EMPIRICAL SUPPORT FOR A MODEL OF RISK AND RESILIENCE IN CHILDREN AND FAMILIES DURING COVID-19:

A SYSTEMATIC REVIEW AND NARRATIVE SYNTHESIS

GILLIAN SHOYCHET

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Abstract

Background. The COVID-19 Family Disruption Model (FDM) describes the cascading effects of pandemic-related social disruptions to child and family psychosocial functioning. The current systematic review assesses the empirical support for the model. **Methods.** Study eligibility: 1) children between 2–18 years (and/or their caregivers); 2) a quantitative longitudinal design; 3) published findings during the first 2.5 years of COVID-19; 4) an assessment of caregiver and/or family functioning; 5) an assessment of child internalizing, externalizing, or positive adjustment; and 6) an examination of a COVID-19 FDM pathway. Following a search of PsycINFO and MEDLINE in August 2022, screening, full-text assessments, and data extraction were completed by two reviewers. Study quality was examined using an adapted NIH risk-of-bias tool. **Results.** Findings from 47 studies were summarized using descriptive statistics, tables, and a narrative synthesis. There is emerging support for bidirectional pathways linking caregiver-child functioning and family-child functioning, particularly for child internalizing problems. Quality assessments indicated issues with attrition, power justification, and insufficient examination of mediators and moderators. **Discussion.** We provide a critical summary of the empirical support for the model, highlighting themes related to family systems theory and risk/resilience. We outline future directions for research on child and family well-being during COVID-19.

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Table of Contents

Abstract ii

Acknowledgements iii

Notice of Publication iv

Table of Contents v

List of Tables vii

List of Figures viii

Introduction 1

The Impact of COVID-19 on Children and Families 1

Principles of Risk and Resilience 2

Development of the Family Disruption Model 4

Current Study 6

Methods 8

Eligibility Criteria 8

Information Sources and Search Strategy 9

Study Selection 10

Data Extraction Process 11

Risk-of-Bias Assessment 13

Data Synthesis 14

Ethical Considerations 15

Results 16

Study Selection 16

Description of Studies 16

Risk of Bias 18

Narrative Synthesis of Higher-Quality Studies 19

Discussion 28

Summary of Support 28

Possible Adaptations to the COVID-19 FDM 35

Strengths and Limitations 35

Future Directions 36

Conclusions 38

References 39

Supplemental Materials 107

S1 – Search Terms: PsycINFO and MEDLINE (Ovid) 107

S2 – Rationale for a Revised Quality Assessment Tool 108

List of Tables

Table 1. Descriptive Characteristics and Primary Findings from Individual Studies 61

Table 2. Sample Characteristics 79

Table 3. Measures of Child, Caregiver, and Family Functioning 90

List of Figures

Figure 1. The COVID-19 Family Disruption Model 56

Figure 2. The Simplified COVID-19 Family Disruption Model 57

Figure 3. PRISMA Flow Diagram 58

Figure 4. Risk of Bias 59

Empirical Support for A Model of Risk and Resilience in Children and Families During COVID-19: A Systematic Review and Narrative Synthesis

The COVID-19 pandemic (hereafter referred to as pandemic) has impacted mental health across the globe (Kumar & Nayar, 2021; Wu et al., 2021). Families with children have been particularly vulnerable to the social disruptions caused by the pandemic. Factors such as financial burden, school closures, lack of childcare, and limited opportunities for socialization have resulted in unique challenges for both caregivers and children (Ford & Moore, 2022). However, the specific pathways through which the pandemic has influenced family processes remain to be elucidated. In the early months of the pandemic, Prime et al. (2020) proposed the COVID-19 Family Disruption Model (FDM) as a framework for understanding caregiver, family, and child functioning during the pandemic. However, at that time, there were few, if any, empirical articles related specifically to the consequences of COVID-19 to children and families. Since then, the paper delineating the model has been cited over 1600 times on Google Scholar, demonstrating its widespread uptake. Given the scope and quantity of the available literature, as well as the chronicity and global ramifications of the pandemic, further investigation of the utility of the model for explicating the impact of the pandemic is warranted. The current study uses a systematic review methodology to synthesize and evaluate the empirical support and utility of the COVID-19 FDM for understanding how the pandemic has impacted children (i.e., children and adolescents between two and 18; defined hereafter as children), caregivers, and families.

The Impact of COVID-19 on Children and Families

Many children have experienced heightened mental health problems since the onset of the pandemic (Glynn et al., 2021; Panchal et al., 2021). Across 18 systematic reviews of studies that examined the impact of COVID-19-related lockdowns and mitigation measures on child mental health, the global pooled prevalence for each of depression and anxiety was 32%, an increase in comparison to pre-pandemic estimates (Harrison et al., 2022). Other studies have found an increase in children's externalizing behaviours (e.g., hyperactivity and conduct problems; Giannotti et al., 2021). Pandemic-related school closures and lockdowns, in addition to other disruptions to children's daily routines, contributed to this increase in psychological maladjustment (Osgood et al., 2021; Viner et al., 2022). All told, children's emotional and behavioural functioning have been significantly impacted by the pandemic.

In addition to the impact of the pandemic on children's functioning, pandemic-related social disruptions have had an adverse effect on caregiver and family functioning. For example, clinically elevated symptoms of depression and anxiety in mothers of young children nearly doubled and tripled, respectively, from before the pandemic (Racine et al., 2022). Increases in caregiver mental health problems during the pandemic have implications for parenting behaviours and parent-child relationships. For instance, greater parental psychological distress was associated with a higher likelihood of engaging in more negative and fewer positive parenting practices during the pandemic (Roos et al., 2021). Another study found that higher levels of depression in both mothers and fathers predicted greater parent-child relationship conflict (Russell et al., 2020). Pandemic stressors have further implications for entire family systems; heightened COVID-19 disruptions were associated with poorer parenting quality which, in turn, predicted greater family dysfunction (Browne et al., 2021). The pandemic has altered the lives of caregivers, with implications for specific and whole-family relationships (Prime et al., 2020).

Principles of Risk and Resilience

The chronic, pervasive, and multisystemic impact of COVID-19 disruptions to communities, schools, families, and individuals created a natural opportunity to study risk and resilience in families globally. Not all families are expected to be similarly impacted by the social disruptions caused by the pandemic (Masten, 2021). For example, mothers (Yavorsky et al., 2021), members of racialized groups (Le et al., 2022), financially insecure families (Zheng et al., 2021), as well as other groups (e.g., those with existing physical and/or mental health conditions, belonging to sexually marginalized groups, and living closer to large infection sites; Gibson et al., 2021), have experienced greater stress due to the public health restrictions to contain COVID-19 (Thomas et al., 2022). Furthermore, some families may be at risk due to pre-existing stressors in the family system such as trauma, relationship strain, or poor mental health among family members (Chavira et al., 2022). Although families experiencing greater cumulative stress prior to and/or during COVID-19 are more likely to experience worse outcomes, *risk* is a probabilistic process and therefore not deterministic (Juster et al., 2016; Masten, 2013). Specifically, risk factors operate in tandem with promotive and protective factors. *Promotive* factors place family members on a trajectory towards positive development and functioning regardless of risk level (Masten, 2013; Masten & Cicchetti, 2016; Rutter, 2012; Sameroff, 2000). In contrast, *protective* factors promote positive adaptation and functioning in contexts of risk and adversity, only (Masten, 2013). These processes are relevant when studying risk and resilience, as they will influence children and families' capacities to recover, positively adapt, and grow in response to threat, adverse circumstances, and trauma (Cicchetti, 2013; Walsh, 1996, 2016, 2021). Accordingly, the long- and short-term effects of the pandemic on families largely depend on pre-existing vulnerabilities and strengths, current available (or lack of) resources, developmental stages, and the type and severity of challenges experienced (Masten, 2021).

Development of the Family Disruption Model

As families play a proximal role in influencing child functioning, various processes within families will be influential in shaping how children respond to pandemic-related disruptions. The COVID-19 FDM was developed to conceptualize potential pandemic-related threats to the structural and functional processes within the family and, thus, child functioning (Prime et al., 2020).

Model Overview

Conceptual frameworks and/or models are typically developed after synthesizing research on a specific topic (Stansfeld et al., 2019). However, at the time of developing the COVID-19 FDM, there was no available empirical research on the COVID-19 pandemic. Model development necessitated authors to draw on pre-established systemic models of human development and family functioning, as well as research on the adverse impacts of economic hardships (e.g., Great Depression, World War II, the Great Farm Crisis, and the 2008 global recession), natural disasters (e.g., Hurricane Katrina), terrorist events (e.g., September 11 [9/11] attacks), and cumulative risk/poverty to child and family functioning. The COVID-19 FDM was formulated using three primary theoretical frameworks: the Bioecological Model of Development, Family Systems Theory, and the Family Stress Model. Bronfenbrenner's (2005) *Bioecological Model of Development* describes the transactional process in which multiple systems of influence impact human development. Specifically, a child's biological and genetic predispositions interact with their proximal (e.g., family, peers, school) and distal environments (e.g., social services, mass media, societal values), across time, to influence development. The

COVID-19 FDM also draws from Bowen's (1985) *Family Systems Theory* to provide further insight into the potential impact of the pandemic on intrafamilial processes. This framework describes the family as a single emotional unit and emphasizes that individual members cannot be understood in isolation. Since individual family members are interdependent and interconnected, stressors that impact the functioning of one family member will ultimately have ripple effects on all other family members. Finally, Conger et al.'s (2010) *Family Stress Model* informed the COVID-19 FDM in its emphasis on the cascading effects of economic hardship on family relationships and child functioning. Specifically, the model proposes that economic stress emanating from economic hardship leads to enhanced parental psychological distress, with negative consequences to interparental conflict and disrupted parenting. Sequentially, negative interparental relationships and disrupted parenting behaviours diminish the child's well-being.

Collectively, drawing on these theories, and previous research on risk and resilience, the COVID-19 FDM describes a negative cascade from which social disruptions due to COVID-19 and related mitigation efforts impact child, caregiver, and family functioning via various pathways (see Figure 1; Prime et al., 2020). The model begins by hypothesizing that the social disruptions caused by COVID-19 (e.g., job loss, financial insecurity, social distancing, and confinement) will infiltrate family systems through their influence on caregiver functioning, such as enhanced parent mental health problems and parenting stress. Caregiver psychological functioning is hypothesized to impact family functioning (i.e., comprised of parent-child, sibling, marital, and whole-family relationships) which, in turn, will influence child functioning (i.e., internalizing and externalizing problems, positive adjustment, collectively referred to hereafter as child functioning). The model further predicts a bidirectional relationship between child and caregiver functioning, whereby each will mutually impact one another. Importantly, the model predicts that risk and protective factors will impact the various pathways by weakening or strengthening the capacity of families to cope with and/or positively adapt to adversity.

Initial Support for the COVID-19 FDM Pathways

By exploring studies on a case-by-case basis, the COVID-19 FDM appears to be a promising model for explaining child, caregiver, and family functioning during COVID-19. There is evidence from high-quality studies for caregiver mental health and parenting practices predicting child internalizing and externalizing problems during the pandemic (Fosco et al., 2022; Shelleby et al., 2022). There is also some support that these processes are bidirectional in nature (Browne et al., 2021; Rizeq et al., 2021). In addition to individual studies, one systematic review found that pandemic-related lockdowns led to increases in familial conflict which, in turn, had negative implications for children's mental health (Naff et al., 2022). In another systematic review, positive parent-child communication was shown to protect youth at risk for negative mental health outcomes such as anxiety, depression, and stress (Panchal et al., 2021). These reviews provide some preliminary support for the COVID-19 FDM. However, these reviews do not include a comprehensive set of constructs relevant to child, caregiver, and family functioning, collectively. Moreover, they include many cross-sectional studies (rather than longitudinal), which are not able to speak to change over time nor the temporal order of predictors and outcomes (Vaillancourt et al., 2021). The rapid growth of research on this topic, and its relevance to researchers and policymakers, alike, warrants a systematic synthesis of the extant literature to draw themes, identify gaps, and drive future research.

Current Study

The current study provides a comprehensive examination of pathways linking child, caregiver, and family functioning in studies that used prospective, longitudinal designs. The overarching goal of the review was to examine the empirical support for the COVID-19 FDM in explaining processes of risk and resilience in children and families amid the height of the pandemic. Specific aims included:

1. To synthesize the extant literature on the most pertinent pathways of the COVID-19 FDM (see Figure 2), which included caregiver to child functioning (and the reverse) and family to child functioning (and the reverse). We considered pathways that originate pre-COVID (e.g., caregiver functioning pre-COVID to child functioning during COVID-19), as well as those that took place solely during the pandemic (e.g., caregiver functioning during Time 1 of COVID-19 to child functioning during Time 2 of COVID-19).
    - 1a. To explain why relationships exist between constructs (i.e., mechanisms) through the examination of mediating/indirect pathways.
    - 1b. To explore risk and protective factors that might have influenced the strength and/or direction of relationships between constructs (i.e., moderation), signaling processes of heightened risk or resilience.
2. To assess whether the pathways of the COVID-19 FDM capture the existing empirical research and to adapt the model as indicated and necessary to better represent the empirical literature.
3. To identify inconsistencies between studies and gaps in the literature to inform future primary research.

Research objectives were addressed through a systematic review and narrative synthesis, which involved the systematic search, integration, and presentation of studies for the purposes of theory-building and refinement (Edwards & Kaimal, 2016; Kastner et al., 2016). Narrative syntheses have been previously used to develop or refine models related to personal recovery in mental health (Leamy et al., 2011) and caregiver sense of competence (Stansfeld et al., 2019), among others (Le Boutillier et al., 2019; Skiba et al., 2020). We followed published guidelines for a narrative synthesis approach to minimize potential bias through enhancing transparency, reproducibility, and robustness of findings (Popay et al., 2006). Finally, we conducted a risk-of-bias assessment of primary studies, which was used to contextualize findings and inform future research needs.

Methods

This systematic search and narrative synthesis was registered with the International Prospective Register of Systematic Reviews (PROSPERO; CRD42022327191) prior to data extraction. It followed the guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P; Moher et al., 2015) and the PRISMA 2020 Statement (Page et al., 2021), as well as guidelines for narrative syntheses (Popay et al., 2006).

Eligibility Criteria

Eligibility criteria as outlined by the PECOS (Population, Exposure, Comparators, Outcome, Study Design) framework are described below. The population of interest was children between two and 18 years and/or their parents. No samples of children were excluded based on psychological and/or physical disability. At least one wave of data collection must have been completed during COVID-19 (i.e., following March 11, 2020, the date the World Health Organization declared COVID-19 a pandemic[1]). Studies published during the first two and a half years of the pandemic were considered for inclusion (elaborated below). Outcomes of interest were assessed across time (i.e., longitudinally) either (i) pre-pandemic (T_{pre}) to during pandemic (T_{COVID}), or (ii) multiple time points during the pandemic. Given that the COVID-19 FDM

[1] Studies with data collected before March 11, 2020, were considered if participants were from China.

describes developmental pathways, only prospective quantitative longitudinal designs were included. Intervention studies were excluded as the current review is not focused on treatment efficacy. All studies had to report on the following outcomes: child functioning (defined as internalizing problems, externalizing problems, and/or positive adjustment) and one of either caregiver functioning (e.g., psychological distress or well-being) or family functioning (e.g., parent-child conflict or family support). Studies were also required to examine at least one of the pre-determined bidirectional or unidirectional pathways in Objective 1 (elaborated below in *Pathways*).

Only studies published in English were included. Publication type was restricted to peer-reviewed and published works. We did not include a grey literature search due to feasibility concerns, given the high volume of studies being published on the topic. Meta-analyses have shown that the inclusion of grey literature minimally impacts synthesis results (Bellefontaine & Lee, 2014; Schmucker et al., 2017).

Information Sources and Search Strategy

Search terms were created using four key constructs relevant to the COVID-19 FDM: COVID-19, caregiver functioning, family functioning, and child functioning (Table S1). The search was further restricted to studies published in English and during 2020 or later. The search strategy was executed in PsycINFO (Ovid) and MEDLINE (Ovid) databases to identify all potentially relevant empirical studies. We chose these two databases to balance our desire for relevance with feasibility and efficiency (i.e., identifying relevant studies while managing project capacity for reviewing abstracts in a burgeoning field). Notably, Booth (2016) concluded that MEDLINE, alone, is sufficient in reaching valid conclusions about health-related topics in both systematic reviews and meta-analyses. However, PsycINFO was also included as it is a specialized database that adds unique references related to specific psychological processes and mental health (Bramer et al., 2017; Eady et al., 2008; Rogers et al., 2018). We executed the search strategy in October 2021, June 2022, and then one final time in August 2022.

Eligible studies included those published in the first two and a half years of the pandemic. This range represents data collected during the first two years of the pandemic plus an additional six months to accommodate average publication speed during this time (Forti et al., 2021; Horbach, 2021). This time frame was selected for several reasons: The first two years of COVID-19 represent a discrete period wherein there were continuous rolling waves characterized by high rates of COVID-19 infection, hospitalizations and deaths, lockdowns and stay-at-home orders, and school closures, on a global scale (World Health Organization, 2021). Second, although rates of COVID-19 infection continue to fluctuate, the fatality of the disease had significantly declined as vaccination rates increased considerably (Scobie et al., 2021). Accordingly, around March 2022, many countries began lifting restrictions such as removing mask-mandates, stay-at-home orders, and travel bans, all of which contributed to a relative return to normalcy (Stokel-Walker, 2022). Lastly, we were interested in children and families' responses to the initial global crisis, rather than long-term adversity. This is an important distinction because processes of risk and resilience in families are likely to shift as the pandemic evolves and time passes (Masten, 2021).

Study Selection

The results from the search strategy were exported to Covidence, a web-based software platform that is used for abstract screening, full-text review, quality assessment, and data extraction. Covidence automatically removed any duplicate citations. Two independent reviewers completed a training activity for abstract screening (80 records) and full-text assessments (10 full-texts) to ensure they were making comparable decisions (percent agreement $\geq .80$; $\kappa \geq 0.60$; McHugh, 2012). Once reliability was attained, reviewers independently screened abstracts, in duplicate, according to the search criteria. Inter-rater reliability for abstract screening was good based on 1,496 abstracts (87% percent agreement; $\kappa = 0.70$; McHugh, 2012). Full-text articles were assessed in a similar fashion to determine the final number of included studies (91% percent agreement; $\kappa = 0.61$ based on 503 full-texts). The first author resolved conflicts with consultation from the senior author.

