted as associative rather than causal.

Although the preregistered project referred broadly to sleep quality, the available C19PRC variable indexed insomnia symptoms specifically. The present write-up therefore uses the term insomnia symptoms to more accurately reflect the construct analysed.

Ethics

This study involved secondary analysis of fully anonymised C19PRC data. As no new data were collected and participants could not be identified or contacted, the project was considered to pose minimal ethical risk. Ethical approval for the proposed analyses was obtained through the University of Sheffield's low-risk research ethics review procedure. The

study was preregistered on the Open Science Framework following protocol and ethical approval. Data were stored on secure, encrypted University servers, with access restricted to the researcher and supervisory team. Only aggregated, non-identifiable findings are reported.

Participants

Participants were adults aged 18 years and over drawn from the C19PRC study. Wave 5 comprised 2,520 participants, of whom 1,423 also participated at Wave 6 and formed the longitudinal analytic sample, representing retention of 56.5% and attrition of 43.5%.

C19PRC fieldwork procedures excluded incomplete interviews from final wave samples, contributing to minimal item-level missingness in the available secondary data. Within the linked Wave 5/Wave 6 sample, there were no missing data on parenting status, insomnia symptoms, PHQ-9 or GAD-7 scores. Four participants had missing data for the binary gender covariate, resulting in 1,419 complete cases for adjusted mediation models.

Statistical power

As this study used secondary longitudinal data, sample size was fixed by the number of participants available across Waves 5 and 6 and could not be determined prospectively. A sensitivity power analysis was conducted using G*Power 3.1 for the planned regression-based models. Assuming $\alpha = .05$, the available sample ($N = 1,423$) provided 80% power to detect an effect of $f^2 = .007$ and 90% power to detect an effect of $f^2 = .009$, indicating sensitivity to very small regression effects. Power for indirect effects and subgroup-specific pathways may nevertheless have differed, particularly given the smaller parent group.

Procedure

C19PRC fieldwork was conducted online by Qualtrics using established online research panels. The original study used quota sampling and subsequent sample-replenishment procedures to maintain representation across key sociodemographic characteristics. At Wave 5, adults who had participated in previous waves were re-contacted by email, SMS or in-app notification and invited to complete the survey online (McBride et al., 2021, 2022).

For the present secondary analysis, anonymised Wave 5 and Wave 6 data were obtained from the C19PRC repository and stored on the University of Sheffield's encrypted filestore. Parenting status, insomnia symptoms and baseline depressive and anxiety symptoms were extracted from Wave 5, with depressive and anxiety outcomes extracted from Wave 6. Data were checked for accuracy, completeness, coding and distributional properties before analysis.

Measures

Parenting status

Parenting status was coded using the Wave 5 parenting variable. Participants were classified as parents if they endorsed having a child or children under 18 years of age primarily living with them in their household. This was coded 1. All other participants were classified as non-parents and coded 0. Because multiple responses were permitted, endorsement of the resident-child-under-18 item was prioritised where participants also endorsed other child-residence categories. There were no conflicting responses, such as simultaneously reporting a resident child under 18 and no children. The operationalisation was intended to capture co-residing parenting of dependent minors, judged most relevant to day-to-day caregiving demands potentially related to sleep and psychological wellbeing.

Insomnia symptoms

Sleep was indexed using the four-item insomnia subscale of the Sleep Disorders Symptom Checklist-17 (SDS-CL-17; Klingman et al., 2017). The pre-calculated score assessed sleep-onset difficulty, nocturnal wakefulness, early morning waking and daytime tiredness or sleepiness, with higher scores indicating greater insomnia symptoms.

The SDS-CL-17 is a multidimensional screening checklist, and its validation focused on diagnostic performance rather than internal consistency of a global scale. Cronbach's alpha was not reported for the four-item insomnia subscale; the subscale demonstrated sensitivity of .70, specificity of .64 and an area under the receiver operating characteristic curve of .72 against expert diagnosis (Klingman et al., 2017).

The measure did not identify whether sleep disruption was child-related, who responded to the child, the frequency of night-time caregiving, or whether sleep opportunity was constrained by caregiving responsibilities.

Psychological distress

Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001), which demonstrated high internal consistency in its original validation study, with Cronbach's $\alpha = .89$ in a primary-care sample and $\alpha = .86$ in an obstetrics/gynaecology sample. Anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 scale (GAD-7; Spitzer et al., 2006), which also demonstrated high internal consistency in its original validation study (Cronbach's $\alpha = .92$).

Wave 6 PHQ-9 and GAD-7 total scores were used as separate outcome variables, with corresponding Wave 5 scores included as baseline covariates. Scores were treated as continuous measures of symptom severity rather than categorical caseness.

Covariates

The corresponding Wave 5 symptom score was included as a covariate in each outcome model. Age was entered continuously. Participant gender, rather than child gender, was included as a covariate because caregiving demands, sleep disruption and psychological distress may differ by gender. During the UK COVID-19 lockdown, women undertook more unpaid childcare and housework than men, with greater unpaid care associated with higher psychological distress (Xue & McMunn, 2021). Gender was coded as 0 = male and 1 = female for the primary analyses because very few participants endorsed other categories.

The analyses used pre-computed total or subscale scores rather than item-level responses, so internal consistency could not be calculated within the present analytic sample. Psychometric properties reported above therefore refer to the original validation studies.

Data analysis

Analyses were conducted using IBM SPSS Statistics and the PROCESS macro. In line with the preregistered analysis plan, two longitudinal mediation models were estimated using PROCESS Model 4. Parenting status at Wave 5 was entered as the independent variable, Wave 5 insomnia symptoms as the mediator, and either Wave 6 depressive or anxiety symptoms as the outcome. The corresponding Wave 5 symptom score, age and gender were included as covariates.

Descriptive statistics summarised the sample. Independent samples t-tests compared parents and non-parents on continuous study variables, and chi-square analysis examined the association between parenting status and binary gender. Assumptions relevant to ordinary least-squares regression were assessed using residual plots and variance inflation factors.

No exposure, mediator or outcome data were missing within the linked analytic sample; the principal missing-data issue was therefore attrition between waves rather than item-level missingness. PROCESS used listwise deletion, excluding four participants with missing binary gender data from adjusted models. Imputation was not undertaken.

Indirect effects were estimated using 5,000 bias-corrected bootstrap samples with 95% confidence intervals and were considered statistically significant where the interval excluded zero. Unstandardised coefficients, standard errors and 95% confidence intervals were reported. Sensitivity analyses compared models with and without covariates and examined influence diagnostics, including Cook's distance.

Results

Preliminary Analyses

Participant flow from the original Wave 5 sample to the adjusted mediation analyses is shown in Figure 2. Descriptive statistics for the analytic sample are presented in Table 1a. Wave 5 baseline characteristics by Wave 6 retention status are presented in Table 1b.