Data Extraction Process

The first and senior authors piloted data extraction using 10 articles to develop the manual in an iterative process. Following, data extraction was completed primarily by the first author, with a second reviewer extracting an overlapping 20% of articles to promote consistency. Discrepancies were resolved through consensus, with consultation from the senior author as necessary.

Data Items and Outcomes

Using a standardized extraction template developed by the first author, the following data items were extracted in Covidence: author, year, country, sample characteristics for both children and caregivers (i.e., sample size, age, sex/gender, race/ethnicity, and income/socioeconomic status), variables of interest (i.e., child, caregiver, and family functioning) and their corresponding study instruments and scales (i.e., names of the measurement tools), relevant time points (i.e., $T_{pre} – T_{COVID}$ or $T_{COVID1} – T_{COVID+}$) and specific dates, types of analyses conducted, and main findings as they relate to pathways.

Primary outcomes included child, caregiver, and family functioning, and the pathways linking them. The method of evaluating each outcome (e.g., child-reported, parent-reported, behavioural observation, and direct assessment) was documented.

Child Functioning. Child functioning was defined by internalizing (e.g., emotional difficulties such as emotional reactivity, anxiety, depression, somatic complaints, and withdrawn behaviours) and externalizing symptoms (e.g., behavioural difficulties such as attention problems, aggressive behaviours, and rule breaking), in addition to positive adjustment (e.g., positive affect, well-being, happiness, and adaptive coping).

Caregiver Functioning. Caregiver functioning was classified by emotional distress (e.g., internalizing symptoms, parenting stress, psychological distress, anger, suicide risk, substance use, and psychological inflexibility) and well-being (e.g., life satisfaction, happiness, autonomy, competency, and self-confidence).

Family Functioning. Family functioning was comprised of four family constellations: parent-child/parenting, couple/interparental/marital, sibling, and whole-family relationships. For each subsystem, several processes were considered, such as relationship quality (e.g., cohesion, supportiveness, warmth, closeness, attachment, and strong communication), relational negativity (e.g., conflict, aggression, maltreatment, harshness/coerciveness, and neglect), and structure (e.g., rules, routines, and rituals).

Pathways

The above constructs were examined within the context of predefined pathways. A pathway is defined as any link between two or more variables of interest, which must include a child functioning variable plus a caregiver and/or a family functioning variable (see Figure 2), examined longitudinally. We considered bidirectional relationships, when available. We extracted the most comprehensive set of variables that align with pathways in the simplified model of the COVID-19 FDM. That is, though studies must include pathways with at least two variables (e.g., parenting and child mental health), some may include three or four variables in the case of mediation or moderation. For example, positive parenting practices (T_{COVID}) may mediate the relationship between caregiver internalizing problems (T_{pre}) and child affect (T_{COVID}). Additionally, there are two categories of moderators that were investigated: (1) *demographic characteristics* such as economic hardship, child age, race, and gender, and (2) *process variables*, wherein our variables of interest (i.e., child, caregiver, and/or family functioning) themselves served as moderators. An example of a pathway with a process variable as a moderator would be co-parental support influencing the strength of the relationship between caregiver mental health and child maladjustment. If studies included a measure of pandemic-related social disruption, then that variable was also investigated in the pathway (though this was not required for inclusion in the review).

Risk-of-Bias Assessment

Following data extraction, risk of bias was assessed using a quality assessment tool developed by the National Heart, Lung, and Blood Institute (2013), adapted for the current study. The Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies was chosen as a brief risk-of-bias measure as it has items relevant to the types of studies included in our review, in addition to being implemented in other systematic reviews on similar topics (Hohls et al., 2021; Racine et al., 2022). Five out of the original 14 items were removed from the scale as they were not applicable to the studies included in this review. An additional 3 items were added based on recommendations for assessing longitudinal research during the pandemic (Vaillancourt et al., 2021). The full list of items, including their sources and rationale for inclusion/exclusion can be found in Supplemental File 2. Items evaluated information about the research question, study population and recruitment, sample size justification, whether predictors were assessed more than once over time, the use of psychometrically sound measures, attrition rate, the inclusion of baseline measurements, the inclusion of mediators and moderators, whether important confounding variables were considered, and whether child-reported measures were included. Two independent raters piloted the quality assessment tool. Subsequently, one reviewer completed the quality assessment, with 20% of studies double coded by a second reviewer to promote consistency. Disagreements were resolved by consensus discussion, and when needed, through consultation with the senior author. Studies were not excluded based on their quality scores; however, risk of bias was taken into consideration when synthesizing the results.

Data Synthesis

Description of Studies

Frequencies and percentages were used to describe the included studies. Symbols *k* and *n* refer to the number of studies and pathways, respectively. First, study characteristics such as country, number of data collection points (T_{pre} vs. T_{COVID}), and timing of data collection periods were described. Following, sample characteristics were reported including caregiver type (e.g., mother), child age (i.e., early childhood, middle childhood, and adolescence), and presence of a clinical diagnosis. Lastly, characteristics of pathways were summarized, such as the most and least frequently reported paths, and the most common predictors/outcomes.

Risk-of-Bias Assessment

A visual depiction of the risk-of-bias assessments was created using the *robvis* visualization tool (McGuinness & Higgins, 2020). This tool created "traffic light" plots of domain-level judgements for each study included in the review. The risk-of-bias assessments were used to depict overall strengths and weaknesses of the pool of included studies. Moreover, ratios of *yes*-to-*no* responses were considered in determining the overall quality of an individual study. Studies with lower scores indicated a higher risk of bias (i.e., lower quality). Scores falling below the median were considered lower quality. All studies were included in data tables for readers to review. However, the narrative synthesis included only higher quality studies (those with scores at and above the median).

Narrative Synthesis

Main findings of individual studies were presented in tabular form and synthesized using descriptive statistics (e.g., frequencies and percentages) and through a narrative approach. Findings were categorized in accordance with the primary child functioning predictors/outcomes (i.e., internalizing problems, externalizing problems, and positive adjustment) and within each section, specific uni/bidirectional pathways proposed in the COVID-19 FDM were described (i.e., child–caregiver; child–family). Processes of mediation and moderation (i.e., risk and protective factors) were considered within each pathway. Heterogeneity in study characteristics were also described narratively. In the Discussion, a critical summary of the model's fit to empirical data is presented, discussing whether adaptations are needed, and providing suggestions for future research on risk and resilience in child and family well-being during COVID-19.

Ethical Considerations

To reduce the risk of confirmation bias, we followed rigorous research methods in line with the PRISMA protocol (Moher et al., 2015; Page et al., 2021) and pre-registered our review. Also, we have a team of quantitative and qualitative researchers with extensive experience in systematic reviews and related methodologies. Finally, we conducted quality assessments for each study to assess various features that could alter the interpretation of findings.

Results

Study Selection

Results of the study selection process are depicted in a PRISMA flow diagram (Figure 3). Once duplicates were removed, 1,496 abstracts were screened, with 503 proceeding to full-text review. During this stage, studies were excluded if their variables of interest were not measured longitudinally (*k* = 274, 60.1%) or no relevant pathway was examined (*k* = 129, 28.3%). Additional reasons for exclusion were secondary and/or non-quantitative data collection, language of publication, participant age, dissertations, and intervention studies (*k* = 53, 11.6%). Accordingly, 47 studies were included in the final review. Studies were assessed for overlapping samples, producing 44 independent samples across 47 studies.

Description of Studies

Descriptive characteristics of individual studies are summarized in Table 1. Studies include samples from 14 countries, including the Unites States (*k* = 17, 36.2%), China (*k* = 6, 12.8%), Italy (*k* = 5, 10.6%), Germany (*k* = 4, 8.5%), the Netherlands (*k* = 3, 6.4%), Canada (*k* = 2, 4.3%), Japan (*k* = 2, 4.3%), Australia (*k* = 1, 2.1%), Brazil (*k* = 1, 2.1%), England (*k* = 1, 2.1%), Ireland (*k* = 1, 2.1%), Israel (*k* = 1, 2.1%), Jordan (*k* = 1, 2.1%), Peru (*k* = 1, 2.1%), and one (2.1%) multinational sample. Twenty-five studies (53.2%) included a pre-pandemic time point, of which 11 (23.4%) were from 2018 or earlier, 13 (27.7%) were from 2019 or 2020, and one (2.1%) did not specify. Almost all studies included at least one COVID-19 time point in 2020 (*k* = 46; 97.9%), whereas only nine (19.1%) studies collected data in 2021. The number of data collection points during COVID-19 ranged from one to five, except for one study that conducted bi-weekly assessments for a year. Twenty studies (42.6%) had only one pandemic time point, 15 studies (31.9%) had two pandemic time points, and eight studies (17.0%) had three pandemics time points. The remaining three studies (6.4%) included four or more data collection periods during the pandemic.

Sample size ranged from 45 to 7,940 across 47 studies. Out of 30 studies that reported caregiver type, 27 (90.0%) consisted of mostly mothers (i.e., more than two thirds of the sample), whereas three (10%) had a relatively equal ratio of mothers to fathers. Most studies (k = 27, 57.4%) examined children in the adolescence period (mean age in 2020: 12–18 years), with 14 studies (29.8%) exploring middle childhood (mean age in 2020: 6–11 years) and five studies (10.6%) focusing on early childhood samples (mean age in 2020: 2–5 years). One study did not report mean age (range = 4–18). Nine studies (19.1%) included children with current or previous neuropsychiatric diagnoses (e.g., anxiety disorder, attention-deficit/hyperactivity disorder [ADHD], autism spectrum disorder, communication disorder, conduct disorder, epilepsy, fragile X syndrome, intellectual disability, and specific learning disorder). Lastly, samples were diverse on several sociodemographic indicators, including child sex/gender, race/ethnicity, and income/SES (Table 2).

Pathway Characteristics

Studies most frequently examined pathways from family functioning (k = 42 studies, n = 128 paths[2]) and caregiver functioning (k = 28, n = 77) to child functioning. Fewer studies examined pathways from child to family functioning (k = 19, n = 47) and caregiver functioning (k = 14, n = 38). No studies investigated relationships between marital/couple/interparental functioning and child functioning, and only one study explored child functioning in relation to

[2] Several studies examined multiple pathways within one study (e.g., Fosco et al. [2022]: change in family conflict predicted child internalizing problems; change in lax discipline predicted child externalizing problems).

sibling functioning. Regarding child functioning, depression (*k* = 12), positive adjustment (e.g., positive affect, well-being, coping, prosocial behaviour; *k* = 11), anxiety (*k* = 8), and conduct/behavioural problems (*k* = 8) were most often examined (Table 3). In terms of caregiver and family constructs, commonly reported variables were caregiver stress (*k* = 8), depression (*k* = 7), and anxiety (*k* = 4), as well as parental/familial support (*k* = 7), parenting quality (*k* = 6), parent-child/family conflict (*k* = 5) and parental monitoring (*k* = 4).

Risk of Bias

The risk of bias for individual studies is illustrated in Figure 4. Each criterion was rated as *yes*, *no*, or *not reported*. Studies were given a score of 1 for *yes* and 0 for *no* or *not reported*. The pool of included studies had several strengths, such as clearly describing their research questions (*k* = 47, 100.0%) and populations (*k* = 46, 97.9%), in addition to implementing valid and reliable measures for assessing predictors (*k* = 46, 97.9%) and outcomes (*k* = 43, 91.5%). Most studies measured and statistically controlled for key confounding variables (*k* = 33, 70.2%) and assessed predictors more than once over time (*k* = 31, 66.0%). Many studies included youth-report measures of child functioning (*k* = 29, 61.7%). Approximately half of the studies included a pre-COVID baseline measurement (*k* = 26, 55.3%), examined mediators and moderators in the pathways of interest (*k* = 25, 53.2%) and had over 50% of eligible individuals participating in their studies (*k* = 24, 51.1%). Regarding study weaknesses, only 18 studies (38.3%) had low attrition rates (< 20%) and 14 studies (29.8%) provided power justification for sample size. The distribution of risk-of-bias scores ranged from 42% to 92% with a median of 67%. Scores at the first and third quartiles were 67% and 75%, respectively. Scores falling below the median were considered lower-quality studies and were not included in the narrative synthesis. However, main findings from all eligible primary studies are summarized in Table 1.

Narrative Synthesis of Higher-Quality Studies[3]

Child Internalizing Symptoms

Caregiver Functioning. There is emerging support for longitudinal links between caregiver functioning and child internalizing symptoms. For instance, pre-pandemic parental emotional distress was a robust predictor of elevated internalizing problems in young children during the pandemic, even after accounting for prior and current changes in family functioning and parenting quality (Fosco et al., 2022). In another study, maternal mood moderated the trajectory of child internalizing problems from before to during the pandemic, such that child anxious/depressed, emotionally reactive, and withdrawn symptoms tended to increase only when mothers were more anxious and depressed (Frigerio et al., 2022). These findings suggest that pre-existing caregiver problems may reflect a vulnerability factor, leading children to have more adjustment problems during the pandemic. Nevertheless, several studies did not find pre-pandemic caregiver stress (e.g., parental negative feelings, history of major depressive disorder, and maternal mental health difficulties) to be a vulnerability factor for children's internalizing problems (e.g., stress, depression, and anxiety; Achterberg et al., 2021; Duttweiler et al., 2022; Feurer et al., 2021; Fogarty et al., 2022; Wong et al., 2022).

Caregiver functioning and child internalizing difficulties may mutually influence one another in the pandemic context, with evidence for a bidirectional relationship between increases in caregiver stress (from before to during the pandemic) and increases in child stress (Paschke et al., 2021). In one multinational study, greater COVID-19 disruption indirectly predicted elevated caregiver stress through its effect on family-average child mental health problems (Browne et al.,

[3] Efforts were made to include all higher-quality studies in the synthesis; however, five higher-quality studies were left out and only included in tables (Hastings et al., 2021; Köhler-Dauner et al., 2022; Operto et al., 2022; Pelham et al., 2022; Penner et al., 2021).

2021). In another study, maternal mental health was a mediator linking pre-pandemic income and COVID-stressors to adolescent internalizing symptoms during the pandemic (Lengua et al., 2022). Together, these findings suggest a ripple effect whereby pandemic disruptions adversely altered the functioning of individual members of the family (e.g., caregiver or child), with consequences for other individual family members (e.g., caregiver or child).

However, there were several studies that did not find links between caregiver functioning and child internalizing problems during the pandemic (Gordon-Hacker et al., 2022; McArthur et al., 2021; Neubauer et al., 2021). Inconsistent findings can sometimes signal the presence of moderators. One potential moderator may be measurement approach. For instance, in one study adult stress during the pandemic predicted child stress when the child outcome was caregiver-reported but not when it was child-reported (Corbett et al., 2021). Alternatively, pre-existing characteristics may moderate pathways. For children reporting warm and loving relationships with parents prior to the pandemic, increases in parental stress were related to increases in child distress (Wong et al., 2022). This pattern of functioning was reversed among children who reported less satisfying family life pre-pandemic (i.e., increases in parent stress were related to decreases in child psychological distress; Wong et al., 2022). These paradoxical findings highlight that there may be different mechanisms of influence for children with pre-existing vulnerabilities (e.g., poor parent-child relationships), a point to which we will return in the Discussion.

Family Functioning. Changes to children's family conditions during the pandemic may influence how they respond to stress during the pandemic. Although baseline family well-being did not significantly predict later internalizing problems in children, increases in family well-being from pre-pandemic to during COVID-19 were associated with decreases in child internalizing problems (Nocentini et al., 2022). Furthermore, increases in family conflict and decreases in the quality of emotional connections among family members (i.e., family cohesion) were predictive of heightened child internalizing problems during the pandemic, while baseline levels were not (Fosco et al., 2022). The degree of disruption to family life from pre-pandemic to during the pandemic (i.e., deterioration or improvement in family functioning) may be a more salient predictor of adjustment than absolute levels of prior child and/or family functioning. These findings highlight the complex interplay between starting levels and change in functioning in the family system, its children, and their caregivers.

In addition to whole-family functioning, changes to parental discipline practices (i.e., harsh: angry/coercive/over-reactive and lax: overly permissive/inconsistent) and parent-child conflict also predicted child internalizing problems in studies using pre-pandemic data (Fosco et al., 2022) and those with all data collection taking place during the pandemic (Qu et al., 2021; Wang, Henry, et al., 2021; Wang, Henry, et al., 2022). Other predictors of more child internalizing problems were prior parental overreactivity (Achterberg et al., 2021), less supportive parental responses to child emotions (Shi & Wang, 2021), parental fear induction practices regarding the severity of the pandemic (Ren et al., 2021), and more fear-inducing pandemic-focused family conversations (e.g., importance of hand washing, preventing spread of germs, protecting vulnerable people; Trucco et al., 2022). Taken together, there is ample support that problematic parent-child interactions are linked to worsening child internalizing problems during the pandemic.

The parenting environment (e.g., parent-child conflict, positive parenting practices) may help to explain when and/or why some children are more at risk during the pandemic than others, as examined in mediation and moderation models. Wang, Henry, and colleagues (2021) found that parents who experienced job loss had elevated parent-child conflict which, in turn, predicted heightened negative affect in children during the pandemic. Notably, low-income families were twice as likely to lose their jobs and therefore more vulnerable to deteriorating family relationships and later child internalizing difficulties. Though parental warmth did not emerge as a significant mediator linking job loss and child affect, it was influential in minimizing negative affect in children whose parents worked from home during the pandemic. Another study revealed that children who felt more stressed towards school reopening earlier in the pandemic were more likely to experience greater levels of depression and anger several months later, but only when parent-child conflict earlier in the pandemic was high (Qu et al., 2021). Coming from a more conflictual home environment appeared to increase child vulnerability to the effects of their own stress.

Positive parenting did not consistently emerge as a protective factor for children during the pandemic. For instance, in a study of Latinx adolescents, parental support was not a significant moderator of the relationship between COVID-19 stressors and internalizing problems (Roche et al., 2022). Adolescents in this study reported increased childcare responsibilities particularly if they endorsed pandemic-related economic and health stressors. The added burden of childcare responsibilities may have outweighed any protective effect of parental support. Taken together, although less conflict and more positivity in the parenting environment is important for minimizing children's internalizing symptoms during the pandemic, its protective effect may depend on prior and ongoing child and family vulnerabilities.