Figure 2

Participant Flow From Wave 5 Baseline Sample To Adjusted Mediation Analyses.

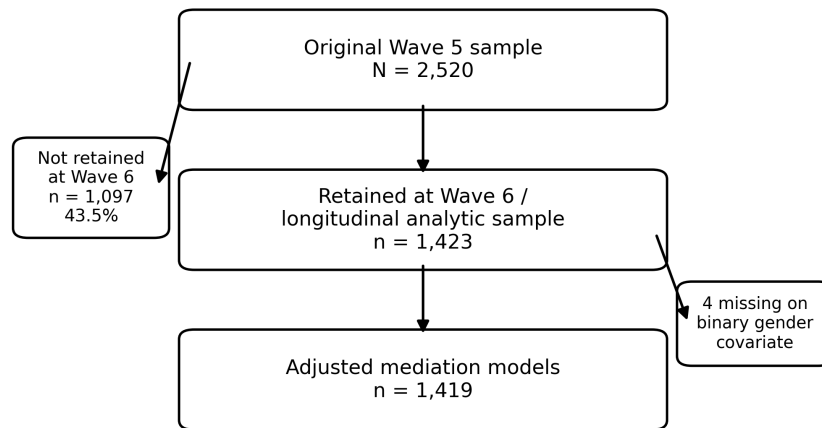


Table 1a

Participant Characteristics and Descriptive Statistics for Study Variables

Variable	n / N	%	M	SD	Min	Max
Age	1,423	—	49.43	15.08	18.00	89.00
Parent status: non-parent	1,099	77.2	—	—	—	—
Parent status: parent	324	22.8	—	—	—	—
Gender: male	706	49.8	—	—	—	—
Gender: female	713	50.2	—	—	—	—

Insomnia Score	1,423	—	4.74	3.47	0.00	12.00
Depressive symptoms, Wave 5	1,423	—	5.34	6.28	0.00	27.00
Anxiety symptoms, Wave 5	1,423	—	4.24	5.49	0.00	21.00
Depressive symptoms, Wave 6	1,423	—	4.90	6.05	0.00	27.00
Anxiety symptoms, Wave 6	1,423	—	3.95	5.27	0.00	21.00

Note. Parenting status was coded 0 = non-parent and 1 = parent. Binary gender was coded 0 = male and 1 = female. Participants who selected transgender, prefer not to say, other, or had missing gender data were treated as missing for the binary gender variable; therefore, gender percentages are based on valid N = 1,419.

Table 1b

Wave 5 Baseline Characteristics by Wave 6 Retention Status

Wave 5 variable	Longitudinal Analytic Sample (W5 participants retained at W6) n = 1,423	Not retained at W6, n = 1,097	Total W5 sample, N = 2,520	<i>p</i>
Age, M (SD)	49.43 (15.08)	53.89 (14.73)	51.37 (15.09)	< .001
Non-parent, n (%)	1,099 (77.2)	904 (82.4)	2,003 (79.5)	.001
Parent, n (%)	324 (22.8)	193 (17.6)	517 (20.5)	—
Male, n (%)	706 (49.8)	561 (51.3)	1,267 (50.4)	.448
Female, n (%)	713 (50.2)	533 (48.7)	1,246 (49.6)	—
Insomnia symptoms, M (SD)	4.74 (3.47)	4.91 (3.63)	4.81 (3.54)	.222

Depressive symptoms, M (SD)	5.34 (6.28)	5.63 (6.23)	5.47 (6.26)	.238
Anxiety symptoms, M (SD)	4.24 (5.49)	4.52 (5.55)	4.36 (5.52)	.216

Note. Percentages are calculated within each column. Parenting-status percentages use the full sample available in each column. Binary-gender percentages use valid binary-gender data within each column: retained, $n = 1,419$; not retained, $n = 1,094$; total Wave 5 sample, $n = 2,513$. Seven participants in the total Wave 5 sample were missing from the binary gender variable. p values compare participants retained at Wave 6 with those not retained. Continuous variables were compared using independent-samples t -tests; categorical variables were compared using Pearson's chi-square tests.

Compared with participants not retained at Wave 6, retained participants were significantly younger and were more likely to be coded as parents of a resident child under 18. Retention was not significantly associated with binary gender. Although retained participants had slightly lower mean Wave 5 insomnia, depressive, and anxiety symptom scores than those not retained, these differences were not statistically significant.

Differences between parents and non-parents on key variables

Independent samples t -tests were used to compare parents and non-parents on continuous study variables. Parents were significantly younger than non-parents, Welch's $t(915.05) = 14.06$, $p < .001$. Parents also reported slightly lower Wave 5 insomnia symptoms than non-parents, Welch's $t(573.19) = 2.20$, $p = .028$. There were no statistically significant parent/non-parent differences in Wave 5 depressive symptoms, Wave 5 anxiety symptoms, Wave 6 depressive symptoms, or Wave 6 anxiety symptoms. A chi-square test indicated that parenting status was significantly associated with binary gender, $\chi^2(1, N = 1,419) = 6.53$, $p =$

.011, although the association was small, $\phi = .068$. A greater proportion of females than males were classified as parents: 25.7% of females compared with 20.0% of males.

Table 2

Parent/Non-Parent Differences in Study Variables

Variable	Non-parent, n = 1,099 M (SD)	Parent, n = 324 M (SD)	t(df)	p
Age, Wave 5	51.67 (15.73)	41.85 (9.23)	14.06 (915.05)	< .001
Insomnia symptoms, Wave 5	4.84 (3.54)	4.38 (3.22)	2.20 (573.19)	.028
Depressive symptoms, Wave 5	5.30 (6.34)	5.45 (6.08)	-0.36 (1421)	.719
Anxiety symptoms, Wave 5	4.22 (5.56)	4.31 (5.26)	-0.26 (1421)	.798
Depressive symptoms, Wave 6	4.79 (6.00)	5.29 (6.21)	-1.31 (1421)	.191
Anxiety symptoms, Wave 6	3.84 (5.27)	4.32 (5.26)	-1.46 (1421)	.145

Note. Parenting status was coded 0 = non-parent and 1 = parent. Welch's t-tests are reported where Levene's test indicated unequal variances.

Primary mediation analyses

Two longitudinal mediation models were estimated using PROCESS Model 4 with 5,000 bootstrap samples and 95% confidence intervals. In both models, Wave 5 parenting status was entered as the predictor and Wave 5 insomnia symptoms as the mediator. The first model predicted Wave 6 depressive symptoms while controlling for Wave 5 depressive symptoms, age, and gender. The second model predicted Wave 6 anxiety symptoms while controlling for Wave 5 anxiety symptoms, age, and gender. Total, direct, and indirect effects

are summarised in Table 3. The adjusted mediation models are also shown visually in Figure 3.

Depressive symptoms

The adjusted depression model explained 59.6% of the variance in Wave 6 depressive symptoms. Parenting status was negatively associated with Wave 5 insomnia symptoms, although this association was not statistically significant, $b = -0.34$, $p = .089$. Higher Wave 5 insomnia symptoms were significantly associated with higher Wave 6 depressive symptoms, controlling for parenting status and covariates, $b = 0.20$, $p < .001$.

The total effect of parenting status on Wave 6 depressive symptoms was not statistically significant, $b = 0.27$, $p = .292$. The direct effect was also not statistically significant, $b = 0.34$, $p = .184$. The indirect effect via insomnia symptoms was negative but not statistically significant, $b = -0.07$, 95% BCa CI $[-0.17, 0.003]$.

Anxiety symptoms

The adjusted anxiety model explained 62.2% of the variance in Wave 6 anxiety symptoms. Parenting status was not significantly associated with Wave 5 insomnia symptoms, $b = -0.30$, $p = .129$. Higher Wave 5 insomnia symptoms were significantly associated with higher Wave 6 anxiety symptoms, controlling for parenting status and covariates, $b = 0.06$, $p = .028$.

The total effect of parenting status on Wave 6 anxiety symptoms was not statistically significant, $b = 0.27$, $p = .209$. The direct effect was also not statistically significant, $b = 0.29$, $p = .178$. The indirect effect via insomnia symptoms was also not statistically significant, $b = -0.02$, 95% BCa CI $[-0.07, 0.001]$.

Table 3

Summary of Longitudinal Mediation Models

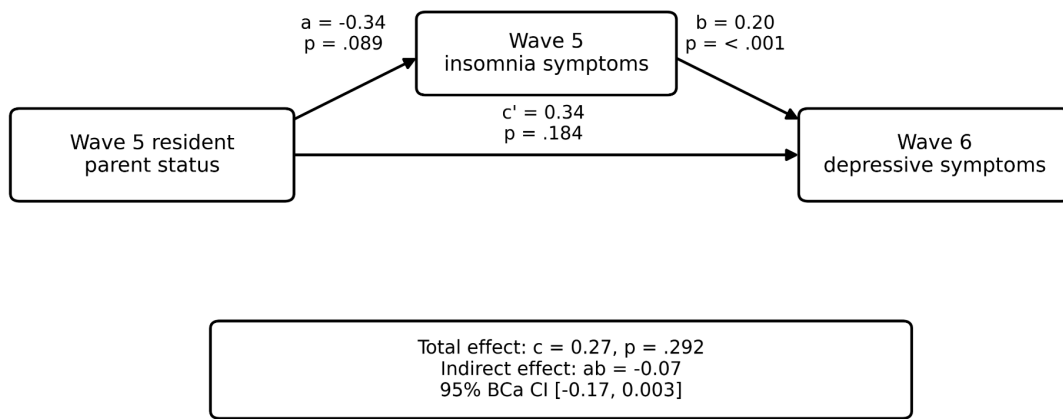
Outcome	Model	Outcome model R ²	a path: Parent → insomnia a b (SE)	b path: Insomnia a → outcome b (SE)	Total effect c b (SE)	Direct effect c' b (SE)	Indirect effect ab	95% BCa CI
W6 Depression	Adjusted	.596	-0.34 (0.20)	0.20 (0.03)***	0.27 (0.26)	0.34 (0.25)	-0.07	[-0.17, 0.003]
W6 Anxiety	Adjusted	.622	-0.30 (0.20)	0.06 (0.03)*	0.27 (0.21)	0.29 (0.21)	-0.02	[-0.07, 0.001]
W6 Depression	Unadjusted	.201	-0.46 (0.22)*	0.78 (0.04)***	0.50 (0.38)	0.86 (0.34)*	-0.36	[-0.70, -0.05]
W6 Anxiety	Unadjusted	.158	-0.46 (0.22)*	0.60 (0.04)***	0.49 (0.33)	0.76 (0.31)*	-0.27	[-0.54, -0.03]

Note. Adjusted models controlled for age, gender, and the corresponding baseline symptom score. R² values refer to the outcome model only. Indirect effects were estimated using 5,000 bias-corrected bootstrap samples. Parenting status was coded 0 = non-parent and 1 = parent. Gender was coded 0 = male and 1 = female. Adjusted models used N = 1,419 due to four missing cases on the binary gender covariate; unadjusted models used N = 1,423. *p < .05. **p < .01. ***p < .001.

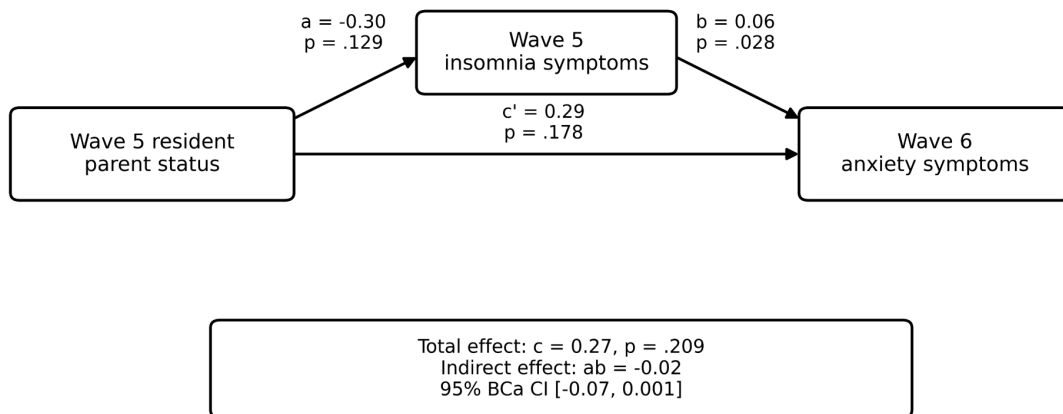
Figure 3

Adjusted mediation models for depressive and anxiety symptoms.

Panel A



Panel B



Note. Panel A shows the model for depressive symptoms; Panel B shows the model for anxiety symptoms. Models controlled for age, binary gender, and corresponding baseline symptom score. Coefficients are unstandardised. Indirect effects were estimated using 5,000 bias-corrected bootstrap samples.

Sensitivity analyses

Sensitivity analyses were conducted by re-estimating both mediation models without covariates, as specified in the protocol. In these unadjusted models, the a path from parenting

status to Wave 5 insomnia symptoms was identical across the depression and anxiety models and showed that parenting status significantly predicted lower Wave 5 insomnia symptoms, $b = -0.46$, $p = .021$, although parenting status explained only 0.3% of the variance in insomnia scores. Insomnia symptoms significantly predicted higher Wave 6 depressive and anxiety symptoms, and the indirect effects via insomnia were negative and statistically significant for both outcomes: depression, $b = -0.36$, 95% BCa CI $[-0.70, -0.05]$, and anxiety, $b = -0.27$, 95% BCa CI $[-0.54, -0.03]$.