Regarding the reverse direction from child internalizing to family functioning, in one study, pre-pandemic child internalizing symptoms did not predict parenting practices/whole-family functioning following the onset of the pandemic (Fosco et al., 2022). Relatedly, in a daily diary design in the initial month of the pandemic, daily negative affect in children did not significantly predict changes in the family environment (cohesion, expression, organization, and control; Neubauer et al., 2021). In contrast, youth-reported pandemic-related stress and internalizing difficulties (i.e., anxiety and depression) negatively predicted family functioning one month later (Rizeq et al., 2021). Support for this child-driven pathway was also demonstrated by Browne and colleagues (2021) using a within-family design (i.e., all families had at least two children in the home), whereby pandemic-related social disruptions led to higher child mental health problems (on average) which, in turn, led to lower quality parenting and made siblings more dissimilar in their internalizing problems. The sibling with worse mental health was more likely to receive lower-quality parenting across the pandemic, particularly in families that engaged in more differential parenting. Thus, siblings' individual vulnerabilities may influence the quality of parenting that they receive during the pandemic, leaving the struggling child with less protective familial support.

Child Externalizing Symptoms

Caregiver Functioning. No studies explored whether child externalizing problems prior to the pandemic impacted caregiver functioning during the pandemic. Findings with measurement during the pandemic were mixed, with one study demonstrating that child behaviour problems predicted maternal psychological distress (Shelleby et al., 2022) and another not supporting this direct link (Berry et al., 2021).

Regarding associations between pre-pandemic caregiver functioning and subsequent child externalizing problems, prior maternal mood predicted increases in child aggressive behaviour (but not attention problems), only when mothers were highly depressed and anxious (Frigerio et al., 2022). In another study, pre-existing parental distress was related to heightened child externalizing behaviours during the pandemic, over and above changes in family conflict and lax discipline (but not other family functioning variables; Fosco et al., 2022). There was no support for this relationship in studies with measurement during the pandemic, only (Gordon-Hacker et al., 2022; Neubauer et al., 2021; Shelleby et al., 2022).

Cascading effects were explored in Lengua et al. (2022), wherein pre-existing financial hardship indirectly predicted heightened youth externalizing problems via an increase in pandemic-related stressors and worsened maternal mental health. Taken together, although there is limited research assessing children's externalizing problems, available studies provide mixed evidence for the link between this caregiver-child relationship.

Family Functioning. Two studies investigated the impact of prior levels of child externalizing problems on family functioning during the pandemic. Children with an ADHD diagnosis were more likely to experience greater family conflict earlier in the pandemic, as compared to children without a previous ADHD diagnosis (Rosenthal et al., 2022). In contrast, Fosco et al. (2022) did not find any evidence to suggest that prior child externalizing problems predicted changes in whole-family functioning (e.g., family cohesion, conflict, and routines) or parenting practices (e.g., warmth and discipline).

In examining whether deteriorating family relationships had an impact on child externalizing problems, increases in parental discipline (harsh and lax) and family conflict from pre- to during COVID-19, but not changes in family cohesion, routines, and parental warmth, predicted greater child externalizing problems during the pandemic (Fosco et al., 2022). This was, in part, supported with data collected during the pandemic; negative parenting practices predicted child behaviour problems a few weeks later, but not the reverse (Shelleby et al., 2022). Similarly, fluctuations in household chaos positively predicted fluctuations in child behavioural problems (Gordon-Hacker et al., 2022). Thus, an increase in harsh and/or inconsistent family interactions may be a salient risk factor for how children negatively respond to the pandemic.

Other studies exploring relations between family functioning and child externalizing symptoms did not support this pathway, such as fear-inducing pandemic-focused family conversations and parenting practices (e.g., autonomy-supportive parenting, warmth, acceptance, parent-child conflict, and social support) in relation to child externalizing behaviours (Neubauer et al., 2021; Roche et al., 2022; Trucco et al., 2022; Wang, Henry, et al., 2022). Taken together, there is limited, and mixed, research examining family functioning and child externalizing problems. Findings thus far suggest that family functioning is a more salient predictor of child externalizing problems than the reverse relationship, and that harsh and/or unpredictable family environments may be a particular risk factor for a deterioration in child functioning.

Child Positive Adjustment

Caregiver Functioning. It is also important to consider the positive adjustment of children in the context of pandemic disruptions and stressors. Several studies explored pathways examining the positive adjustment of children in relation to caregiver functioning. In one study examining maternal resilience during the pandemic, both child (i.e., effortful control) and maternal (i.e., well-being) pre-pandemic functioning predicted how children were coping early in the pandemic (Jones et al., 2022). Children’s adaptive coping during the pandemic also went on to predict subsequent maternal coping. Indeed, children’s coping mediated the effects of both child effortful control and maternal well-being on subsequent maternal coping (Jones et al., 2022). These findings illustrate that both child and maternal characteristics prior to the pandemic have protective effects for how children cope with pandemic stressors, and this has ripple effects on how mothers cope, too. Bidirectional effects were also examined in a study examining child emotional well-being and parental strain during the pandemic. Specifically, Essler and colleagues (2021) demonstrated that child emotional well-being during lockdown restrictions negatively predicted parental strain approximately two months later when restrictions loosened, though the reverse relationship was not significant (Essler et al., 2021). However, intraindividual change in parental strain negatively predicted intraindividual change in child emotional well-being from early in the pandemic to several months later, further demonstrating the complex interplay between children and their caregivers.

In another study, maternal mental health (i.e., anxiety and depression) during COVID-19 did not predict child self-reported happiness a month later (McArthur et al., 2021). Inconsistencies across these studies may be due to the fact that the specific measures of child positive adjustment were inherently different constructs (e.g., adaptive coping, emotional well-being, and happiness). Furthermore, assessments of caregiver functioning varied in valence (i.e., well-being versus distress) and intensity (e.g., parental strain vs. mental health symptoms). It may be that indices of caregiver functioning within the normative range are more strongly linked to child resilience and positive adaptation, as compared to clinical symptomatology.

Family Functioning. There is emerging evidence that parental and familial support is important for children's positive coping during the pandemic, with implications for their subsequent adjustment. Children with parents who were more emotionally supportive were more likely to use approach coping (e.g., problem solving, seeking support, or reappraising the problem) which, in turn, was related to decreased emotional problems (Shi & Wang, 2021). Parental supportive reactions, rather than unsupportive reactions, were important for adaptive coping (Shi & Wang, 2021). Similarly, adolescents who reported increases in parental support, compared to their daily average, were more likely to report elevated next-day positive affect during the pandemic (Wang, Toro, et al., 2021; Wang, Henry, et al., 2022). Finally, family support was related to children's self-efficacy, optimism, hope, and resilience, as well as their adaptive coping, which, together, enhanced children's well-being (Wang, Ng, & Siu, 2022).

There is evidence that the family environment links pandemic stressors to children's levels of positive adjustment during the pandemic. One study found that parents who lost their jobs during the pandemic experienced greater parent-child conflict which, in turn, was associated with decreased positive affect in children (Wang, Henry, et al., 2021). In contrast, parents who worked from home were more likely to demonstrate parental warmth, which sequentially predicted increased positive affect in children. Together, we are seeing that the emotional climate during the pandemic has important ripple effects for how children cope and adjust to the stressors inherent in the pandemic.

Children's active coping (e.g., reassessing the situation and seeking support) may also impact their environments during the pandemic. Donker and colleagues (2021) found that parents' responses to child stress depended on their children's own coping abilities. Specifically, among youth who engaged in high levels of coping (prior to the pandemic), greater pandemic-related stress in children was associated with decreased positive parenting. In contrast, for adolescents who engaged in low levels of coping, elevated pandemic-related stress was associated with increases in positive parenting (Donker et al., 2021). Child coping did not moderate the relationship between child stress and parental support, discipline, and negative interactions. In another study, children's use of problem solving and emotion regulation strategies for coping early in the pandemic did not predict positive parenting practices mid-pandemic (Jones et al., 2022). Thus, there is mixed evidence regarding the salience of child-driven positive coping on parenting practices.

Discussion

The primary objective of the current review was to examine the empirical support for the COVID-19 FDM, allowing us to consider the utility of the model in delineating processes of risk and resilience in children and families during the COVID-19 pandemic. This review synthesized findings across heterogeneous studies exploring complex pathways linking child, caregiver, and family functioning prior to and during the pandemic. By only including longitudinal studies, we were better able to infer directionality of relationships between children, caregivers, and multiple family subsystems. We used a narrative synthesis, as it is most suitable to concept formation and theory-testing (Edwards & Kaimal, 2016; Kastner et al., 2016), enabling us to assess how existing research aligns with the pathways described in the COVID-19 FDM. After providing a summary of support and highlighting the generated themes, we discuss potential adaptations to the model and future directions.

Summary of Support

Overall, we found emerging support for some of the pathways in the COVID-19 FDM, though to varying degrees. The most examined pathways were those linking caregiver, parent-child, and whole-family functioning to child internalizing problems. More studies explored internalizing problems as an indicator of child functioning than they did externalizing problems or positive adjustment. Additionally, more studies investigated caregiver/family-to-child effects in comparison to the reverse. Despite this, there is some support for pathways stemming from child to caregiver and family functioning, though this research is less common and yielded mixed results. There was a dearth of research on child functioning in relation to sibling subsystems and/or couple/marital/interparental functioning. This lack of research is consistent with existing literature wherein there is an emphasis on caregivers and parenting, to the exclusion of other important subsystems (Perez-Brena et al., 2022).

There was ample support linking caregiver and family (i.e., whole-family and parent-child) functioning to child internalizing behaviours, both from T_{pre} to T_{COVID} (e.g., Achterberg et al., 2021; Donker et al., 2021; Fosco et al., 2022; Frigerio et al., 2022; Lengua et al., 2022; Nocentini et al., 2022; Paschke et al., 2021; Shi & Wang, 2021; Wang, Ng, & Siu, 2022; Wong et al., 2022) and at multiple time points during the pandemic (e.g., Browne et al., 2021; Corbett et al., 2021; Qu et al., 2021; Ren et al., 2021; Rizeq et al., 2021; Trucco et al., 2022; Wang, Henry, et al., 2022; Wang, Henry, et al., 2021; Wang, Toro, et al., 2021). In contrast, there was less and mixed support for the interrelations between caregiver/family functioning and child externalizing problems (e.g., Berry et al., 2021; Fosco et al., 2022; Frigerio et al., 2022; Gordon-Hacker et al., 2022; Lengua et al., 2022; Neubauer et al., 2021; Roche et al., 2022; Rosenthal et al., 2022; Shelleby et al., 2022; Trucco et al., 2022; Wang, Henry, et al., 2022). Lastly, there is emerging evidence linking caregiver/family functioning with child positive adjustment (e.g., Donker et al., 2021; Essler et al., 2021; Fosco et al., 2022; Neubauer et al., 2021; Shi & Wang, 2021; Wang, Ng, & Siu, 2022; Wang, Henry, et al., 2022; Wang, Henry, et al., 2021; Wang, Toro, et al., 2021), though more research is needed to better explicate these relationships. Notably, there was support for bidirectional relationships within pathways, such as between (i) child internalizing behaviours and family dysfunction (e.g., Browne et al., 2021), parental stress (e.g., Paschke et al., 2021), and change in family well-being (e.g., Nocentini et al., 2022) and between (ii) child positive adjustment and caregiver functioning (e.g., maternal coping [Jones et al., 2022] and parental strain [Essler et al., 2021]). However, additional primary studies are needed to study the extent to which family members are reciprocally influencing one another, and/or whether effects are stronger in one direction than another.

Mixed findings across studies may be due to several factors, as studies were heterogenous in terms of design, sample attributes, number of and interval between time points, current state of the pandemic at the time of data collection, varying constructs, among other characteristics. For example, some studies explored caregiver distress (e.g., depression and stress), while others explored caregiver well-being (e.g., resilience and coping). Likewise, studies varied in whether they examined positive child adjustment (e.g., primary coping and positive affect) or child maladjustment (e.g., anxiety and conduct problems). The nature of valence (positive or negative) or intensity of constructs may influence the strength of relationships among variables.

An iterative review of our synthesis findings allowed our team to generate several themes that characterize the available data. These themes encompass (a) mechanisms of influence (i.e., *Cascading Effects*, *Complementarity Processes*, and *Stress Inoculation*) and (b) processes of *Risk and Resilience*. What follows is a description of these themes for explicating our findings in relation to the COVID-19 FDM to enhance our understanding of the impacts of COVID-19 social disruptions to child and family functioning.

Cascading Effects, Complementarity Processes, and Stress Inoculation

Developmental cascades (also referred to *spillover effects*) describe “cumulative consequences for development of the many interactions and transactions occurring in developing systems that result in spreading effects across levels, among domains at the same level, and across different systems or generations” (Masten & Cicchetti, 2010). In line with the COVID-19 FDM, there is robust evidence in support of a cascading process wherein pandemic-specific social disruptions impact child and caregiver/family functioning (Browne et al., 2021; Fosco et al., 2022; Lengua et al., 2022; Rizeq et al., 2021; Wang, Ng & et al., 2022; Wang, Henry, et al., 2021). Cascading processes were also evident within pathways including only caregiver/family and child constructs (e.g., heightened parent-child conflict predicting elevated adolescent depression; Achterberg et al., 2021; Essler et al., 2021; Frigerio et al., 2022; Paschke et al., 2021; Qu et al., 2021; Trucco et al., 2022; Wong et al., 2022). These spillover effects within the family system align with other research published earlier during the pandemic (Masten, 2021).

There may be other mechanisms of influence within families that were identified in the current review. Family Systems Theory posits that families aim to maintain *homeostasis* (i.e., a state of functioning based on established behaviours/norms; Lloyd-Hazlett, 2016; Watson, 2012), which may be accomplished through *complementary* patterns of interaction – when family members' interactions represent "behaviour-like puzzle pieces" that result in functional or dysfunctional relationships (Seshadri, 2019). In the current review, in relation to pandemic-related child stress, there were lower levels of positive parenting for children who were coping well pre-pandemic, and higher levels of positive parenting for children who were coping poorly prior to COVID-19 (Donker et al., 2021). This may reflect a process of adaptive complementarity – parents are responding to a stressful context (the pandemic) in a way that is responsive to their child's existing needs (i.e., coping ability), which may be adaptive if parental resources are limited for reasons such as dealing with their own mental health or financial struggles. In another study, children who were not satisfied with family life pre-pandemic had a reduction in stress when their parents' stress increased during the pandemic (Wong et al., 2022). In this example, the reversal of roles between children and their caregivers (i.e., an increase in caregiver stress was related to a decrease in child stress) may have restored balance within the family system. When the desire to maintain homeostasis trumps a family's ability to adapt to changing demands (e.g., redrawing boundaries or renegotiating relationships in response to reductions in income, school closures, loss of childcare, etc.) this can result in maladaptive and dysfunctional processes within families (Lebow & Sexton, 2016). We are not able to speak to this process based on the current findings, but this is a ripe area for future pandemic research.

Yet another mechanism of influence that was identified in the literature supports *stress inoculation* effects – prior exposure to moderate stressors may be protective for youth who experience subsequent trauma or challenges (Masten & Narayan, 2012). For instance, in two studies, children and caregivers who started worse off pre-pandemic (e.g., low family functioning or greater levels of caregiver stress) were doing better than families who had higher baseline levels of functioning (Fosco et al., 2022; Paschke et al., 2021). Findings from Wong et al. (2022), described above, may alternatively be interpreted using a stress inoculation perspective: Children who reported less satisfaction with family life pre-pandemic coped well with caregiver stress during the pandemic (i.e., they were stress-adapted). In this case, being unsatisfied with family life pre-pandemic may have acted as a moderate stressor, enabling youth to better tolerate and respond to subsequent stressful experiences such as heightened caregiver stress during COVID-19. This is in contrast with the negative spillover occurring for children who were more satisfied with their family life pre-pandemic (i.e., an increase in parent stress resulted in an increase in child stress; Wong et al., 2022). These alternative mechanisms of influence may help to explain the unexpected findings, not in line with the COVID-19 FDM and, as a result, future research is needed.

Processes of Risk and Resilience

Processes of risk (i.e., heightened vulnerability) and resilience (i.e., protective factors and/or positive adaptation) was the second theme we generated following our review of the empirical support for the COVID-19 FDM. One pre-existing vulnerability to child and family functioning that was identified was economic hardship, putting some families at greater risk during the pandemic. Though not reported in the narrative synthesis, higher socioeconomic vulnerability prior to the pandemic indirectly predicted parent-reported pandemic stress and child mental health via greater material and economic deprivation due to COVID-19 (Rizeq et al., 2021). Other studies provided evidence that these linkages may have operated through changes to the caregiving and family environment; lower-income families were more vulnerable to the negative disruptions (i.e., health, financial, social, school, and environment stressors) caused by the pandemic, which had negative consequences to caregiver and family functioning and, in turn, child adjustment (Lengua et al., 2022; Wang, Henry, et al., 2021). This is in accordance with the Bioecological Model of Development, as child adjustment was indirectly impacted by distal factors (i.e., prior economic hardship) through more proximal COVID-specific disruptions (e.g., food and housing) and family influences. Financial instability during the pandemic was itself a risk factor for child and family well-being (Paschke et al., 2021). For instance, family income loss during the pandemic worsened mental health among Latinx adolescents due to increased childcare responsibilities (Roche et al., 2022). Notably, parental support did not buffer against the cumulative negative impact of job loss and adolescent caregiving burden on adolescent mental health. Consistent with the Family Stress Model, pre-existing financial hardship and pandemic-related economic strain represent key risk factors for poor child and family adjustment during COVID-19.

Other vulnerability factors included pre-pandemic neurodevelopmental and mental health diagnoses (e.g., autism spectrum disorder, ADHD [Corbett et al., 2021; Operto et al., 2022; Rosenthal et al., 2022]2023-08-21 8:43:00 PM, epilepsy, specific learning disorder, intellectual disability, behavioural disorder [Operto et al., 2022]), prior relationship strain (e.g., unsupportive parenting [Shi & Wang, 2021]), and parental overreactivity (Achterberg et al., 2021). Processes of vulnerability were not consistently supported. For instance, a few studies tested whether baseline functioning (i.e., vulnerability) or change in functioning (i.e., improvement/deterioration) was a stronger predictor of positive and negative outcomes during COVID-19. Across several pathways, Fosco et al. (2022) found more support for change in family dynamics (e.g., conflict, cohesion, and discipline) predicting child maladjustment rather than initial scores of the same measures. Similarly, another study demonstrated that baseline family well-being did not predict change in child emotional difficulties; rather, change in family well-being covaried with change in child emotional difficulties (Nocentini et al., 2022). Essler and colleagues also provided support for change scores in parental strain predicting intraindividual change in child emotional well-being. Overall, these findings illustrate the importance of considering the magnitude of change in family relationships, rather than simply the starting point, in predicting child and family functioning during the pandemic. This has implications for identifying who might be at greatest risk for negative outcomes during the pandemic. In line with the principles of homeostasis, greater dysfunction within the family system compared to “normal” results in disequilibrium (i.e., imbalance) and therefore causes instability and discomfort among individual members within the system (Lebow & Sexton, 2016).