In contrast, the total effects of parenting status on later depressive and anxiety symptoms were not statistically significant, while the direct effects were positive and statistically significant. This pattern is consistent with an inconsistent mediation or suppression pattern, whereby opposing pathways may have partially cancelled one another out. However, following covariate adjustment, the indirect effects were no longer statistically significant for either depressive or anxiety symptoms.

Assumption checks

Assumptions relevant to OLS regression were examined for the adjusted models. Variance inflation factors indicated no evidence of problematic multicollinearity, with all VIFs below 1.40. Cook's distance values were low for both models, with maximum values of .077 for depression and .070 for anxiety, suggesting that findings were not unduly driven by a small number of influential cases.

Inspection of residual plots indicated some departures from normality and homoscedasticity, consistent with the bounded and positively skewed distribution of depressive and anxiety symptom scores. Given the large sample size and the use of bootstrapped confidence intervals for indirect effects, the mediation findings were interpreted with appropriate caution.

Exploratory gender interaction analyses

Exploratory supplementary regressions tested whether binary gender moderated associations between parenting status and Wave 5 insomnia symptoms or Wave 6 psychological distress. Parenting status $\times$ gender interactions were non-significant in all models: insomnia symptoms with depression covariate, $b = 0.30$, $SE = 0.39$, $p = .435$; insomnia symptoms with anxiety covariate, $b = 0.16$, $SE = 0.39$, $p = .678$; Wave 6 depressive symptoms, $b = -0.10$, $SE = 0.49$, $p = .833$; and Wave 6 anxiety symptoms, $b = -0.07$, $SE = 0.41$, $p = .861$. These exploratory analyses provided no evidence that the associations differed by binary gender, full results are reported in Appendix I.

Discussion

The present study examined whether insomnia symptoms measured in March/April 2021 mediated the association between being a parent of a child living at home, also measured in March/April 2021, and psychological distress approximately 4–5 months later, in August/September 2021. Models controlled for baseline psychological distress, age and gender. The hypotheses that parents would report higher insomnia symptoms and that insomnia symptoms would mediate the association between parenting status and later psychological distress were rejected. The hypothesis that greater insomnia symptoms would predict higher later depressive and anxiety symptoms was supported. Parenting status was not significantly associated with later depressive or anxiety symptoms, and the adjusted indirect effects via insomnia symptoms were not statistically significant for either outcome. However, higher insomnia symptoms in March/April 2021 were associated with higher depressive and anxiety symptoms approximately 4–5 months later, even after adjustment for baseline symptoms and demographic covariates. Taken together, the findings support the prospective relevance of insomnia-type sleep difficulties to later distress, but not the proposed parenting–insomnia–distress pathway.

The clearest and most consistent finding was that greater insomnia symptoms at baseline predicted poorer psychological outcomes approximately 4–5 months later. In the adjusted models, higher insomnia symptoms were associated with higher later depressive and anxiety symptoms even after controlling for baseline symptom levels. This pattern is consistent with wider evidence suggesting that sleep difficulties are not only concurrent correlates of poor mental health, but may also be involved in its persistence or worsening over time, particularly in relation to depression and across diagnostic groupings more broadly (Baglioni et al., 2011; Harvey, 2011; Dolsen et al., 2014; Freeman et al., 2020). Possible

mechanisms include heightened emotional reactivity, reduced coping capacity, impaired concentration and problem-solving, and diminished recovery from daily stressors (Harvey, 2011; Palmer & Alfano, 2017). The present findings are therefore consistent with the broader conceptualisation of sleep problems as clinically meaningful prospective correlates of subsequent emotional difficulties.

The findings for parenting status ran counter to the original hypothesis. In bivariate comparisons, parents were significantly younger than non-parents and reported slightly lower baseline insomnia symptoms. However, this difference was small, and parents did not differ significantly from non-parents on baseline depressive symptoms, baseline anxiety symptoms, later depressive symptoms or later anxiety symptoms. Parenting status was also significantly associated with binary gender, although the association was small, with a higher proportion of females than males classified as parents. Overall, the results did not provide evidence that being a parent of a child living at home was associated with greater insomnia symptoms or greater later psychological distress.

Importantly, this absence of the hypothesised associations should not be attributed solely to limitations in measurement or study design. Although those limitations restrict the precision of the conclusions, the findings are also consistent with the possibility that the original parenting-related hypotheses were incorrect. Co-residing parenting status may not, in itself, confer greater risk of insomnia symptoms or later psychological distress, and insomnia may not represent a general mechanism linking parenting status with distress. Sleep and psychological outcomes may instead depend more strongly on specific caregiving demands, family circumstances and individual differences than on parenting status alone.

This interpretation is supported by the magnitude of the parenting–insomnia association. Although parents reported slightly lower insomnia symptoms than non-parents in

bivariate comparisons, and parenting status significantly predicted lower insomnia symptoms in the unadjusted mediation models, the effect was very small. Parenting status explained only 0.3% of the variance in insomnia scores. The statistically significant unadjusted association should therefore not be interpreted as evidence of a clinically meaningful difference in sleep between parents and non-parents, or as evidence that parenting was protective for sleep. Rather, co-residing parent status had limited explanatory value for insomnia symptoms in this sample.

At the same time, the parenting variable was necessarily broad. Participants were classified as parents if they had a child under 18 years of age primarily living in their household. This reduced a heterogeneous set of caregiving experiences into a single category: parents of infants, toddlers, school-aged children and adolescents were classified identically despite likely experiencing very different sleep demands. The absence of detailed child age, number of children and caregiving-intensity data therefore limited the ability to distinguish family contexts in which parenting-related sleep disruption may differ meaningfully (Meltzer & Mindell, 2007; Richter et al., 2019; Varma et al., 2020). The present results therefore indicate that broad co-residing parent status did not function as a useful marker of increased insomnia-related risk; they do not establish that particular caregiving circumstances are unrelated to sleep.

A further consideration is that the parenting variable may have captured a particular household role rather than caregiving burden in any simple sense. The parent category represented co-residing parents of dependent minors, while excluding parents whose children primarily lived elsewhere, parents of only adult children and those living with someone else's child without endorsing the resident-child-under-18 category. During the pandemic, co-residing parent status may have indexed not only practical caregiving demands but also

greater household structure, daily routine, interpersonal contact and role continuity during a period of social disruption. For some individuals these features may have been sources of strain; for others they may have offered protection against loneliness, loss of routine or social isolation. Although this interpretation remains speculative and could not be tested directly, it suggests that parenting status may have represented a more mixed social position than a straightforward marker of burden.

The mediation findings should therefore be interpreted in light of both the null parenting association and the supported insomnia–distress association. In both adjusted models, the indirect effect of parenting status on later depressive or anxiety symptoms via baseline insomnia symptoms was negative but not statistically significant. The absence of mediation primarily reflected the lack of the expected positive association between parenting status and insomnia symptoms rather than an absence of association between insomnia and later distress. This distinction is important because the findings do not undermine the broader relevance of sleep to psychological distress; rather, they reject the specific hypothesis that co-residing parenting operated through insomnia symptoms to predict later distress.