Processes of resilience were examined in various ways, such as pre-existing circumstances that support child/family functioning during the pandemic or processes during the pandemic that facilitate healthy adjustment. Several protective factors emerged such as working from home during the pandemic (Wang, Henry, et al., 2021), family/parent support (Wang, Ng,

& Siu, 2022; Wang, Toro, et al., 2021), and adaptive coping (Jones et al., 2022). For instance, pre-pandemic maternal well-being had positive ripple effects on family coping during the pandemic (Jones et al., 2022). Similarly, children from more supportive families pre-pandemic had enhanced self-efficacy, optimism, hope, and resilience during the pandemic (Wang, Ng, & Siu, 2022). Despite only a few studies exploring processes of resilience and positive adaptation via pathways linking children, caregivers, and family subsystems, there are likely many other proximal and distal protective factors contributing to positive functioning during the pandemic.

Possible Adaptations to the COVID-19 FDM

There are a few areas of modification to the model that would better represent the empirical literature thus far. Specifically, the COVID-19 FDM relies on developmental cascades/spillover effects, without considering other processes of change such as complementary relational patterns and stress-inoculation (stress-adapted) effects. These are interesting patterns that were identified within this review and, as a result, should be considered in future longitudinal work. One question we could ask is 'under which circumstances do spillover effects versus complementarity and/or stress-inoculation processes occur?' Additionally, the model would benefit from distinguishing between magnitude of change (e.g., deterioration/improvement) as a complement to considering initial levels of functioning (e.g., vulnerability/asset) in conceptualizing processes of risk and resilience. Lastly, the original COVID-19 FDM model emphasized unidirectional effects, for example from caregiver well-being to family well-being, and family well-being to child adjustment. However, including these as bidirectional pathways is justified based on the findings from this review.

Strengths and Limitations

This review had many strengths such as the rigorous study design including pre-registration with PROSPERO, a comprehensive and systematic search, and reporting in line with PRISMA guidelines. Moreover, the papers included represent a geographically diverse sample of longitudinal studies, enabling a better understanding of the global impact of COVID-19 on child and family functioning. By only including longitudinal studies, which includes leveraging natural experiments with pre-pandemic data, we were able to speak to the directionality of effects – an important component of studying developmental cascades. Another strength was incorporating a risk-of-bias assessment to complement our narrative synthesis; this allowed us to use higher quality studies when generating interpretations and conclusions about the explanatory utility of the COVID-19 FDM. Lastly, this review was comprehensive in that it captured processes of risk in addition to positive adaptation and resilience, the latter of which is often overlooked and understudied during times of adversity.

There are also limitations that should be considered. First, in attempting to balance comprehensiveness with feasibility, we excluded several important domains of child development, including academic, cognitive, biological, and social functioning. Additionally, we did not examine all components of the COVID-19 FDM, such as the caregiver-family interrelations. Another important limitation is that this review only covers the first two years of the pandemic and therefore future research should explore this model over a longer period. It is further possible that we missed key studies that were published in languages other than English (e.g., Chinese) which could have implications for our synthesis. A final limitation was that we altered the risk-of-bias tool and, thus, utilized an unvalidated scale. We believe the benefits gained by adding items based on recommendations from the literature outweigh the risks.

Despite these limitations, we believe this is a foundational start to the theory-building work required for pandemic research.

Future Directions

Findings from the current review highlighted several gaps in the existing literature. In addition to those already mentioned in the *Summary of Support*, there are further methodological considerations that should be incorporated into future work. Specifically, results from the risk-of-bias assessment indicated the following limitations in primary studies: i) there was a significant issue with attrition and strategies to reduce attrition are important for future longitudinal work; ii) only a few studies provided power justification and, therefore, it is possible that studies were underpowered to detect effects; and iii) approximately half of the included studies examined mediators and moderators in the pathways of interest. Future work should focus on explaining when and/or why certain families are more at risk or doing better during the pandemic than others. Additionally, although the current review did not focus on effect sizes, it would be helpful for subsequent meta-analyses to quantify the magnitude of effects to determine clinical relevance.

In addition, only three studies (6.4%) in our review included four or more periods of data collection during the pandemic, which may have been due to our eligibility criteria. Longitudinal designs with more than three time points are needed to truly assess non-linear change and developmental cascades (Masten & Cicchetti, 2010; Vaillancourt et al., 2021). Additionally, multiple informants should be included particularly when conducting family systems research as findings may differ based on the respondent (e.g., Corbett et al., 2021; De Los Reyes et al., 2015; Georgiades et al., 2019). Studies should also attempt to include fathers rather than over-relying on mothers, as evidenced by 90% of included studies (k = 27/30) consisting mostly of mothers.

Although our review captured geographically diverse studies, there was no research from regions such as South Asia and Africa. More work should focus on child and family functioning in lower-income countries to fully understand the global impact of pandemic social disruptions. A final consideration for future work is exploring the COVID-19 FDM pathways within different age groups of children, particularly since there were very few studies on young children (i.e., mean age: 2–5 years).

Conclusions

The social disruptions caused by the pandemic have had an immense impact on child, caregiver, and family functioning. Findings from the current study provide initial support for the utility of the COVID-19 FDM for understanding processes of risk and resilience in family systems and implications for child internalizing, externalizing, and positive adjustment. Notably, the findings included in this study provide a 2-year snapshot in time for how families experienced and adapted to the COVID-19 pandemic. Processes of risk and resilience are dynamic and will likely shift as time passes. The COVID-19 FDM provides a working framework, in need of continued development, that will aid in future research, clinical work, and policy for supporting pandemic recovery efforts.

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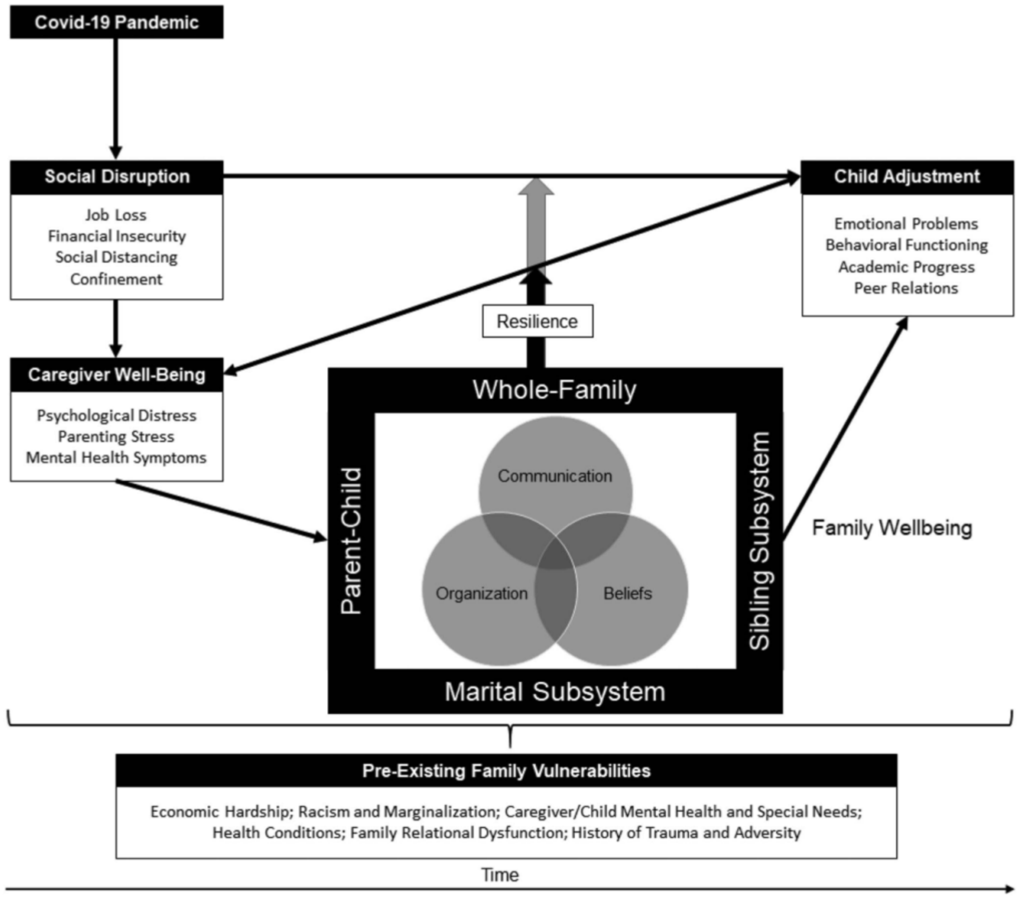
Figure 1

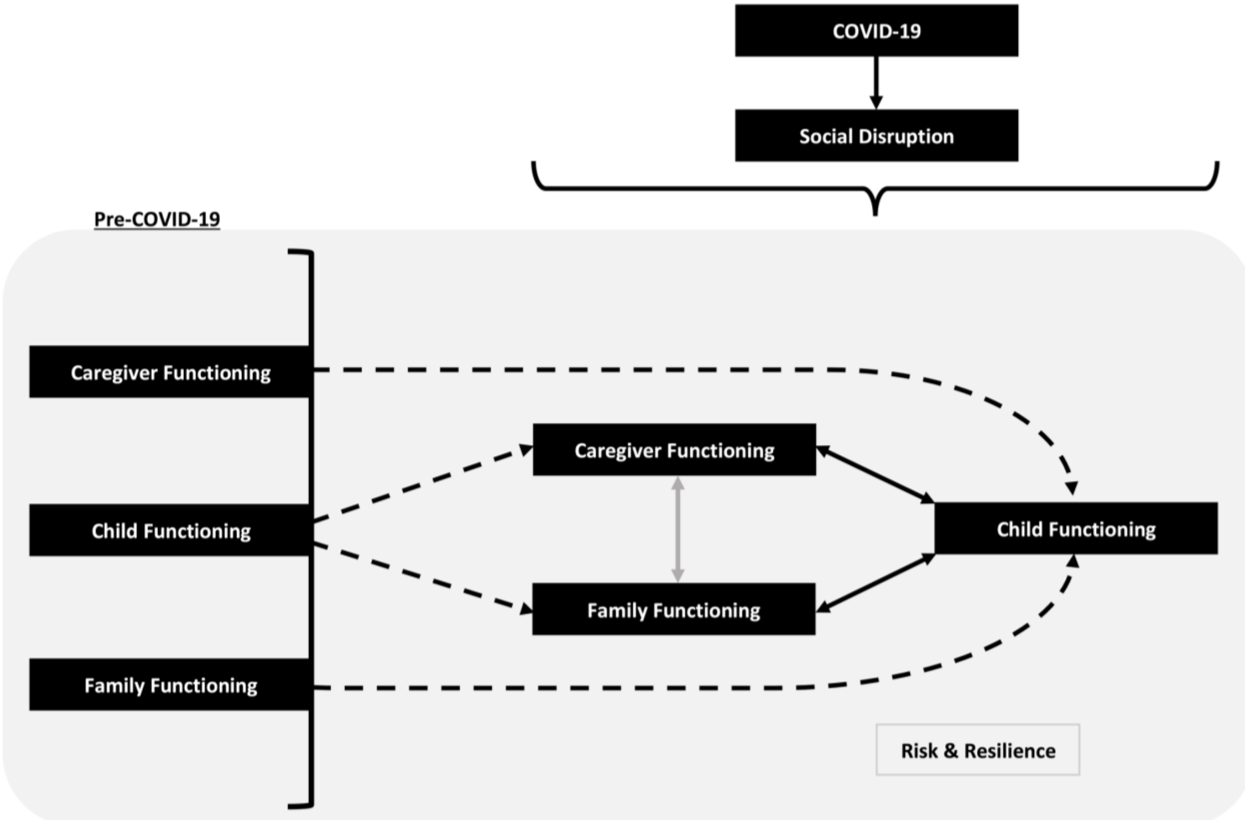
The COVID-19 Family Disruption Model



Note. Original COVID-19 FDM model developed by Prime et al. (2020).

Figure 2

The Simplified COVID-19 Family Disruption Model



Note. Modified COVID-19 FDM model serving as the model under empirical review in the current study. Dashed lines represent longitudinal pathways between pre-pandemic and pandemic variables. Solid lines illustrate longitudinal pathways between variables assessed during the pandemic. Black lines demonstrate the pathways under investigation in the current review. Light grey lines represent additional pathways that are not principal to the current study. Processes of risk and resilience are considered for all pathways enclosed in the simplified model.

Figure 3

PRISMA Flow Diagram

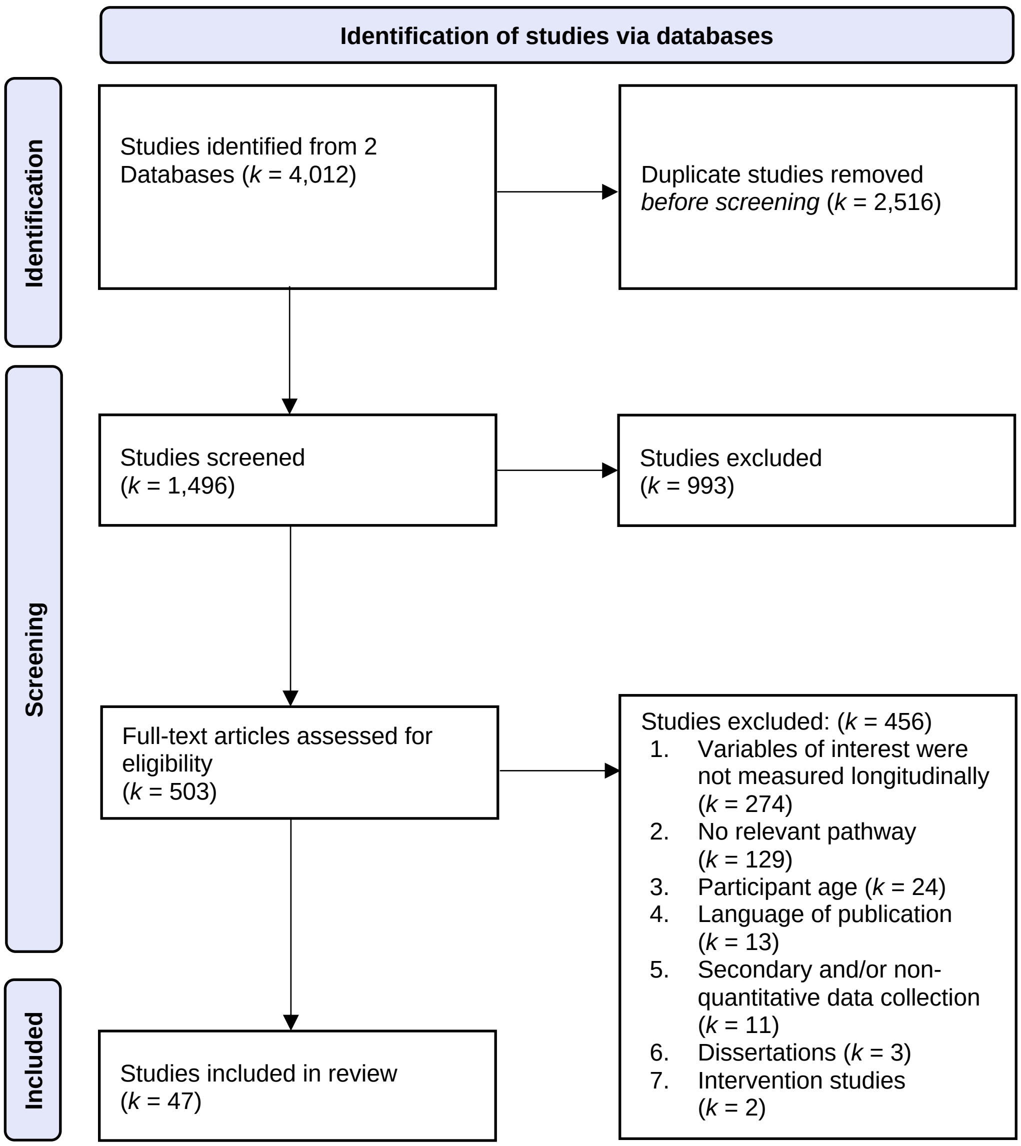


Figure 4

Risk of Bias

D1: Was the research question or objective in this paper clearly stated?
D2: Was the study population clearly specified and defined?
D3: Was the participation rate of eligible persons at least 50%?
D4: Was a sample size justification, power description, or variance and effect estimates provided?
D5: Were the predictor measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
D6: Was the predictor(s) assessed more than once over time?
D7: Was a pre-covid baseline measure included in the analysis?
D8: Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
D9: Was the child adjustment variable child-reported?
D10: Was loss to follow-up after baseline 20% or less?
D11: Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between predictor(s) and outcome(s)?
D12: Were moderators and/or mediators examined?