The unadjusted sensitivity analyses showed a different but still unexpected pattern. Parenting status significantly predicted lower insomnia symptoms, insomnia symptoms predicted higher later depressive and anxiety symptoms, and the indirect effects via insomnia were negative and statistically significant for both outcomes. At the same time, the total effects of parenting status on later depressive and anxiety symptoms were not statistically significant, while the direct effects were positive and statistically significant. This combination is consistent with an inconsistent mediation or suppression pattern, whereby opposing pathways may partially cancel one another out (MacKinnon et al., 2000; Rucker et al., 2011). However, the pattern was attenuated after covariate adjustment and the adjusted

indirect effects were no longer statistically significant. The unadjusted suppression pattern should therefore not be treated as evidence for the hypothesised parenting–insomnia–distress pathway.

The attenuation of effects following covariate adjustment is an important part of the interpretation. By controlling for baseline depressive and anxiety symptoms, the adjusted models tested whether parenting status and insomnia symptoms were associated with later distress over and above prior symptom levels. In effect, these models were closer to predicting residual change in symptoms than raw follow-up symptom levels. This is a methodological strength, although effect sizes would be expected to diminish given the strong associations between baseline and follow-up depression and anxiety. The weakening of effects after adjustment suggests that part of the unadjusted pattern reflected age, gender and pre-existing symptom levels. The adjusted models therefore provide the most appropriate basis for the central conclusions.

An important conceptual issue concerns the sleep variable itself. In the present study, sleep was indexed using an insomnia score rather than a comprehensive measure of sleep quality. Sleep quality is a broad, multidimensional construct encompassing features such as perceived restorativeness, continuity, duration, efficiency, timing and overall satisfaction, whereas insomnia measures focus more narrowly on difficulties initiating or maintaining sleep, early waking and associated impairment (Buysse, 2014; Harvey, 2011; Grandner, 2017). The present findings should therefore be interpreted specifically in relation to insomnia-type symptoms rather than sleep quality in its broadest sense.

This distinction is particularly relevant in the context of parenting. Parents of young children may experience disrupted sleep because they are repeatedly woken by external caregiving demands rather than because they have difficulty initiating or maintaining sleep

when given the opportunity. Such disruption may be highly impairing but may not map neatly onto insomnia symptomatology (Meltzer & Mindell, 2007; Varma et al., 2020; Park et al., 2022). The insomnia score may therefore not have captured the full range of caregiving-related sleep disruption. However, this limitation should not be taken as evidence that the expected positive parenting–sleep association necessarily existed but went undetected; the results remain compatible with the alternative conclusion that parenting status itself was not meaningfully associated with insomnia symptoms in this sample.

More broadly, the findings illustrate both the value and limitations of testing theoretically plausible models using secondary data. The study benefitted from a large longitudinal sample and preregistered analyses, but the available variables constrained the precision with which parenting-related sleep burden could be operationalised. Null and unexpected findings should therefore be interpreted within those measurement constraints without assuming that methodological limitations necessarily account for the absence of the hypothesised effects.

The pandemic context also deserves consideration. Data were collected in March/April 2021 and August/September 2021, when work patterns, schooling, childcare routines, family stress and mental health remained affected by unusual social conditions (Prime et al., 2020; O'Connor et al., 2021). For some parents, increased time at home may have increased caregiving demands and reduced opportunities for rest; for others, remote working or reduced commuting may have increased flexibility. Non-parents may meanwhile have experienced other stressors, including isolation, disrupted routines or economic uncertainty. These conditions may have altered the usual patterning of sleep and distress and limit comparison with non-pandemic populations. They do not, however, alter the finding that

co-residing parent status was not associated with greater insomnia symptoms or later psychological distress within the period studied.

Strengths and limitations

The study had several strengths. It used a relatively large longitudinal dataset and a preregistered analytic approach, reducing the risk of post hoc decision-making. Importantly, the mediation model was retained because it reflected the preregistered, theory-led analytic plan; the absence of support for the hypothesised pathway was therefore interpreted as a substantive finding rather than as a reason to revise the primary model after observing the results. The inclusion of baseline depressive and anxiety symptoms provided a more stringent test of prospective associations than cross-sectional analyses or models without adjustment for prior symptoms. Bootstrapped confidence intervals strengthened inference regarding indirect effects, sensitivity analyses demonstrated the extent to which findings changed following covariate adjustment, and assumption checks indicated no problematic multicollinearity or undue influence from a small number of observations.

These strengths should be considered alongside several limitations. First, attrition between March/April and August/September 2021 was substantial, with 43.5% of Wave 5 participants not retained at Wave 6. Retained participants differed from those not retained: they were younger on average, slightly more likely to be classified as parents of a resident child under 18, and reported slightly lower baseline insomnia, depressive and anxiety symptoms. The longitudinal analytic sample may therefore underrepresent participants with higher baseline distress or sleep difficulties, limiting generalisability and potentially influencing estimated associations. The available analyses cannot determine the precise direction or magnitude of any attrition-related bias.

The study was also constrained by the measures available within the secondary dataset. As discussed above, parenting status was a broad binary indicator and sleep was measured using an insomnia score that may not have captured externally driven sleep fragmentation or restricted sleep opportunity. These measurement constraints limit the specificity of conclusions about parenting-related sleep burden but should be distinguished from the substantive finding that the hypothesised associations were not observed.

Although the design was longitudinal in relation to the outcome, parenting status and insomnia symptoms were both measured in March/April 2021. The hypothesised ordering was theoretically plausible because parenting status reflects a relatively stable household role whereas insomnia symptoms reflect current sleep difficulties, but there was no temporal separation between predictor and mediator. Indirect effects should therefore be interpreted as associative rather than causal. A three-wave design separating caregiving context, sleep and psychological distress would provide a stronger test of mediation. This was not possible because the relevant sleep measure was unavailable at Wave 4 and Wave 7 data were unavailable for the present analysis. The use of Waves 5 and 6 therefore reflected the strongest feasible longitudinal design using the available variables, while a three-wave analysis would also likely have further reduced sample size through additional attrition.

All variables were self-reported, introducing possible reporting and shared-method biases. Although age, gender and baseline symptoms were included as covariates, the analysis could not account for all potentially relevant confounders, including socioeconomic circumstances, employment status, relationship status, ethnicity, physical health, household composition and caregiving intensity. Some broader contextual variables were available within C19PRC but were not included in the preregistered model. Retaining the planned model avoided adding post hoc covariates after observing the results, although residual

confounding may remain. Gender was also modelled as binary because of small numbers endorsing other categories, meaning gender diversity could not be meaningfully represented. Finally, the pandemic-specific context may limit generalisability to non-pandemic settings.