Table 1

Descriptive Characteristics and Primary Findings from Individual Studies

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Achterberg et al., 2021	Netherlands	T_{pre} – T_{COVID}	$T_{pre:}$ 2019 $T_{COVID:}$ April 28 – May 10, 2020	Multiple Regression	**Significant Results:** • Parental overreactivity → child perceived stress **Non-Significant Results:** • Parental negative feelings → child perceived stress	Lower
Berry et al., 2021	Ireland	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ March 28 – May 18, 2020 $T_{COVID2:}$ June 10 – July 19, 2020 $T_{COVID3:}$ September 21 – October 21, 2020	MANOVA/ANOVA	**Non-Significant Results:** • Child externalizing group → trajectory of parental functioning (i.e., sources of stress, well-being, stress responses, and coping)	Lower
Browne et al., 2021	Multinational	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ May 2020 $T_{COVID2:}$ July 2020	Multilevel Path Analysis	**Significant Results:** • Family dysfunction → family-average child mental health problems • COVID-19 disruption → family dysfunction (mediator) → family-average child mental health problems • Family-average child mental health problems → caregiver distress AND family dysfunction AND family-average parenting quality • COVID-19 disruption → family-average child mental health problems (mediator) → caregiver distress • COVID-19 disruption → family-average child mental health problems (mediator) → family-average parenting quality • Family-average child mental health problems → sibling differences in child mental health problems • COVID-19 disruption → family-average child mental health problems (mediator) → sibling differences in child mental health • Child-specific mental health problems → child-specific parenting quality (within-family)	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					• Child-specific mental health problems → family variance (i.e., SD) in child-specific parenting quality (mediator) → child-specific parenting quality **Non-Significant Results:** • Child-specific parenting quality → child-specific mental health problems (within-family)	
Cooper et al., 2021	England	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ March 30 – June 1, 2020 $T_{COVID2:}$ 1-month follow-up	Hierarchical Regression	**Significant Results:** • Closeness to parents → child emotional symptoms AND psychological distress **Non-Significant Results:** • Closeness to parents → child conduct problems AND hyperactivity-inattention	Higher
Corbett et al., 2021	USA	T_{pre} – T_{COVID}	$T_{pre:}$ August 2017 – August 2018 $T_{COVID:}$ April 27 – May 29, 2020	MANOVA/ANOVA Hierarchical Regression Repeated Measures ANOVA/ MANCOVA	**Significant Results:** • Child diagnosis → caregiver personal stress AND coping response AND state anxiety • Caregiver stress → caregiver-reported child stress **Non-Significant Results:** • Child diagnosis → caregiver trait anxiety • Caregiver stress → child self-reported stress • Interaction between child diagnosis AND time → caregiver stress AND anxiety	Lower
Di Giunta et al., 2021	Italy	T_{pre} – T_{COVID}	$T_{pre:}$ May – December 2019 $T_{COVID:}$ August – September 2020	Path Analysis	**Significant Results:** • Unsupportive parental emotion socialization → child total problems	Higher

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Donker et al., 2021	Netherlands	T_{pre} – T_{COVID}	$T_{pre:}$ Fall 2019 $T_{COVID:}$ Spring 2020	Latent Change Score Models	**Significant Results:** • Interaction between child-reported COVID-related stress AND active coping → change in positive parenting **Non-Significant Results:** • Interaction between child-reported COVID-related stress AND active coping → change in parental support • Interaction between child-reported COVID-related stress AND active coping → change in negative interactions • Interaction between child-reported COVID-related stress AND active coping → change in discipline practices	Lower
Duttweiler et al., 2021	USA	T_{pre} – T_{COVID}	$T_{pre:}$ 18.34 months (on average) before T_{COVID} $T_{COVID:}$ June – September 2020	Regression	**Non-Significant Results:** • Change in mother depression symptoms → change in child rumination (mediator) → change in child depression symptoms • Change in child depression symptoms → change in mother rumination (mediator) → change in mother depression symptoms	Lower
Essler et al., 2021	Germany	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ April – May 2020 $T_{COVID2:}$ July 2020	Cross-Lagged Panel Models True Intraindividual Change Models	**Significant Results:** • Child emotional well-being → parental strain • Child problem behaviour → parental strain • Child problem behaviour → negative relationship quality (moderator) → parental strain • Parental strain → child problem behaviour • Parental strain → change in child emotional well-being • Change in parental strain → change in child emotional well-being • Parental strain → change in child problem behaviour • Change in parental strain → change in child problem behaviour **Non-Significant Results:** • Child emotional well-being → relationship quality (moderator) → parental strain • Parental strain → child emotional well-being	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					• Parental strain → relationship quality (moderator) → child emotional well-being • Child problem behaviour → positive relationship quality (moderator) → parental strain • Parental strain → relationship quality (moderator) → child problem behaviour	
Feurer et al., 2021	USA	T_{pre} – T_{COVID}	$T_{pre:}$ 19.31 months (on average) before T_{COVID} $T_{COVID:}$ June – September 2020	Regression	**Non-Significant Results:** • Maternal history of major depressive disorder → child depressive symptoms	Lower
Fogarty et al., 2022	Australia	T_{pre} – T_{COVID}	$T_{pre:}$ 1, 4, and 10 years postpartum $T_{COVID:}$ June – September 2020	Hierarchical Multiple Regression	**Non-Significant Results:** • Maternal mental health difficulties → child depression AND anxiety	Lower
Fosco et al., 2022	USA	T_{pre} – T_{COVID}	$T_{pre:}$ ~8.7 months (on average) before T_{COVID} $T_{COVID:}$ May 2020	Structural Equation Models	**Significant Results:** • Decrease in family cohesion → risk for child internalizing problems • Increase in family conflict → risk for child internalizing AND externalizing problems • Harsh discipline → child internalizing problems • Increase in harsh discipline → child internalizing AND externalizing problems • Increase in lax discipline → child internalizing AND externalizing problems • In a model that tested for the impact of change in family cohesion on child functioning, parental distress → child internalizing problems • In a model that tested for the impact of change in family conflict on child functioning, parental distress → child internalizing AND externalizing problems	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					• In a model that tested for the impact of change in family routines on child functioning, parental distress → child internalizing problems • In a model that tested for the impact of change in harsh discipline on child functioning, parental distress → child internalizing problems • In a model that tested for the impact of change in lax discipline on child functioning, parental distress → child internalizing AND externalizing problems • In a model that tested for the impact of change in parental warmth on child functioning, parental distress → child internalizing problems **Non-Significant Results:** • Family cohesion AND conflict AND routines → child internalizing AND externalizing problems • Change in family cohesion → child externalizing problems • Change in family routines → child internalizing AND externalizing problems • Harsh discipline → child externalizing problems • Lax discipline → child internalizing AND externalizing problems • Parental warmth → child internalizing AND externalizing problems • Change in parental warmth → child internalizing AND externalizing problems • Child internalizing AND externalizing problems → latent change scores for any of the family functioning (i.e., cohesion, conflict, routines) AND parenting (i.e., harsh discipline, lax discipline, parental warmth) variables • In a model that tested for the impact of change in family cohesion on child functioning, parental distress → child externalizing problems • In a model that tested for the impact of change in family routines on child functioning, parental distress → child externalizing problems • In a model that tested for the impact of change in harsh discipline on child functioning, parental distress → child externalizing problems • In a model that tested for the impact of change in parental warmth on child functioning, parental distress → child externalizing problems	

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Frigerio et al., 2022	Italy	T_{pre} – T_{COVID}	$T_{pre:}$ Child at ages 1 and 3 years $T_{COVID:}$ April 22 – June 3, 2022	Hierarchical Linear Models	**Significant Results:** • Intensity of maternal mood → linear and quadratic change in child emotionally reactive AND anxious/depressed symptoms • Intensity of maternal mood → quadratic change in child withdrawn AND aggressive behaviour **Non-Significant Results:** • Intensity of maternal mood → linear and quadric change in child somatic complaints • Intensity of maternal mood → linear and quadric change in child attention problems • Directionality of maternal mood → linear and quadric change in child emotionally reactive symptoms AND anxious/depressed symptoms AND withdrawn behaviour AND aggressive behaviour AND somatic complains AND attention problems	Lower
Gordon-Hacker et al., 2022	Israel	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ September 2020 $T_{COVID2:}$ October 2020 $T_{COVID3:}$ January 2021 $T_{COVID4:}$ March 2021	2-Level Multilevel Models	**Significant Results:** • Change in household chaos → change in child behavioural problems (within-family effect) **Non-Significant Results:** • Change in household chaos → change in child emotional problems (within-family effect) • Change in maternal depression → change in child behavioural AND emotional problems (within-family effects)	Lower
Guazzelli Williamson et al., 2022	Peru	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ April 2020 $T_{COVID2:}$ May 2020 $T_{COVID3:}$ May 2020 (1-week after T_{COVID2})	Linear Mixed Effects Models	**Significant Results:** • Interaction between caregiver resilience AND time → change in child anxiety **Non-Significant Results:** • Interaction between caregiver resilience AND time → change in child depression	Higher

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Hastings et al., 2021	Jordan	T_{pre} – T_{COVID+}	$T_{pre:}$ 2019 $T_{COVID1:}$ June 2020 $T_{COVID2:}$ December 2020	Path Analysis	**Significant Results:** • Child psychosocial adjustment → negative changes to family life • Adaptive coping responses → child psychosocial adjustment **Non-Significant Results:** • Child psychosocial adjustment → adaptive coping responses • Negative changes to family life → child psychosocial adjustment	Lower
Janssen et al., 2020	Netherlands	T_{pre} – T_{COVID}	$T_{pre:}$ September 2018 – November 2019 $T_{COVID:}$ April 14 – 28, 2020	2-Level Multilevel Models	**Non-Significant Results:** • Interaction between child intolerance of uncertainty AND time → parenting behaviours	Higher
Jones et al., 2022	USA	T_{pre} – T_{COVID}	$T_{pre:}$ Composite of child at ages 3, 4, and ~5-6 years old $T_{COVID1:}$ Late spring – summer 2020 $T_{COVID2:}$ Late fall 2020 – early winter 2021	Path Analysis Cross-Lagged	**Significant Results:** • Maternal well-being → child primary coping • Child primary coping → maternal adaptive coping • Maternal adaptive coping → child primary coping • Maternal well-being → child primary coping (mediator) → maternal adaptive coping **Non-Significant Results:** • Child primary coping → maternal positive parenting behaviour	Lower
Jordan et al., 2022	USA	T_{pre} – T_{COVID}	$T_{pre:}$ Not indicated $T_{COVID:}$ May – July 2020	Correlation	**Significant Results:** • Maternal mental health (i.e., depression, phobic anxiety) → child pandemic worries in the non-clinical group • Mother-child relationship (i.e., communication, involvement, frustration) → child pandemic worries in the fragile X syndrome group **Non-Significant Results:** • Maternal mental health (i.e., depression, phobic anxiety) → child pandemic worries in the fragile X syndrome group	Higher

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					• Associations between maternal mental health (i.e., depression, phobic anxiety) AND child pandemic worries were not significantly different from each other among the clinical and non-clinical groups • Mother-child relationship (i.e., communication, involvement, frustration) → child pandemic worries in the non-clinical group • Associations between mother-child relationship (i.e., communication, involvement, frustration) AND child pandemic worries were not significantly different from each other among the clinical and non-clinical groups	
Köhler-Dauner et al., 2021	Germany	T_{pre} – T_{COVID}	$T_{pre:}$ 3 months postpartum $T_{COVID:}$ May – July 2020	Ordinary Least Squares and Multiple Regression Path Analysis	**Significant Results:** • Maternal attachment representation → severity of maternal depression (mediator) → child mental health **Non-Significant Results:** • Maternal attachment representation → child mental health	Lower
Lengua et al., 2022	USA	T_{pre} – T_{COVID+}	$T_{pre:}$ Child at age 12 years $T_{COVID1:}$ April – May 2020 $T_{COVID2:}$ November 2020 – January 2021	Path Analysis	**Significant Results:** • Income-to-needs → pandemic-related stressors → maternal mental health → child internalizing problems (T_{COVID1}) → child internalizing problems (T_{COVID2}) • Income-to-needs → pandemic-related stressors → maternal mental health → child externalizing problems (T_{COVID1}) → child externalizing problems (T_{COVID2}) • Pandemic-related stressors → maternal mental health → child internalizing problems (T_{COVID1}) → child internalizing problems (T_{COVID2}) • Pandemic-related stressors → maternal mental health → child externalizing problems (T_{COVID1}) → child externalizing problems (T_{COVID2}) **Non-Significant Results:** • Maternal mental health → child internalizing AND externalizing problems	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Liang et al., 2021	Italy	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ March 2020 $T_{COVID2:}$ April 2020 $T_{COVID3:}$ May 2020	Path Analysis	**Significant Results:** • Parental stress → child anxiety AND depression • Parent expressive suppression → child anxiety AND depression • Parental stress → parent expressive suppression (mediator) → child anxiety AND depression	Higher
McArthur et al., 2021	Canada	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ May – July 2020 $T_{COVID2:}$ July – August 2020	Multivariable Linear Regression Analysis	**Non-Significant Results:** • Maternal anxiety AND depression → child anxiety • Maternal anxiety AND depression → child depression • Maternal anxiety AND depression → child happiness	Lower
Neubauer et al., 2021	Germany	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ March 27 – April 3, 2020 $T_{COVID2:}$ Daily diary over the next 21 days $T_{COVID3:}$ Day after last day of T_{COVID2} (end of April 2020)	Latent Change Regression Models	**Significant Results:** • Daily parental need frustration → change in child prosocial behaviour • Child daily positive affect → change in parental vitality **Non-Significant Results:** • Child daily positive affect → change in family cohesiveness AND expressiveness AND organization AND control • Child daily negative affect → change in family cohesiveness AND expressiveness AND organization AND control • Daily autonomy support → change in child emotional problems AND hyperactivity/inattention AND prosocial behaviour • Daily parental need satisfaction → change in child emotional problems AND hyperactivity/inattention AND prosocial behaviour • Daily parental need frustration → change in child emotional problems AND hyperactivity/inattention • Child daily positive affect → change in parental stress • Child daily negative affect → change in parental vitality AND stress	Lower
Nocentini et al., 2022	Italy	T_{pre} – T_{COVID}	$T_{pre:}$ January – February 2020	Bivariate Latent Change Score Model	**Significant Results:** • Change scores in child emotional difficulties ←→ change scores in family well-being (covariance)	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
			T_{COVID}: June 5 – 15, 2020		**Non-Significant Results:** • Family well-being → latent change score of child emotional difficulties • Child emotional difficulties → latent change score of family well-being	
Omiya et al., 2022	Japan	T_{pre} – T_{COVID}	T_{pre}: March – April 2019 T_{COVID}: July – September 2020	*t*-Test Generalized Estimating Equation-Logistic Model	**Non-Significant Results:** • Child-reported parenting nurturing attitude (i.e., acceptance, psychological control, monitoring) → trajectory of child sense of coherence • Caregiver-reported parenting attitude (i.e., acceptance/child-centered, control, inconsistent indecisive discipline) → trajectory of child sense of coherence	Higher
Operto et al., 2022	Italy	T_{pre} – T_{COVID}	T_{pre}: 2018 – 2019 T_{COVID}: March 23 – May 15, 2020	Wilcoxon Signed-Rank Test	**Significant Results:** • Child diagnosis: autism, epilepsy, specific learning disorder, intellectual disability, AND behavioural disorder → increase in caregiver total and subscale stress scores • Child diagnosis: anxiety → increase in caregiver total and subscale stress scores (i.e., parental distress and dysfunctional parent-child interaction) • Child diagnosis: mood disorders → increase in caregiver subscale stress score (i.e., dysfunctional parent-child interaction) **Non-Significant Results:** • Child diagnosis: communication disorder and attention deficit/hyperactivity disorder → change in caregiver total and subscale stress scores • Child diagnosis: anxiety → change in caregiver subscale stress score (i.e., difficult child) • Child diagnosis: mood disorders → change in caregiver total and subscale stress scores (i.e., parental distress and difficult child)	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Paschke et al., 2021	Germany	T_{pre} – T_{COVID}	$T_{pre:}$ September 13 – 27, 2019 $T_{COVID:}$ April 20 – 30, 2020	Multilevel Model Logistic Regression	**Significant Results:** • Increase in child psychological stress → increase in parental psychological stress • Increase in parental psychological stress → increase in child psychological stress	Lower
Pelham et al., 2022	USA	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ May 16, 2020 $T_{COVID2:}$ August 4, 2020 $T_{COVID3:}$ December 13, 2020 $T_{COVID4:}$ May 17, 2021	First-Differenced (Within-Family) Regression Models	**Significant Results:** • Within-family change in parental knowledge/monitoring → within-person change in child depressive symptoms	Lower
Penner et al., 2021	USA	T_{pre} – T_{COVID}	$T_{pre:}$ January 2020 $T_{COVID1:}$ April 2020 $T_{COVID2:}$ Early May 2020 $T_{COVID3:}$ Late May 2020	Repeated-Measures Mixed ANCOVA	**Significant Results:** • Interaction between family functioning AND time → child externalizing problems **Non-Significant Results:** • 3-way interaction between family functioning AND time AND group (i.e., high vs. low child mental health problems) → child internalizing AND externalizing AND attention AND total problems • Interaction between family functioning AND time → child internalizing AND attention AND total problems	Lower
Qu et al., 2021	China	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ April 24, 2020 $T_{COVID2:}$ July 6, 2020	Hierarchical Regression Analyses	**Significant Results:** • Parent-child conflict → child depression AND anger • Parent-child intimacy → child anger • Child stress → parent-child conflict (moderator) → child depression • Child stress → parent-child conflict (moderator) → child anger	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					Non-Significant Results: • Parent-child intimacy → child depression • Child stress → parent-child intimacy (moderator) → child depression • Child stress → parent-child intimacy (moderator) → child anger	
Ren et al., 2021	China	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ January 28 – 30, 2020 $T_{COVID2:}$ March 7 – 11, 2020	Path Analysis	**Significant Results:** • Parental fear induction → child depressive symptoms • Parental fear induction → child trait anxiety (moderator) → child depressive symptoms	Lower
Rizeq et al., 2021	Canada	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ May – September 2020 $T_{COVID2:}$ June – November 2020	Structural Equation Models	**Significant Results:** • Caregiver-reported child mental health difficulties AND child-reported mental health difficulties AND child-reported stress → family functioning • Caregiver-reported child mental health difficulties → parent stress AND parent mental health difficulties • Parent stress AND parent-mental health difficulties → caregiver-reported child mental health difficulties	Lower
Roche et al., 2022	USA	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ Fall 2020 $T_{COVID2:}$ Spring 2021	Structural Equation Models	**Non-Significant Results:** • COVID stressors → parental support (moderator) → child internalizing AND externalizing symptoms	Lower
Rosenthal et al., 2022	USA	T_{pre} – T_{COVID}	$T_{pre:}$ 2017–2018 $T_{COVID1:}$ May 2020 $T_{COVID2:}$ March 2021	Independent Samples *t*-Tests Chi-Square Tests Multiple Regression	**Significant Results:** • Child ADHD diagnosis → increase in family conflict **Non-Significant Results:** • Child ADHD diagnosis → parental monitoring (moderator) → family conflict • Child ADHD diagnosis → parental monitoring (moderator) → child COVID-19 rule-breaking	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					• Child ADHD diagnosis → parental monitoring (moderator) → child negative emotions resulting from COVID-19 fears	
Shelleby et al., 2022	USA	T_{COVID1} – T_{COVID+}	T_{COVID1}: April 20 – May 6, 2020 T_{COVID2}: May 7 – 23, 2020 T_{COVID3}: May 27 – June 6, 2020 T_{COVID4}: June 11 – 20, 2020	Structural Equation Modeling	**Significant Results:** • Child behaviour problems → maternal psychological distress • Negative parenting → child behaviour problems **Non-Significant Results:** • Child behaviour problems → negative parenting • Maternal psychological distress → child behaviour problems • COVID-19 percent cases (by zip code) → pandemic-related financial stress → maternal psychological distress → negative parenting → child behaviour problems	Lower
Shi & Wang, 2021	China	T_{pre} – T_{COVID}	T_{pre}: December 2018 T_{COVID}: May 2020	Two-Group Path Analysis	**Significant Results:** • Perceived parental supportive reactions → child approach AND avoidance coping • Perceived parental unsupportive reactions → child avoidance coping • Perceived parental supportive reactions → child approach coping (mediator) → child emotional maladjustment • Perceived parental supportive reactions → child avoidance coping (mediator) → child emotional maladjustment • Perceived parental unsupportive reactions → child avoidance coping (mediator) → child emotional maladjustment **Non-Significant Results:** • Perceived parental unsupportive reactions → child approach coping • Perceived parental supportive AND unsupportive reactions → child emotional maladjustment • Perceived parental unsupportive reactions → child approach coping (mediator) → child emotional maladjustment	Lower
Trucco et al., 2022	USA	T_{COVID1} – T_{COVID+}	T_{COVID1}: Summer 2020	Path Model	**Significant Results:**	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
			$T_{COVID2:}$ Fall 2020 $T_{COVID3:}$ Winter 2020		• COVID-19 family conversations → child COVID-19 social distancing fears • COVID-19 family conversations → social distancing fears (mediator) → reduced child quality of life (mediator) → child internalizing problems **Non-Significant Results:** • COVID-19 family conversations → child quality of life AND COVID-19 angst AND internalizing problems AND substance use	
Ueda et al., 2022	Japan	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ May 2020 $T_{COVID2:}$ May 2021	Path Analysis	**Significant Results:** • Child quality of life → parenting stress • Improvements in child quality of life → parenting stress (mediator) → improvements in maternal depressive symptoms	Higher
Wang, Henry, et al., 2021	USA	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ May 2020 $T_{COVID2:}$ May 18 – June 1, 2020 (15 consecutive days)	2-Level Multilevel Models	**Significant Results:** • Fluctuations in parent-child conflict → fluctuations in child positive AND negative affect • Fluctuations in parental warmth → fluctuations in child positive AND negative affect • Job loss → fluctuations in parent-child conflict (mediator) → fluctuations in child positive AND negative affect • Work from home → fluctuations in parental warmth (mediator) → fluctuations in child positive AND negative affect **Non-Significant Results:** • Job loss → fluctuations in parental warmth (mediator) → fluctuations in child positive AND negative affect • Work from home → fluctuations in parent-child conflict (mediator) → fluctuations in child positive AND negative affect • Fluctuations in parent-child conflict → socioeconomic status (moderator) → fluctuations in child positive AND negative affect • Change in parental warmth → socioeconomic status (moderator) → fluctuations in child positive AND negative affect	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Wang, Henry, et al., 2022	USA	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ April 8 – 21, 2020 (29 consecutive days) $T_{COVID2:}$ May 18 – June 1, 2020 (29 consecutive days)	2-Level Multilevel Models	**Significant Results:** • Increased parent-child conflict (compared to one's average) → increased next-day child negative affect • Increased parental social support (compared to one's average) → increased next-day child positive affect **Non-Significant Results:** • Increased parent-child conflict (compared to one's average) → next-day child positive affect • Increased parental social support (compared to one's average) → next-day child negative affect • Increased parent-child conflict AND parental social support (compared to one's average) → next-day child misconduct	Lower
Wang, Ng & Siu, 2022	China	T_{pre} – T_{COVID}	$T_{pre:}$ 2019 (8 months before the COVID-19 outbreak) $T_{COVID:}$ 2020 (8 months after the COVID-19 outbreak)	Structural Equation Models	**Significant Results:** • Family support → child psychological capital • Family support → child psychological capital → child problem-focused coping → child well-being **Non-Significant Results:** • Family support → child problem-focused coping • Family support → child psychological capital (mediator) → child well-being • Family support → child problem-focused coping (mediator) → child well-being	Lower
Wang, Toro, et al., 2021	USA	T_{COVID1} – T_{COVID+}	$T_{COVID:}$ April 8 – 21, 2021 (14 consecutive days)	2-Level Multilevel Models	**Significant Results:** • Parental support → next-day child positive affect **Non-Significant Results:** • Parental support → next-day child negative affect • Financial stress → parental support (moderator) → next-day child negative AND positive affect	Lower

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
Wong et al., 2022	China	T_{pre} – T_{COVID}	$T_{pre:}$ April – August 2019 $T_{COVID:}$ February 2020	Structural Equational Modelling (Two-Wave Autoregressive Cross-Lagged Design) Hierarchical Linear Modelling	**Significant Results:** • Parental perception of child adjustment problems → parental stress • Parental stress → parental perception of child adjustment problems • Child satisfaction with family life → mean change in child stress AND depression • Change in parental stress → child satisfaction with family life (moderator) → mean change in child anxiety AND stress **Non-Significant Results:** • Change in parental stress → mean change in child anxiety AND stress AND depression • Child satisfaction with family life → mean change in child anxiety • Change in parental stress → child satisfaction with family life (moderator) → mean change in child depression	Lower
Zhou et al., 2022	USA	T_{COVID1} – T_{COVID+}	$T_{COVID1:}$ March 30 – April 14, 2020 $T_{COVID2:}$ May 13 – June 1, 2020 $T_{COVID3:}$ June 30 – July 14, 2020	Longitudinal Measurement Invariance Multivariate Growth Mixture Modeling	**Results based on trajectories:** Profile 1: (low parental anxiety and low child distress) • Reference group 1) Increased risk for being in Profile 2: (high parental anxiety and high child distress) • Higher parent vicarious racism stress at T_{COVID3} • Higher child negative affect at T_{COVID2} • Lower positive parenting at T_{COVID2} 2) Increased risk for being in Profile 3: (high parental anxiety and low child distress) • Higher parent vicarious racism stress at T_{COVID3} • Higher negative parenting at T_{COVID2} • Higher child negative affect at T_{COVID2} • Being a mother (in comparison to a father) • Lower annual household income	Higher

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					3) Increased risk for being in Profile 4: (low parental anxiety and high child distress) • Higher negative parenting at T_{COVID2} • Higher child negative affect at T_{COVID2} • Having a younger child	

Zhu et al., 2021	China	T_{pre} – T_{COVID}	T_{pre}: September 2019
			
			T_{COVID}: June 2020
				ANOVA
				Logistic Regression
					4 Groups:
					• 1) Non-suicidal group (no suicidal ideation at either time point)
					• 2) Recovered from suicidal ideation group (suicidal ideation at baseline but not follow-up)
					• 3) Occurrence of ideation group (no suicidal ideation at baseline but present at follow-up)
					• 4) Recurrence of ideation group (presence of suicidal ideation at both waves)
					
					Significant Results:
					• Non-suicidal group (Group 1) had higher family support AND parental supervision than Groups 2–4
					• Interaction between group membership AND child gender when age was fixed
					  ○ Females in Group 1 received more family support than males
					  ○ Females in Group 3 and 4 received less family support compared to males
						Higher

Zuccolo et al., 2022	Brazil	T_{COVID1} – T_{COVID+}	T_{COVID}: June – November 2020 T_{COVID+}: Invited for follow-up assessments every 15 days until June 2021	Stepwise Linear Mixed Effect Models	**Significant Results:** • Absence of structured family routines → child total emotional problems AND depression • Physical maltreatment → child depression • Psychological aggression → child total emotional problems AND depression AND anxiety • Child neglect → child total emotional problems AND depression • Parental psychopathology → child total emotional problems AND depression AND anxiety	Higher

Study	Country	Time Points	Dates	Relevant Analysis	Outcomes Relevant to Pathways	RoB
					Non-Significant Results: • Physical maltreatment → child total emotional problems	

Note. ANOVA = Analysis of variance; MANOVA= Multivariate analysis of variance; ANCOVA = Analysis of covariance; MANCOVA = Multivariate analysis of covariance; RoB = Risk of Bias.

Table 2
Sample Characteristics

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
Achterberg et al., 2021	151 children 106 caregivers	12.00(0.81), 10.76–13.65	47% girls	44.89(4.97), 33.45–58.80	93% female	89% White	Middle to high SES (based on parental education: 3% low, 38% middle, 59% high)	44.4% of children were twins Among the twin pairs, 67% were monozygotic
Berry et al., 2021	159 caregivers: 115 C 44 NC	4–18 years (eligibility criteria)	Not Reported	C: 40–49 55.65% NC: 40–49 59.09%	C: 94.78% mothers NC: 86.36% mothers	Not Reported	C: 40.00% Managerial & technical workers NC: 54.55% Managerial & technical workers	Clinical group based on parent-report of child conduct and/or hyperactive/inattention problems
Browne et al., 2021	1098 children 549 caregivers	Younger child: 9.62(3.21) Older child: 11.80(3.32)	Younger child: 45.9% female Older child: 49.0% female	41.33(6.33)	67.8% mothers	73.1% White-European 12.3% White-North American 3.7% Asian-South 1.8% Asian-South East 2.2% Black-African 1.1% Black-North American 2.6% Mixed 2.8% Other	Median 2019 income $50,000–$74,999 USD	Eligibility criteria: Caregivers with at least two children
Cooper et al., 2021	894 children	13.37(1.64) – 13.28(1.68), 11–16	49.4% female	Not Reported	Not Reported	93.1% White – British, Irish, other	20.5% <£30,000 72.1% >£30,000	
Corbett et al., 2021	122 child-caregiver dyads: 61 C (ASD)	C: 13.24(1.16)	C: 24.6% female	Not Reported	96.3% mothers	84.42% White 4.92% African American 10.66% mixed race	18.8% < $50,000 33.9% = $50,000–$100,000 47.3% > $100,000	Diagnosis of ASD was based on the DSM-5 and ADOS-2

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
	61 NC	NC: 13.38(1.20)	NC: 42.6% female			9.12% Hispanic 90.88% non-Hispanic		
Di Giunta et al., 2021	80 children 156 caregivers	14.97(2.27)	44.4% girls	Mothers: 49.25(5.52) Fathers: 50.14(5.80)	51.3% mothers	Not Reported	Majority had an average gross annual income between €30,000–€40,000/year	Eligibility criteria: Children in treatment due to clinically relevant levels of depression, anxiety, learning problems, or conduct disorder
Donker et al., 2021	240 child-caregiver dyads	11.4(0.50)	50.4% girls	44.2(5.04)	85% mothers	Not Reported	Median monthly family net income: €4000–€4500 /month (SD = 4.44, ~ €2220)	
Duttweiler et al., 2021	53 child-caregiver dyads: 26 high-risk mothers 27 low-risk mothers	12.5(2.3), 9–15	77.4% female	42.2(6.5)	100% mothers	52.8% White 24.5% Black 13.2% Asian 9.5% multiracial or another race -- 24.5% Hispanic/Latinx	Not Reported	High-risk mothers had a history of MDD Low-risk mothers had no history of psychopathology
Essler et al., 2021	2921 caregivers	5.67(2.03), 3–10	46.5% female	38.10(4.93), 21–60	92.1% female	Not Reported	Not Reported	
Feurer et al., 2021	45 child-caregiver dyads	12.42(2.31), 9–16	82.2% female	42.09(6.44), 30–56	100% mothers	53.3% White 24.4% Black 11.1% Asian 11.2% multiracial or another race 25.0% Hispanic/ Latinx	Not Reported	44.4% of mothers met diagnostic criteria for at least a single MDD episode using the Structured Clinical Interview for DSM–5

Study	**Participants**	**Child Age M(SD), Range**	**Child Sex/Gender**	**Caregiver Age M(SD), Range**	**Caregiver Sex/Gender**	**Race/Ethnicity**	**Income/SES**	**Other**
Fogarty et al., 2022	257 child-caregiver dyads	15.47(0.87), 14–17	54.5% female	Not Reported	100% mothers	Not Reported	Not Reported	
Fosco et al., 2022	204 caregivers	4.17(2.17)	45.1% girls	27.43(1.67)	70.6% mother 1.5% stepmother	90.7% White 4.4% Black/ African American 0.5% American Indian, Eskimo, or Aleut 4.4% Other -- 10.8% Hispanic	Median annual family income: $50,000–59,999	
Frigerio et al., 2022	74 caregivers	4.20(0.61)	45.8% female	Mothers: 37.17(3.51) Fathers: 40.04(5.62)	100% mothers	Not Reported	3.4% low 44.1% middle 50.8% high	
Gordon-Hacker et al., 2022	230 caregivers	4.02(0.85) 2.17–6.33	44.7% female	33.6(4.74), 23–44	100% mothers	Not Reported	17.6% significantly below average 29.5% below average 35.2% average 13.3% above average 4.3% significantly above average	
Guazzelli Williamson et al., 2022	1334 children	13.54, 10.92–17.41	58.2% girls	Not Reported	Not Reported	Sample mostly reflects the ethnic/racial breakdown of Peruvian youth, oversampling from the mestizo population	Low- and middle-income	

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
Hastings et al., 2021	49 caregivers	5.12(0.37)	61.22% girls	Not Reported	100% mothers	100% of families spoke Arabic as their primary language in the home	36.73% Poverty (<350 JOD) 38.77% Low income (350–850 JOD) 16.33% Middle-high income (>850 JOD)	16.33% of the sample identified as urban Syrian refugees
Janssen et al., 2020	34 children 67 caregivers	16.95(1.01) 14.66–19.01	64.7% girls	49.12(5.73), 36.25–71.04	56.7% female	Not Reported	Sample lived in relatively favorable circumstances (e.g., high SES)	
Jones et al., 2022	95 caregivers	7.23 (1.53), 4.37–9.75	45.3% female	38.21(5.71), 25.72–51.60	100% mothers	95.38% European American	Majority middle-class	
Jordan et al., 2022	80 children: 47 C (fragile X syndrome; FXS) 33 NC	C: 11.84(3.11), 6.3–18.0 NC: 12.23(2.25), 8.2–16.6	100% girls	Not Reported	100% mothers	C: 89.36% White 2.13% Black 4.25% Asian 4.25% multiracial NC: 54.54% White 24.24% Asian 21.21% multiracial	Not Reported	Full mutation FXS diagnosis confirmed by molecular genetic testing
Köhler-Dauner et al., 2021	91 caregivers	6.03(0.61), 4.98–7.14	47.3% girls	38.14(4.08), 31.00–46.00	100% mothers	89.6% German origin	60.9% of mothers had a university degree 6.5% had a decrease in income during the pandemic	
Lengua et al., 2022	143 child-caregiver dyads	14.33(0.48)	63% female	Not Reported	100% mothers	65% White 12% Black 11% Latinx	Median and mean income = $75,000–$100,000	

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
						9% Asian 4% Another race or ethnicity		
Liang et al., 2021	288 caregivers	13.89(2.15), 11–18	45.1% female	46.50(4.65),	95.5% female	Not Reported	Monthly family income: 4.5% ≤ €999 20.2% €1000–€1999 32.6% €2000–€3999 30.3% €3000–€4999 12.4% ≥ €5000 Mostly middle-class	
McArthur et al., 2021	846 child-caregiver dyads	9.85(0.78), 9–11	47.1% female	Not Reported	100% mothers	82.9% White 12.2% Asian 2.6% Other/mixed 1.3% Latin 0.5% Black 0.2% First Nations, Inuit, Metis	Household income before COVID-19: 80.3% ≥ $80,000 CAD 16.4% ≤ $79,999 CAD	
Neubauer et al., 2021	970 caregivers	9.81(2.85), 6–19	47.8% female	42.93(6.40), 25–82	86.4% women	Not Reported	Net monthly household income: 46.0% > €4,000 24.4% < €3,000 21.4% €3,000–€4,000	
Nocentini et al., 2022	166 children	11.14(0.47)	51.8% female	Not Reported	Not Reported	Not Reported	Out of 7 schools: 5 represent medium-low SES 2 represent medium SES	Middle school students

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
Omiya et al., 2022	166 child-caregiver dyads	27.7% 12–13 72.3% 13–14	53% female	44.9(4.2)	Mainly mothers	Not Reported	Subjective economic conditions: 10.2% poor/very poor 47.6% average 42.2% relatively rich/rich	2 groups: 59.6% increased/ maintained sense of coherence from T_{pre}–T_{COVID} 40.4% decreased sense of coherence from T_{pre}–T_{COVID}
Operto et al., 2022	383 families	9.89(4.42), 2–18	39% female	Mothers: 40.82(6.34) Fathers: 43.87(7.05)	Not Reported	Not Reported	Not Reported	9 clinical groups based on a neuropsychiatric diagnosis made using DSM-5: 29.8% ASD 24.3% epilepsy 10.7% specific learning disorders 8.9% intellectual disability 8.4% communication disorders 5.5% ADHD 4.2% behavioural disorders 4.2% anxiety disorders 4.2% mood disorders
Paschke et al., 2021	824 child-caregiver dyads	13.06(2.4), 10–17	46.36% female	46.46(7.98), 28–75	50.85% female	Not Reported	Family financial worries: 17.06% yes 82.94% no	2 groups: Increase in psychological stress No increase in psychological stress

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
Pelham et al., 2022	7940 children	12.4(0.9), 10.5–14.6	50% female	Not Reported	Not Reported	60.3% White 8.8% Black 17% Hispanic 2.9% multiracial 11% different racial/ethnic identity	8.3% < $25,000 11% $25,000–49,000 13% $50,000–74,000 15% $75,000–99,000 34% $100,000–199,000 13% ≥ $200,000	
Penner et al., 2021	185 children	12.21(1.31), 10–14	56.2% female	Not Reported	Not Reported	71.9% Hispanic/ Latinx 9.7% Black/ African American 5.4% Asian 1.1% White 1.1% American Indian 5.4% Multiple races 5.4% Other	Neighbourhood had a median family income of $29,124 in 2017, $20,000 less than the city average	2 groups: 24.9% high scorers - highest 20% of scorers on the Brief Problem Monitor scale (i.e., youth with elevated mental health problems at baseline) 75.1% low scorers - lower 80% of scorers on the Brief Problem Monitor scale at baseline
Qu et al., 2021	879 children	13.14(1.31), 11–16	51% girls	Not Reported	Not Reported	Not Reported	Primarily working- and middle-class families	
Ren et al., 2021	240 caregivers	9.48(1.39), 7–12	46% girls	38.50(5.80)	75% mothers	All caregivers and children were of Han ethnicity	81% low- to middle-SES Monthly household income < RMB 8,000 (around $1,300 USD)	