Clinical implications

The rejection of the parenting-related hypotheses has implications for practice. The findings do not support assuming that co-residing parents are at greater risk of insomnia or later psychological distress simply because they are parents, or targeting parents as a broad risk group on this basis. Assessment and formulation should instead consider the specific circumstances associated with distress, including caregiving intensity, night-time demands, household arrangements and wider contextual stressors.

Insomnia symptoms nevertheless remained prospectively associated with later depressive and anxiety symptoms. Clinicians may therefore benefit from assessing sleep difficulties directly rather than assuming they are secondary, incidental or adequately inferred from parenting status. In particular, formulation may need to distinguish insomnia-type difficulties from externally driven sleep fragmentation or restricted sleep opportunity associated with caregiving, as these may involve different maintaining processes and intervention needs (Freeman et al., 2020; Park et al., 2022). Clinically, this means moving beyond whether someone is a parent to consider how caregiving is organised, whether sleep opportunity is restricted and whether sleep difficulties are internally maintained, externally driven or both.

The clinical implications should not be overstated. The present study does not establish that treating insomnia would reduce later depressive or anxiety symptoms, nor does it show that parenting is irrelevant to psychological distress. Rather, it suggests that broad co-residing parenting status alone was not a useful marker of sleep-related or psychological

risk in this sample and supports a more individualised approach to assessment and formulation.

Future research

Future research would benefit from more refined measurement of parenting and sleep. Studies should distinguish between parents of children at different developmental stages and, where possible, include indicators of caregiving intensity, number of night-time disruptions and responsibility for overnight care. Sleep measures should extend beyond insomnia symptoms to include sleep duration, fragmentation, sleep opportunity and broader perceived sleep quality, ideally combining self-report and objective methods where feasible. There may also be value in developing and validating parent-focused sleep measures that better capture externally driven night waking and fragmented sleep opportunity.

A three-wave longitudinal design would allow stronger tests of mediation by temporally separating predictor, mediator and outcome. Future work should also examine whether associations differ by factors such as gender, child age, lone versus partnered parenting or broader caregiving burden, while remaining open to the possibility that no uniform parenting–sleep–distress pathway exists.

Future studies should also give greater attention to attrition and representativeness in longitudinal datasets. Weighting, multiple imputation or sensitivity analyses may be useful where their assumptions are justified and may help establish whether findings are robust to differential retention.

Conclusion

The hypotheses that parents would report greater insomnia symptoms and that insomnia would mediate an association between parenting status and subsequent

psychological distress were rejected. In contrast, the hypothesis that greater insomnia symptoms would predict higher later depressive and anxiety symptoms was supported. In the adjusted models, parenting status was not significantly associated with insomnia symptoms or later psychological distress, and indirect effects through insomnia were not statistically significant. Unadjusted sensitivity analyses showed negative indirect effects through insomnia, but these were opposite in direction to the original hypothesis and were attenuated after covariate adjustment.

Although measurement and design limitations constrain the precision and generalisability of these conclusions, the findings are also consistent with the possibility that the proposed parenting–insomnia–distress pathway was incorrect. Insomnia symptoms nevertheless remained associated with later depressive and anxiety symptoms, supporting their relevance as an individual clinical factor. Overall, the findings support direct assessment of sleep and specific caregiving circumstances rather than assuming a general pathway from co-residing parenting through insomnia to later psychological distress.

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Appendices

Appendix A: *Letter from the University Research Ethics Committee*



Downloaded: 25/05/2026
Approved: 10/04/2026

Caitlin Lastra
Registration number: 200183714
Psychology
Programme: DClinPsy

Dear Caitlin

PROJECT TITLE: Sleep Quality as a Longitudinal Mediator Between Parenting Status and Psychological Distress During the COVID-19 Pandemic: A Secondary Analysis of C19PRC Waves 5 and 6 Data
APPLICATION: Reference Number 073470

This letter confirms that you have signed a University Research Ethics Committee-approved self-declaration to confirm that your research will involve only existing research, clinical or other data that has been robustly anonymised. You have judged it to be unlikely that this project would cause offence to those who originally provided the data, should they become aware of it.

As such, on behalf of the University Research Ethics Committee, I can confirm that your project can go ahead on the basis of this self-declaration.

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since full ethical review may be required.

Yours sincerely

Department Of Psychology Research Ethics Committee
Departmental Ethics Administrator

Appendix B: *Participant Information Sheet*

Participant Information Sheet

The COVID-19 pandemic in the UK: One year since lockdown

Last year, you participated in one or more surveys examining the possible psychological and social effects of the coronavirus (COVID-19) pandemic - thank you. Your participation is greatly appreciated and has been invaluable in helping us to understand the UK's experience of the pandemic. It has now been one year since the UK government first imposed a 'lockdown'. We would like to now invite you to participate in a follow-up survey for this same study. Before you decide whether you would like to take part, please read the following information to ensure that you understand what it involves.

What is the purpose of the study and what does it involve? This survey is part of a wider study to understand how the pandemic is affecting the lives of ordinary people over time. We hope that the findings from this survey will be used to make recommendations about how to best manage this and future pandemics and similar crises. We are therefore asking you to complete a series of questionnaires online, which you will be taken to after this invitation. We will ask you about your experiences of the pandemic (e.g. whether you have been infected with coronavirus), your knowledge and attitudes towards the coronavirus pandemic (e.g. what are your thoughts about a vaccine for the coronavirus); your health and well-being (e.g., physical health, mood, fears, unusual experiences) and your home life during the pandemic, as well as your social attitudes (e.g., political beliefs).

We will also ask you about some topics which may be considered sensitive (e.g. difficult childhood experiences) but you do not have to complete this section of the survey and will have the option to skip these questions.

You may have answered some of these questions in previous surveys you completed; however, it will be very helpful to us if you answer these questions again so that we can understand how your views may be changing during the pandemic. The survey will take you

approximately 30 minutes to complete. We may contact you again in the future to further understand how your life is affected as the months pass, but you will be free to refuse to participate at that stage if you then decide that you no longer want to be involved in this study.

Do I have to take part? Participation is on a voluntary basis. If you do decide to take part, you can withdraw at any time. You will not be asked to provide a reason for withdrawing.

What are the possible disadvantages and risks of taking part? We anticipate no risk of harm from taking part in this study, although some of the questions may be quite personal. If for any reason you experience any discomfort and feel that you can no longer continue, you may withdraw from the study by just shutting down the browser. If you are worried about COVID-19, you might find it helpful to visit the UK Government's COVID-19 website <https://www.gov.uk/coronavirus>. If you are concerned or distressed by any of the topics covered in the survey, you might find it helpful to seek support from your GP.

Will my participation in this project be kept confidential? Your data will be treated as anonymous, and you will not be identifiable by the information that you provide to us.