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
Rizeq et al., 2021	441 children 1069 caregivers	11.06(3.37)	42% female 41.07% girls	Not Reported	Not Reported	59.96% European, non-aboriginal North American 14.41% non-European 23.76% Multiple ancestries	Last year's family income: 51.92% > $99,999	65.58% of children were reported to have a pre-COVID psychiatric diagnosis
Roche et al., 2022	547 children	13.73(0.91)	55.2% female	Not Reported	Not Reported	100% Hispanic	Not Reported	10.4% were first-generation immigrants 65.3% were second-generation immigrants 24.3% were third or later generation immigrants
Rosenthal et al., 2022	1234 children 620 C (ADHD) 614 NC	C: 12.4 NC: 12.5	C: 31.0% female NC: 31.1% female	Not Reported	Not Reported	C: 68.5% White 11.5% Black 19.0% Other or Multiracial NC: 69.2% White 11.6% Black 19.2% Other or Multiracial	Total family income: C: 22.5% < $50,000 29.1% $50,000–$99,999 42.1% > $100,000 NC: 22.7% < $50,000 29.8% $50,000–$99,999 40.7% > $100,000	The KSADS-5 was used to determine the presence of a current diagnosis of ADHD
Shelleby et al., 2022	308 caregivers	8.11(2.09)	Not Reported	37.59(7.01)	100% female	76.9% White 7.5% Black 6.8% Asian/Pacific Islander 5.5% multiracial/ multiethnic	Median household income: $70,000 35.5% low income 9.8% below the poverty line	

Study	**Participants**	**Child Age M(SD), Range**	**Child Sex/Gender**	**Caregiver Age M(SD), Range**	**Caregiver Sex/Gender**	**Race/Ethnicity**	**Income/SES**	**Other**
						2.6% Hispanic/ Latina 0.3% Other		
Shi & Wang, 2021	213 children	12.18(0.60)	48.4% female	Not Reported	Not Reported	Participants were recruited from Shanghai, China, a major city in which 98.8% of the population are of Han descent	Not Reported	
Trucco et al., 2022	167 children	16.2, 14–18	44.9% female	Not Reported	Not Reported	85.0% White 7.8% Black 7.2% Other 83.2% Latinx	59.2% had a family income of at least $35,000	
Ueda et al., 2022	89 child-caregiver dyads	11.6(2.8)	21.3% female	44.3(5.3)	94.4% mothers	Not Reported	10.1% Low-income households with welfare	89 school-aged children with NDDs: 52.8% ADHD 55.1% ASD 7.9% SLD
Wang, Henry, et al., 2021	447 child-caregiver dyads	15.09(1.66), 13–18	60.9% female	43.66(6.86), 27–52	87% female	46.1% Black/ African American 38.7% White/ European American 8.5% Latinx 6.3% Asian/Asian American 0.4% Native American	62% low income	
Wang, Henry, et al., 2022	546 children	15.0, 13–18	60% female	Not Reported	Not Reported	43% Black 37% White, 10% Latinx 8% Asian American 3% Native American	61% low-income 39% high income	

Study	**Participants**	**Child Age M(SD), Range**	**Child Sex/Gender**	**Caregiver Age M(SD), Range**	**Caregiver Sex/Gender**	**Race/Ethnicity**	**Income/SES**	**Other**
Wang, Ng & Siu, 2022	281 children	10.07(0.42), 9.46–12.15	44.1% female	Not Reported	Not Reported	Not Reported	Not Reported	
Wang, Toro, et al., 2021	444 children	15.0, 13–18	60% female	Not Reported	Not Reported	44.4% Black/African American 39.2% White/ European American 8.6% Latinx 6.3% Asian American 1.5% Native American	62.2% Household income below 130 percent of the national poverty level	
Wong et al., 2022	233 child-caregiver dyads	12.20(0.43), 3–8	60.5% female	Not Reported	> 97% of parent respondents were mothers	Not Reported	Monthly household income: Mean = 58,927 HKD (SD = 39,087 HKD)	
Zhou et al., 2022	488 caregivers	5.04(1.59)	44% girls	36.73(5.92)	77% mothers	65% non-Hispanic White or European Americans 13% Asian Americans or Pacific Islanders 8% Black/African Americans 6% Hispanic/Latinx Americans 2% Middle Eastern and North Africans 1% Native Americans 5% Multiracial	Annual family income: 52% reporting < $100,000 73% reporting eligibility for a stimulus check	
Zhu et al., 2021	1491 children	13.04(0.86), 10–17	53.12% female	Not Reported	Not Reported	95.10% Chinese	34.47% did not receive financial assistance	

Study	Participants	Child Age M(SD), Range	Child Sex/Gender	Caregiver Age M(SD), Range	Caregiver Sex/Gender	Race/Ethnicity	Income/SES	Other
							12.34% received financial assistance (government or nongovernment) 9.73% received financial assistance (government and nongovernment)	
Zuccolo et al., 2022	5795 children	10.70(3.63), 5–17	49.23% female	Not Reported	Not Reported	69.20% White 30.80% non-White	Monthly income (in BRL): 16.29% >10,000 37.99% 3000–10000 34.55% 1000–3000 11.17% <1,000	18.45% chronic disease, needing treatment 12.70% previous psychiatric diagnosis

Note. SES = socioeconomic status; C = clinical; NC = non-clinical; MDD = major depressive disorder; ASD = autism spectrum disorder; FXS = fragile X syndrome; ADHD = attention-deficit / hyperactivity disorder; NDD = neurodevelopmental disorder; SLD = specific learning disorder; DSM-5: Diagnostic and Statistical Manual of Mental Disorders, 5th Edition; ADOS-2 = Autism Diagnostic Observation Schedule-Second Edition; KSADS-5 = Kiddie Schedule for Affective Disorders and Schizophrenia for DSM-5; USD = US dollar; JOD = Jordanian dollar; CAD = Canadian dollar; RMB = Renminbi; HKD = Hong Kong dollar; BRL = Brazilian Real.

Table 3

Measures of Child, Caregiver, and Family Functioning

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
Achterberg et al., 2021	Perceived Stress	Child-Reported • Perceived Stress Scale (PSS; Cohen, 1994)	Negative Feelings	Caregiver-Reported • Brief Symptom Inventory (BSI; Derogatis & Melisarato, 1983)	Parental Overreactivity	Caregiver-Reported • Parenting Scale (PS; Irvine et al., 1999)
Berry et al., 2021	Externalizing Difficulties	Caregiver-Reported • Strength and Difficulties Questionnaire (SDQ; Goodman, 2001)	Sources of Stress Stress Responses Well-Being Coping	Caregiver-Reported • The Parental Stress Scale (PSS; Berry & Jones, 1995) • The Effects of COVID-19 Questionnaire (ECQ; Burke et al., 2020) Caregiver-Reported • The Impact of Event Scale—Revised (IES-R; Weiss, 2007) Caregiver-Reported • The World Health Organization Well-Being Index (WHO-5; Topp et al., 2015) • The Effects of COVID-19 Questionnaire (ECQ; Burke et al., 2020) Caregiver-Reported • The Brief Coping Orientation to Problems Experienced Inventory (Brief COPE; Carver, 1997)		

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
Browne et al., 2021	Mental Health Problems	Caregiver-Reported • Patient Reported Outcomes Measurement Information System (PROMIS; PROMIS Health Organization, 2020)	Psychological Distress	Caregiver-Reported • Kessler Psychological Distress Scale (K10; Kessler et al., 2002)	Family Dysfunction Parenting Quality	Caregiver-Reported • General Functioning Subscale of the McMaster Family Assessment Device (FAD-GF6+; Boterhoven de Haan et al., 2015; Epstein et al., 1983) Caregiver-Reported • Parenting practices Scale from the 2014 Ontario Child Health Study (Statistics Canada, 2017)
Cooper et al., 2021	Psychological Distress Psychological Difficulties	Child-Reported • Kessler-6 Psychological Distress Scale (K6; Kessler et al., 2002) Child-Reported Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)			Parent Relationship	Child-Reported • Single question adapted from the Millennium Cohort Study (MCS) Age 14 Sweep (2016)
Corbett et al., 2021	Diagnosis of ASD	Researcher determined • Based on DSM-5 (APA, 2013) and the Autism Diagnostic Observation Schedule, Second Edition (ADOS-2; Module 3 [Lord et al., 2012])	Stress & Coping State & Trait Anxiety	Caregiver-Reported • Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000) Caregiver-Reported • State–Trait Anxiety Inventory for Adults (STAI-A; Spielberger et al., 1983)		

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
	Stress & Coping	Child-Reported Caregiver-Reported • Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000)				
Di Giunta et al., 2021	Total Problems	Caregiver-Reported • Child Behaviour Checklist (CBCL; Achenbach, 1994)			Parental Socialization Strategies (in response to youths' negative emotions)	Caregiver-Reported • Parent's version of the Emotions as a Child Scale (EAC; Magai, 1996; Klimes-Dougan et al., 2007)
Donker et al., 2021	Stress Coping	Child-Reported • Four items focused on the amount of worrying because of the COVID-19 measures • Life Experience Survey (Sarason et al., 1978) Child-Reported • Utrechtse Coping Lijst (UCL; Schreurs et al., 1988)	Stress Coping	Caregiver-Reported • Four items focused on the amount of worrying because of the COVID-19 measures • Life Experience Survey (Sarason et al., 1978) Caregiver-Reported • Utrechtse Coping Lijst (UCL; Schreurs et al., 1988)	Parent-Adolescent Relationship Quality Positive Parenting & Discipline Practices	Child-Reported • The Negative Interactions subscale and the Parental Support subscale of the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) Caregiver-Reported • Alabama Parenting Questionnaire (APQ; Frick, 1991)
Duttweiler et al., 2021	Depressive Symptoms Anxiety Symptoms	Child-Reported • The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) Child-Reported • Screen for Child Anxiety Related Emotional	Depression Diagnosis Depressive Symptoms	Structured Interview • Structured Clinical Interview for DSM-5 (SCID-5; First et al., 2015) Caregiver-Reported • Beck Depression Inventory-II (BDI-II; Beck et al., 1996)		

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
	   Rumination	Disorders (SCARED; Birmaher et al., 1999) Child-Reported • Ruminative Response Scale (RRS; Treynor et al., 2003)	Anxiety Symptoms Rumination	Caregiver-Reported • Beck Anxiety Inventory (BAI; Steer & Beck, 1997) Caregiver-Reported • Ruminative Response Scale (RRS; Treynor et al., 2003)		
Essler et al., 2021	Well-Being Problem Behaviours	Caregiver-Reported • KIDSCREEN Health-Related Quality of Life Questionnaire for Children and Adolescents (Ravens-Sieberer et al., 2006) Caregiver-Reported • Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)	Parental Strain	Caregiver-Reported • Set of three questions concerning parental strain as compared to before the pandemic	Parent-Child Relationship Quality	Caregiver-Reported • Adapted items from the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985)
Feurer et al., 2021	Depression	Child-Reported • Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977)	Major Depressive Disorder	Clinical Interview • Structured Clinical Interview for DSM–5 (First et al., 2015)		
Fogarty et al., 2022	Anxiety Depression	Child-Reported • Generalized Anxiety Disorder Scale (GAD-7; Spitzer et al., 2006) Child-Reported • Patient Health Questionnaire-Adolescent (PHQ-A; Johnson et al., 2002)	Mental Health Difficulties	Caregiver-Reported • Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) • Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) • Beck Anxiety Inventory (BAI; Beck et al., 1988)		

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
				• Post-Traumatic Stress Disorder Checklist-Civilian version (PCL-C; Weathers et al., 1991)		
Fosco et al., 2022	Internalizing & Externalizing Problems	Caregiver-Reported • Child Behaviour Checklist (Achenbach & Rescorla, 2000, 2001) • Items adapted from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) • Items adapted from the Child Adjustment and Parent Efficacy Scale (CAPES; Morawska, Sanders, Haslam, Filus, & Fletcher, 2014)	Emotional Distress	Caregiver-Reported • Center for Epidemiological Studies-Depression (Radloff, 1977) • Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990)	Family-Level Functioning: Family Cohesion, Conflict, Routines Parenting Quality: Harsh Discipline, Lax Discipline, Parental Warmth	Caregiver-Reported • 3 items each for family cohesion and conflict from the shortened Family Environment Scale (Bloom, 1985) • Child Routines Inventory (Sytsma, Kelley, & Wymer, 2001) Caregiver-Reported • 3 items each for harsh and lax discipline from the Parenting Scale (Arnold et al.,1993) • Parental Attitudes towards Child Rearing (PACR) warmth scale (Goldberg & Easterbrooks, 1984)
Frigerio et al., 2022	Internalizing & Externalizing Problems	Caregiver-Reported • Child Behaviour Checklist (Achenbach & Rescorla, 2000)	Mood	Caregiver-Reported • State-Trait Anxiety Inventory-Y Form (STAI-Y; Spielberger et al., 1970) • Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)		
Gordon-Hacker et al., 2022	Emotional & Behavioural Problems	Caregiver-Reported	Depressive symptoms	Caregiver-Reported • Center for Epidemiological Studies Depression Scale-10	Household Chaos	Caregiver-Reported • Short version of the Confusion, Hubbub, and

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
		• Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)		(CES-D-10; Andersen et al., 1994)		Order Scale (CHAOS; Matheny et al., 1995).
Guazzelli Williamson et al., 2022	Depression Symptoms Anxiety Symptoms	Child-Reported • Patient Health Questionnaire-2 (PHQ-2; Kroenke et al., 2003) Child-Reported • Patient-Reported Outcomes Measurement Information System Short Form v1.0–Anxiety 4a (PROMIS; Pilkonis et al., 2011)	Caregiver Resilience	Child-Reported • Revised version of the Child and Youth Resilience Measure (CYRM-R; Jefferies et al., 2019)		
Hastings et al., 2021	Psychosocial Adjustment	Caregiver-Reported • Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)			Adaptive Coping Responses & Negative Changes to Family Life	Parent Respondent • Semi-Structured Interview
Janssen et al., 2020	Intolerance of Uncertainty	Child-Reported • Intolerance of Uncertainty Scale (IUS; Carleton et al., 2007)			Daily Parenting Behaviour	Child-Reported Caregiver-Reported • Questionnaires at four time points per day, for 14 consecutive days on smartphones using the mobile app Ethica (Ethica Data, 2019)
Jones et al., 2022	Primary Coping	Caregiver-Reported • COVID-19 version of the Responses to Stress Questionnaire (RSQ-	Maternal Well-Being	Caregiver-Reported • Depression, Anxiety and Stress Scales (DASS;	Parent Adaptive Coping	Caregiver-Reported • COVID-19 version of the Responses to Stress Questionnaire (RSQ-

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
		COVID19; Compas, 2020a, 2020b; Connor-Smith et al., 2000)		Lovibond & Lovibond, 1995)		COVID19; Compas, 2020a, 2020b; Connor-Smith et al., 2000)
Jordan et al., 2022	Pandemic-Related Worries	Caregiver-Reported • Items adapted from The CoRonavIruS Health Impact Survey (CRISIS; Nikolaidis et al., 2021)	Maternal Mental Health	Caregiver-Reported • Symptom Checklist-90, Revised (SCL-90R; Derogatis & Savitz, 1999)	Mother-Child Relationship	Caregiver-Reported • BASC-3 Parenting Relationship Questionnaire (BASC-3 PRQ; Kamphaus & Reynolds, 2015)
Köhler-Dauner et al., 2021	Mental Health	Caregiver-Reported • Strengths and Difficulties Questionnaire (SDQ; Klasen et al., 2003)	Severity of Maternal Depression	Caregiver-Reported • Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001)	Maternal Attachment Representation	Interview • Adult Attachment Projective Picture System (AAP; George & West, 2012)
Lengua et al., 2022	Internalizing & Externalizing Problems	Child-Reported • Youth Self-Report (YSR; Achenbach & Rescorla, 2001) • Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)	Mental Health	Caregiver-Reported • Generalized Anxiety Disorder Scale (GAD-7; Spitzer et al., 2006) • Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001)		
Liang et al., 2021	Anxiety & Depression Symptoms to Quarantine Internalizing Symptoms	Caregiver-Reported • Impact Scale of COVID-19 and home confinement on children and adolescents (Orgilés et al., 2020) Caregiver-Reported • Spence Children's Anxiety Scale-Parent Version (SCAS-P-8; Reardon et al., 2018)	Parental Stress Parents' Expressive Suppression	Caregiver-Reported • Perceived Stress Scale (PSS-10; Cohen et al., 1983) Caregiver-Reported • Suppression sub-scale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003)		

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
		• Short Mood and Feelings Questionnaire-Parent Version (SMFQ-P; Ancold et al., 1995)				
McArthur et al., 2021	Internalizing Problems Happiness	Child-Reported • Behaviour Assessment System for Children (BASC-3; Reynolds & Kamphaus, 2015) Child-Reported • Middle Years Development Instrument (MDI; Schonert-Reichl et al., 2013)	Depression Anxiety	Caregiver-Reported • Center for Epidemiological Studies of Depression Short Form (CES-D-10; Andresen et al., 1994) Caregiver-Reported • Spielberger State Anxiety Inventory Short Form (SSAI-SF; Marteau & Bekker, 1992)		
Neubauer et al., 2021	Emotional Problems, Hyperactivity / Inattention, & Prosocial Behaviour Affect	Caregiver-Reported • Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Klasen et al., 2000) Caregiver-Reported • 8 items (4 negative: afraid, angry, sad, and worried; 4 positive: happy, cheerful, balanced, and relaxed)	Stress Vitality Parental Need Fulfillment	Caregiver-Reported • Perceived Stress Scale (PSS-10; Cohen et al., 1983) Caregiver-Reported • The Subjective Vitality Scale (Goldbeck et al., 2019; Ryan & Frederick, 1997) Caregiver-Reported • The daily diary version (Neubauer & Voss, 2018) of the revised Balanced Measure of Psychological Needs Scale (Neubauer & Voss, 2016; Sheldon & Hilpert, 2012)	Family Cohesion, Organization, Control, & Expressiveness Autonomy-Supportive Parenting	Caregiver-Reported • German adaptation (Roth, 2002) of the Family Environment Scale (Moos & Moos, 1981) Caregiver-Reported • 2 items adapted from similar assessment approaches in prior cross-sectional (Mageau et al., 2015) and daily diary studies (Mabbe et al., 2018)