However, we will record your computer's IP address. We will use the IP address (and the first part of your postcode which you may have provided during a previous survey) to locate the neighbourhood in which you live and to find out what kind of area it is; for example, how many people live in your area and how many people from your area become ill due to COVID-19 in the future. Once we have this information, we will erase your postcode information and IP address from the database. Hence, there will be no possibility of linking the information you provide directly back to you.

We will share the data with other scientists who may want to use it. However, we will require them to observe the highest ethical standards when using it.

What is the legal basis for processing my personal data? According to data protection

legislation, we are required to inform you that the legal basis we are applying in order to process your data is that ‘processing is necessary for the performance of a task carried out in the public interest’ (Article 6(1)(e)). Further information can be found in the University’s Privacy Notice <https://www.sheffield.ac.uk/govern/dataprotection/privacy/general>

Who is organising and funding the research? Researchers at the University of Sheffield, Ulster University, University of Liverpool, and University College London are conducting this study. It is funded by the UK Research and Innovation’s Economic and Social Research Council.

Who is the Data Controller? The University of Sheffield is the Data Controller for this study. This means that University of Sheffield is responsible for looking after your information and using it properly.

What will happen to the data collected, and the results of the research project? When the results of the study are published in a scientific journal, you will not be identifiable. Your data will be stored anonymously, with all personal information removed.

Who has ethically reviewed the project? Ethical approval was obtained from the University of Sheffield, Department of Psychology Ethics Committee.

What if something goes wrong and I wish to complain about the research? If you have any concerns or complaints about the study, you may contact Dr Sarah Butter (s.butter@sheffield.ac.uk) directly.

Also, you can contact the chief investigator: Professor Richard Bentall (r.bentall@sheffield.ac.uk)

Alternatively, if your complaint has not been handled to your satisfaction you may contact Professor Elizabeth Milne (Head of the Psychology Department; psy-hod@sheffield.ac.uk).

Contact for further information: If you have any questions regarding this study, please feel free to contact Sarah Butter or the chief investigator Richard Bentall (details provided above).

Thank you for taking part in this study.

Appendix C: Participant Consent

CONSENT TO TAKING PART

Please read and tick the statements below to indicate your consent to take part in the research.

You must agree to all of these statements in order to participate.

Please tick the appropriate boxes

Taking Part in the Project

Consent1 I have read and understood the project information page. (If 'No' survey terminated.)

☐ Yes

☐ No

Skip To: End of Block If I have read and understood the project information page. (If 'No' survey terminated.) = No

Consent2 I understand that my taking part is voluntary and that I can withdraw from the study at any time while I am completing the survey; I do not have to give any reasons for why I no longer want to take part and there will be no adverse consequences if I choose to withdraw. (If 'No' survey terminated.)

☐ Yes

☐ No

Skip To: End of Block If I understand that my taking part is voluntary and that I can withdraw from the study at any time... = No

Consent3 I understand that my geolocation data is going to be collected as part of demographic information and that this data will be treated as strictly confidential. (If 'No' survey terminated.)

☐ Yes

☐ No

Skip To: End of Block If I understand that my geolocation data is going to be collected as part of demographic information... = No

How my information will be used during and after the project

Consent4 I understand and agree that other authorised researchers will have access to the data from this survey only if they agree to preserve the confidentiality of the information as requested in this form. (If 'No' survey terminated.)

☐ Yes

☐ No

Skip To: End of Block If I understand and agree that other authorised researchers will have access to the data from this s... = No

Consent5 I understand that no information that identifies me will be revealed in any reports or publications that arise from this survey. (If 'No' survey terminated.)

☐ Yes

☐ No

Skip To: End of Block If I understand that no information that identifies me will be revealed in any reports or publication... = No

Consent6 **Project contact details for further information:** Prof. Richard Bentall (Primary Researcher; email: r.bentall@sheffield.ac.uk) Dr Sarah Butter (Researcher; email: s.butter@sheffield.ac.uk) Prof. Elizabeth Milne (Head of Psychology Department; psy-hod@sheffield.ac.uk)

Address: Cathedral Court, 1 Vicar Lane, S1 2LT

Appendix D: *Sleep Disorders Symptom Checklist-17 Items 1-4 (Insomnia Subscale)*

Over the past year...

	Never	Seldom (Once a year)	Sometimes (1 - 3 times per month)	Often (1 - 3 times per week)	Frequently (More than 3 times per week)
It takes me 30 minutes or more to fall asleep.	☐	☐	☐	☐	☐
I am awake 30 minutes or more during the night.	☐	☐	☐	☐	☐
I am awake 30 minutes or more prior to my scheduled wake time or alarm.	☐	☐	☐	☐	☐
I am tired, fatigued or sleepy during the day.	☐	☐	☐	☐	☐

Appendix E: Patient Health Questionnaire-9

Patient Health Questionnaire-9

Over the last two weeks, how often have you been bothered by the following problems?

	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things	0	0	0	0
Feeling down, depressed, or hopeless	0	0	0	0
Trouble falling or staying asleep, or sleeping too much	0	0	0	0
Feeling tired or having little energy	0	0	0	0
Poor appetite or overeating	0	0	0	0
Feeling bad about yourself - or that you are a failure or have let yourself or your family down	0	0	0	0
Trouble concentrating on things, such as reading the newspaper or watching television	0	0	0	0
Moving or speaking so slowly that other people have noticed? Or the opposite - being so fidgety or restless that you have been moving around more than usual	0	0	0	0
Thoughts that you would be better off dead or of hurting yourself in some way	0	0	0	0

Appendix F: Generalized Anxiety Disorder -7

	Not at all	Several days	More than half the days	Nearly every day
Feeling nervous, anxious or on edge	o	o	o	o
Not being able to stop or control worrying	o	o	o	o
Worrying too much about different things	o	o	o	o
Trouble relaxing	o	o	o	o
Being so restless that it is hard to sit still	o	o	o	o
Becoming easily annoyed or irritable	o	o	o	o
Feeling afraid as if something awful might happen	o	o	o	o

Appendix G: Parenting Status

Parent/Child_home

Please indicate which of these statements apply to your parental status and living situation (tick multiple if needed).

- ☐ I do not have any children
- ☐ I have a child/children under 18 years of age, and he/she/they primarily live with me in my household
- ☐ I have a child/children under 18 years of age, but he/she/they primarily live elsewhere
- ☐ I have a child/children aged 18 years or over, and he/she/they primarily live with me in my household
- ☐ I have a child/children aged 18 years or over, but he/she/they primarily live elsewhere
- ☐ Someone else's child/children under 18 years of age lives with me in my household

Appendix H: *Socioeconomic characteristics*

Age: What is your age?

- ☐ 18-24 years
- ☐ 25-34 years
- ☐ 35-44 years
- ☐ 45-54 years
- ☐ 55-64 years
- ☐ 65 years and over

Gender: What is your Gender?

- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Prefer not to say
- ☐ Other

Appendix I: Exploratory Gender Interaction Analyses (Supplementary)

Exploratory supplementary regression analyses were conducted to test whether binary gender moderated associations between parenting status and Wave 5 insomnia symptoms or Wave 6 psychological distress. These analyses were supplementary to the primary mediation models and were not preregistered. Parenting status was coded as 0 = non-parent and 1 = parent.

Gender was coded as 0 = male and 1 = female. A parenting status $\times$ gender interaction term was entered into each model alongside the covariates used in the corresponding adjusted analyses.

As shown in Table I1, parenting status $\times$ gender interactions were non-significant in all models. These analyses therefore provided no evidence that the associations between parenting status and insomnia symptoms, depressive symptoms or anxiety symptoms differed by binary gender.

Table I1
Exploratory Parenting Status $\times$ Gender Interaction Analyses

Outcome	Model covariates	Interaction term	b	SE	p
Wave 5 insomnia symptoms	Age, gender, parenting status, Wave 5 depressive symptoms	Parenting status $\times$ gender	0.30	0.39	.435
Wave 5 insomnia symptoms	Age, gender, parenting status, Wave 5 anxiety symptoms	Parenting status $\times$ gender	0.16	0.39	.678
Wave 6 depressive symptoms	Age, gender, parenting status, Wave 5 insomnia symptoms, Wave 5 depressive symptoms	Parenting status $\times$ gender	-0.10	0.49	.833
Wave 6 anxiety symptoms	Age, gender, parenting status, Wave 5 insomnia symptoms, Wave 5 anxiety symptoms	Parenting status $\times$ gender	-0.07	0.41	.861

Note. Parenting status was coded as 0 = non-parent and 1 = parent. Gender was coded as 0 = male and 1 = female. Coefficients are unstandardised regression coefficients. Analyses were exploratory and supplementary to the primary adjusted mediation models. No parenting status $\times$ gender interaction was statistically significant.

Appendix J: Assumption Testing for the Adjusted Mediation Models

Note. dep6 = Wave 6 depressive symptoms (PHQ-9); gad6 = Wave 6 anxiety symptoms (GAD-7); dep5 and gad5 = corresponding Wave 5 baseline symptom scores; insom = Wave 5 insomnia symptoms; parent = co-residing parenting status; gender = binary gender covariate.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.213	.463		2.618	.009		
	parent	.283	.273	.018	1.036	.300	.902	1.109
	age	-.018	.007	-.046	-2.432	.015	.816	1.225
	gender	-.002	.211	.000	-.009	.993	.938	1.066
	insom	.196	.034	.113	5.810	<.001	.760	1.315
	dep5	.673	.019	.700	35.285	<.001	.728	1.374

a. Dependent Variable: dep6

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	parent	age	gender	insom	dep5
1	1	4.007	1.000	.00	.01	.00	.02	.01	.02
	2	.813	2.219	.00	.80	.00	.00	.01	.02
	3	.528	2.755	.01	.04	.02	.14	.02	.47
	4	.424	3.074	.01	.01	.03	.74	.01	.03
	5	.198	4.495	.01	.01	.02	.00	.94	.39
	6	.029	11.655	.97	.13	.92	.10	.00	.07

a. Dependent Variable: dep6

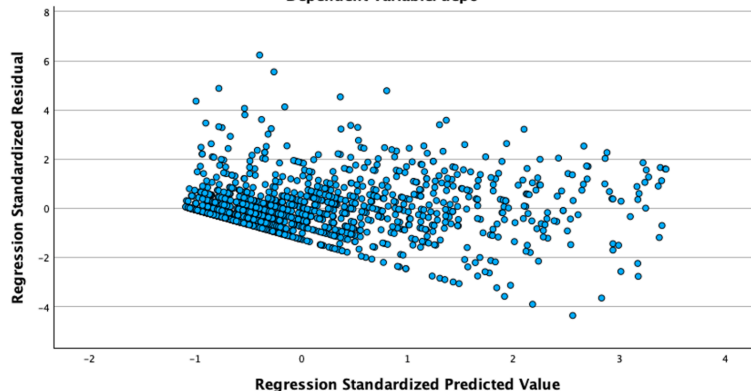
Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.2111	20.8822	4.8774	4.65591	1419
Std. Predicted Value	-1.093	3.438	.000	1.000	1419
Standard Error of Predicted Value	.152	.521	.244	.056	1419
Adjusted Predicted Value	-.2125	20.8151	4.8772	4.65620	1419
Residual	-16.78752	23.96090	.00000	3.83823	1419
Std. Residual	-4.366	6.232	.000	.998	1419
Stud. Residual	-4.380	6.268	.000	1.001	1419
Deleted Residual	-16.89879	24.24303	.00016	3.85992	1419
Stud. Deleted Residual	-4.409	6.355	.000	1.004	1419
Mahal. Distance	1.203	25.049	4.996	2.945	1419
Cook's Distance	.000	.077	.001	.003	1419
Centered Leverage Value	.001	.018	.004	.002	1419

a. Dependent Variable: dep6

Scatterplot

Dependent Variable: dep6



Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.228	.390		3.149	.002		
	parent	.434	.230	.033	1.888	.059	.901	1.110
	age	-.015	.006	-.044	-2.438	.015	.808	1.237
	gender	.072	.178	.007	.404	.686	.938	1.066
	insom	.063	.028	.042	2.235	.026	.765	1.307
	gad5	.721	.018	.754	39.150	<.001	.722	1.385

a. Dependent Variable: gad6

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	parent	age	gender	insom	gad5
1	1	3.965	1.000	.00	.01	.00	.02	.01	.02
	2	.816	2.204	.00	.79	.00	.00	.01	.03
	3	.562	2.657	.01	.05	.02	.05	.01	.51
	4	.429	3.039	.01	.01	.02	.84	.02	.00
	5	.199	4.464	.01	.01	.03	.00	.94	.36
	6	.029	11.605	.97	.13	.93	.09	.00	.08

a. Dependent Variable: gad6

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.0231	16.8766	3.9366	4.14783	1419
Std. Predicted Value	-.955	3.120	.000	1.000	1419
Standard Error of Predicted Value	.128	.400	.205	.046	1419
Adjusted Predicted Value	-.0233	16.8323	3.9366	4.14795	1419
Residual	-14.04493	19.46060	.00000	3.23354	1419
Std. Residual	-4.336	6.008	.000	.998	1419
Stud. Residual	-4.356	6.042	.000	1.001	1419
Deleted Residual	-14.17600	19.68309	.00002	3.25099	1419
Stud. Deleted Residual	-4.384	6.119	.000	1.003	1419
Mahal. Distance	1.202	20.642	4.996	2.812	1419
Cook's Distance	.000	.070	.001	.003	1419
Centered Leverage Value	.001	.015	.004	.002	1419

a. Dependent Variable: gad6