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
Nocentini et al., 2022	Emotional Difficulties	Child-Reported • Strength and Difficulties Questionnaire (SDQ; Goodman et al., 2003)			Family Well-Being	Child-Reported • Multidimensional Students' Life Satisfaction Scale (MSLSS; Huebner, 1994)
Omiya et al., 2022	Sense of Coherence	Child-Reported • Japanese abbreviated version of the Sense of Coherence scale (Togari & Yamazaki, 2005)			Parenting Attitudes: Acceptance, Psychological Control, & Monitoring Parenting Attitudes: Acceptance/ Child-Centered, Control, & Inconsistent Indecisive Discipline	Child-Reported • Children's Report on Parenting in Adolescence Scale (Utsumi, 2013) Caregiver-Reported • The Parental Attitude Scales (Kato et al., 2014)
Operto et al., 2022	Neuropsychiatric Disorder	Direct Assessment • Autism Diagnostic Observation Schedule-Second Edition (ADOS-2; Lord et al., 2012) • Autism Diagnostic Interview-Revised (ADI-R; Rutter et al., 2003) • Kiddie Schedule for Affective Disorders and Schizophrenia—Present and Lifetime (K-SADS-PL; Kaufman et al., 1997) • Child Behaviour Checklist (CBCL; Achenbach, 1994)	Stress	Caregiver-Reported • Parental Stress Index Short Form (Abidin, 1995)		

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
		• Wechsler Intelligence Scales for Children (WISC; 2014) • Conners (2008)				
Paschke et al., 2021	Psychological Stress	Child-Reported • Perceived Stress Scale (PSS-4; Cohen et al., 1983)	Psychological Stress	Caregiver-Reported • Perceived Stress Scale (PSS-4; Cohen et al., 1983)		
Pelham et al., 2022	Depressive Symptoms	Child-Reported • Patient-Reported Outcomes Measurement Information System (PROMIS) pediatric short-form measure of depressive symptoms (v2.0; Quinn et al., 2014)			Parental Knowledge/ Monitoring	Child-Reported • 4-item measure of parental knowledge/monitoring (Chilcoat & Anthony, 1996)
Penner et al., 2021	Mental Health	Child-Reported • Brief Problem Monitor (BPM; Achenbach et al., 2011)			Family Functioning	Child-Reported • 7-item family functioning scale developed for the purpose of this study
Qu et al., 2021	Perceived Stress Toward School Reopening Depression	Child-Reported • A newly developed single item Child-Reported • "LEVEL 2—Depression—Child Age 11–17" scale from the Diagnostic and Statistical Manual of Mental Disorders (DSM–5; American Psychiatric Association, 2013)			Parent-Child Conflict & Intimacy	Child-Reported • 2 subscales from the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985,1992)

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
	Anger	Child-Reported • "LEVEL 2—Anger—Child Age 11–17" scale from DSM–5 (American Psychiatric Association, 2013)				
Ren et al., 2021	Trait Anxiety Depressive Symptoms	Caregiver-Reported • Trait subscale of the State–Trait Anxiety Inventory for Children (STAIC; Spielberger & Gorsuch, 1973) Child-Reported • Center for Epidemiologic Studies Depression Scale for Children (CES-DC; Weissman et al., 1980)			Parents' Fear Induction Practices	Caregiver-Reported • 5 items created based on parents' responses to a semi-structured interview
Rizeq et al., 2021	Stress Due to COVID-19 Restrictions Mental Health Difficulties	Child-Reported • Four items from the CRISIS Questionnaire (Merikangas et al., 2020) Caregiver-Reported • Revised Children's Anxiety and Depression Scale (RCADS; Chorpita et al., 2005) • Screen for Child Anxiety-Related Disorders (SCARED; Monga et al., 2000)	Stress Due to COVID-19 Restrictions Mental Health Difficulties	Caregiver-Reported • Four items from the CRISIS Questionnaire (Merikangas et al., 2020) Caregiver-Reported • Patient Health Questionnaire (PHQ-8; Kroenke et al., 2009) • General Anxiety Disorder (GAD-7; Spitzer et al., 2006)	Family Functioning	Caregiver-Reported • General family functioning subscale from the McMaster Family Assessment Device (Byles et al., 1988)

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
		• Single-item measures from the CRISIS Questionnaire (Merikangas et al., 2020) Child-Reported • Screen for Child Anxiety-Related Disorders (SCARED; Monga et al., 2000) • Centre for Epidemiologic Studies-Depression scale for Children (CES-DC; Radloff, 1977)				
Roche et al., 2022	Internalizing & Externalizing	Child-Reported • Youth Self-Report (YSR 11–18; Achenbach, 1991)			Parental Support	Child-Reported • 8-item Parental Acceptance Scale (Dumka, Roosa, & Jackson, 1997; Schaefer, 1965)
Rosenthal et al., 2022	ADHD Diagnosis Rule-Breaking Behaviour & Negative Emotions Resulting from COVID-19 Fears	Caregiver-Reported • Kiddie Schedule for Affective Disorders and Schizophrenia for DSM-5 (KSADS-5; Townsend et al., 2020) Caregiver-Reported • COVID rapid response research survey (RRR)			Parental Monitoring of the Child Family Conflict	Child-Reported • ABCD Parental Monitoring Survey (PMQ; Zucker et al., 2018) Caregiver-Reported • COVID rapid response research survey (RRR; Rongguang, 2020)

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
Shelleby et al., 2022	Behaviour Problems	Caregiver-Reported • The Behaviour and Feeling Survey (Weisz et al., 2019) • The abbreviated version of the Swanson, Nolan and Pelham rating scale (SNAP-IV; Swanson et al., 2001)	Psychological Distress	Caregiver-Reported • Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) • Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)	Negative Parenting	Caregiver-Reported • Parenting Scale (Arnold et al., 1993)
Shi & Wang, 2021	Emotional Maladjustment Coping Strategies	Child-Reported • 8 items assessing negative emotions (e.g., angry, shamed) that have been used in prior research (Wang, Pomerantz, & Chen, 2007). • Short-form version of the Spielberger State-Trait Anxiety Inventory (STAI; Marteau & Bekker, 1992). • Short-form version of The Center for Epidemiological Studies Depression (CES-D; Kohout et al., 1993) Child-Reported • Chinese version of the Coping Scale for Children and Youth (CSCY; Brodzinsky et al., 1992)			Perceived Maternal & Paternal Reactions to Child Negative Emotions	Child-Reported • Coping with Children’s Negative Emotions Scale-Adolescents’ Perceptions of Parents (CCNES; Fabes & Eisenberg, 1998)

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
Trucco et al., 2022	COVID-19-Related Fears	Child-Reported • Fear of Illness and Virus Evaluation (FIVE; Ehrenreich-May, 2020)			COVID-19-Related Family Conversations	Adolescent-Reported • 12-item measure examining the degree to which children had family conversations about COVID-19 and their experiences with the pandemic
	Impact of COVID-19 on Quality of Life	Child-Reported • An average of two items from the Fear of Illness and Virus Evaluation (FIVE) assessed how COVID-19 has impacted adolescents' quality of life and mental health (Ehrenreich-May, 2020)				
	Internalizing Problems	Child-Reported • Depression Anxiety Stress Scales (DASS; Antony et al., 1998)				
	Substance Use	Child-Reported • The sum of the number of substances children reported using in the past month				
Ueda et al., 2022	Quality of Life	Caregiver-Reported • Kiddo-KINDLR (Ravens-Sieberer & Bullinger, 1995)	Stress	Caregiver-Reported • Parenting Stress Index (PSI; Narama, 1999)		
			Depressive State	Caregiver-Reported • Center for Epidemiologic Studies Depression Scale (CES-D; Radlof, 1977)		

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
Wang, Henry, et al., 2021	Affect	Child-Reported • Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999)			Family Relationship	Child-Reported & Caregiver-Reported (composite) • Network of Relationship Inventory (Furman & Buhrmester, 2009)
Wang, Henry, et al., 2022	Affect Misconduct	Child-Reported • Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999) Child-Reported • Youth Misconduct Scale (Elliot et al., 1989)			Parent-Child Relationship	Child-Reported • Network of Relationship Inventory (Furman & Buhrmester, 2009)
Wang, Ng & Siu, 2022	Psychological Capital Problem-focused coping Well-Being	Child-Reported • Psychological Capital Questionnaire (PCQ-12; Luthans et al. 2007; Martínez et al., 2021) Child-Reported • Problem-focused coping subscale of the Kids Coping Scale (KCS; Maybery et al., 2009) Child-Reported • The Satisfaction with Life Scale (SWLS; Diener et al., 1985)			Family Support	Child-Reported • Family social support subscale of the Multi-Dimensional Support Scale (MDSS; Winefield et al., 1992)

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
Wang, Toro, et al., 2021	Affect Stress Coping	Child-Reported • Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999) Child-Reported • Modified version of the Multicultural Events Schedule for Adolescents (Gonzales et al., 2001) Child-Reported • Abbreviated version of the Response to Stress Questionnaire (Connor-Smith et al., 2000)			Parental Support	Child-Reported • Network of Relationship Inventory (Furman & Buhrmester, 2009)
Wong et al., 2022	Parental Perception of Child Adjustment Problems Psychological Distress: Anxiety, Depression, & Stress	Child-Reported • Chinese version of the Strength and Difficulties Questionnaire (SDQ; Goodman, 2001) Child-Reported • Chinese version of the Depression Anxiety Stress Scale-21 (DASS-21; Taouk et al., 2001)	Stress	Caregiver-Reported • Parental Distress subscale of the Parenting Stress Index - Short Form (PSI-SF-PD; Abidin, 1997; Tam et al., 1994)	Child Pre-Pandemic Satisfaction with Family Life	Child-Reported • Adapted version of a Family Connectedness Questionnaire (Resnick et al., 1997)
Zhou et al., 2022	Emotional Distress	Caregiver-Reported • Pediatric Emotional Distress Scale (PEDS; Saylor et al., 1999)	Anxiety	Caregiver-Reported • Generalized Anxiety Disorder 7-item scale (GAD-7; Spitzer et al., 2006)	Parenting Practices	Caregiver-Reported • Multidimensional Assessment of Parenting Scale (MAPS; Parent & Forehand, 2017)

Study	Child Variable(s)	Child Measure(s)	Caregiver Variable(s)	Caregiver Measure(s)	Family Variable(s)	Family Measure(s)
	Temperament	Caregiver-Reported • Children's Behaviour Questionnaire (CBQ; Putnam & Rothbart, 2006)	Perceived Stress of Racism	Caregiver-Reported • Vicarious Discrimination Scale (Martz et al., 2019)		
Zhu et al., 2021	Suicidal Ideation	Child-Reported • 9th item of the Patient Health Questionnaire (PHQ-9, Kroenke et al., 2001)			Family Support Parental Supervision	Child-Reported • Family subscale from the Multidimensional Scale of Perceived Social Support scale (MSPSS; Zimet et al., 1988) Child-Reported • Parental monitoring measure (Stattin & Kerr, 2000)
Zuccolo et al., 2022	Emotional Problems	Caregiver-Reported • Revised Children's Anxiety and Depression Scale - Parents Version (RCADS-25-P; Ebesutani et al., 2017)	Parental Psychopathology	Caregiver-Reported • Depression, Anxiety and Stress Scale—Short Form (DASS-21; Henry & Crawford, 2005)	Previous Child Victimization	Caregiver-Reported • Conflict Tactics Scales: Parent–Child Version (CTSPC; Straus et al., 1998; Bonfim et al., 2011)

Table S1

Search Terms: PsycINFO and MEDLINE (Ovid)

#	Searches
1	(COVID-19* or coronavirus* or pandemic* or covid* or quarantine* or lockdown*).mp.
2	((infan* or toddler* or preschool* or child* or youth* or adolescen* or teen* or pediatric* or paediatric* or student*) adj3 (depress* or anxi* or stress* or well* or mental* or trauma* or isolat* or lonel* or affect* or psycho* or distress* or funct* or internal* or external* or conduct* or hyperactiv* or ADHD or resilien* or grow* or routine* or adjust* or maladjust* or maladapt* or social* or mood* or support* or cop* or protect* or risk* or peer* or network* or school* or educat* or engag* or virtual* or learn* or online* or outcome* or develop*)).mp.
3	((parent* or mother* or father* or caregiver* or paternal* or maternal* or grandparent* or grandmother* or grandfather*) adj3 (depress* or anxi* or stress* or well* or mental* or trauma* or isolat* or affect* or psycho* or distress* or funct*)).mp.
4	((parent* or mother* or father* or caregiver* or paternal* or maternal* or grandparent* or grandmother* or grandfather* or marri* or marital or co-parent* or sibling* or brother* or sister* or family* or parent-child* or household* or generation* or couple*) adj3 (interact* or relation* or positiv* or negativ* or hostil* or routine* or support* or conflict* or trauma* or risk* or resilien* or adjust* or cop* or attach* or responsive* or funct* or burden* or protect* or grow* or maltreat* or outcome*)).mp.
5	3 or 4
6	1 and 2 and 5
7	limit 6 to yr="2020 -Current"

Note. Row 1: COVID-19 keywords. Row 2: Child functioning keywords. Row 3 & 4: Caregiver functioning and family functioning keywords.

S2: Rationale for a Revised Quality Assessment Tool

Original Scale Items Included from The Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies:

1. Was the research question or objective in this paper clearly stated?
    - *Rationale for inclusion:* To explicitly understand the primary aim of a research paper.

2. Was the study population clearly specified and defined?
    - *Rationale for inclusion:* To know specific information about whom to recruit (i.e., demographics), where to recruit from (i.e., location), and the specific time period (National Heart, Lung, and Blood Institute, 2021).

3. Was the participation rate of eligible persons at least 50%?
    - *Rationale for inclusion:* There is a concern of bias if less than 50% of eligible people participated (National Heart, Lung, and Blood Institute, 2021). That is, the sample may not be representative of the targeted population if this criterion is not met.

4. Was a sample size justification, power description, or variance and effect estimates provided?
    - *Rationale for inclusion:* To determine whether a study has an appropriate number of participants so that effects can be detected if they exist (i.e., power). A sample size justification enables readers to understand whether the study results represent valuable and meaningful findings. Vaillancourt and colleagues (2021) also highlight an adequate sample size as an important factor in determining study quality.

5. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
    - *Rationale for inclusion:* It is critical that studies use appropriate tools for measurement. Using valid and reliable measures will more accurately detect relationships between predictors and outcomes if they exist (National Heart, Lung, and Blood Institute, 2021). Vaillancourt and colleagues (2021) also emphasize the importance of using psychometrically sound measures in conducting quality research.

6. Was the exposure(s) assessed more than once over time?
    - *Rationale for inclusion:* Multiple measurements allow researchers to explore change over time (National Heart, Lung, and Blood Institute, 2021), which is pivotal in longitudinal studies as emphasized by Vaillancourt and colleagues (2021).

7. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?

- *Rationale for inclusion:* See rationale for item number five.

8. Was loss to follow-up after baseline 20% or less?
    - *Rationale for inclusion:* Longitudinal studies often have high rates of attrition (i.e., the loss of participants over time). Attrition can sometimes be random (e.g., relocating or loss of interest), but it is more commonly due to systemic factors (e.g., higher mental health problems, racialized groups, lower income/education, etc.), which result in less representative samples and more biased results (Vaillancourt et al., 2021). Accordingly, higher follow-up rates are better for data analysis and producing valid study results (National Heart, Lung, and Blood Institute, 2021).

9. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?
    - *Rationale for inclusion:* It is important to control for potential confounding variables (i.e., variables that are not of primary interest to the research question), as they can impact results. Confounders can be controlled for using regression analyses and other methods (National Heart, Lung, and Blood Institute, 2021).

Original Scale Items Removed:

1. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?
    - *Rationale for exclusion:* This item is typically relevant to studies that are interested in an exposure (e.g., diabetes), and exposure groups are selected from a different time or place from one another. That is, studies that recruit groups from different populations. Studies in the current review did not commonly have cohorts/groups.

2. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?
    - *Rationale for exclusion:* Given that this was a criterion for eligibility in our review, it was excluded from the quality assessment.

3. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?
    - *Rationale for exclusion:* We did not have an objective method of determining what is a ‘sufficient’ timeframe for assessing change, given the heterogeneity in constructs and research questions.

4. For exposures that can vary in amount of level, did the study examine different levels of exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?

- *Rationale for exclusion:* This item was removed because it was designed for intervention studies and medical research, and therefore not relevant to the types of studies in our review.

5. Were the outcome assessors blinded to the exposure status of participants?
   - *Rationale for exclusion:* Blinding or "masking" aims to prevent bias in intervention studies and clinical research studies, such as randomized control trials (RCT). (National Heart, Lung, and Blood Institute, 2021). In addition to excluding these types of studies, most of the included studies implemented parent and/or child reports.

New Scale Items Added:

1. Was a pre-covid baseline measure included in the analysis?
   - *Rationale for inclusion:* Data prior to COVID-19 is needed to examine true change in mental health across the pandemic (Vaillancourt et al., 2021). To score favourably on this item, at least one period of data collection should have occurred before March 11, 2020 – the day the World Health Organization declared COVID-19 a pandemic (Cucinotta & Vanelli, 2020).

2. Were moderators and/or mediators examined?
   - *Rationale for inclusion:* The worsening of mental health symptoms during the COVID-19 pandemic does not mean that the pandemic caused these symptoms (Vaillancourt et al., 2021). That is, correlating variables does not imply that one causes the other. Examining moderators and mediators can help to elucidate processes and mechanisms at play. Moderators alter the strength of the relationship between a predictor and outcome, and mediators explain the relationship between a predictor and outcome.

3. Was the child adjustment variable child-reported?
   - *Rationale for inclusion:* Research has demonstrated discrepancies between child and parent reports of child functioning (Oh et al., 2018). Therefore, only including caregiver reports of child adjustment may be limiting for studies examining the effect of pandemic-specific social disruptions on children.

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