

**Parenting Stress and its Impact on Parental and Child Functioning During the COVID-19  
Pandemic: A Meta-Analytical Review**

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## **Abstract:**

Amidst the COVID-19 pandemic, prolonged periods of physical and social isolation imposed significant challenges on parents and children, disrupting their socioeconomic stability and psychological well-being. This study examined the effects of parenting stress on aspects of parents' and children's functioning during the COVID-19 pandemic. A comprehensive search of studies from eight electronic sources, including the WHO's COVID-19 database, yielded 42 studies focusing on the associations between parenting stress, as measured by standardized scales, and child and parental outcomes. Multilevel random-effect models were used to analyze weighted effect sizes. Our findings revealed medium to large effect sizes (ranging from  $r = .29$  to  $.55$ ) in the associations between parenting stress and (1) externalizing child behaviors ( $r = .41$ ), (2) internalizing child behaviors ( $r = .48$ ), (3) negative parents' behavioral engagements ( $r = .29$ ), (4) parents' mental health ( $r = .46$ ), and (5) poor parent-child relationship quality ( $r = .55$ ). These results underscore the significance of addressing parenting stress during a pandemic. Practice implications suggest that governmental or community support, along with tangible assistance, can alleviate parenting stress and positively impact the well-being and functioning of parents and children in the pandemic and post-pandemic era especially in light of the current global mental health crisis. Furthermore, considering the influence of parenting stress on treatment engagement and motivation, family- or parent-oriented interventions that address parenting stress can be more effective at reducing negative consequences of a pandemic on children and their parents.

*Keywords:* Parenting stress; COVID-19 pandemic; Child behavior; Mental health; Parent

## **Introduction**

In the year 2020, the coronavirus (SARS-CoV-2) caused a pandemic of acute respiratory syndrome (COVID-19) with far-reaching global impacts. Due to the virus's rapid spread, the World Health Organization (WHO) declared in January 2020 that the pandemic was a “public health emergency of international concern” (WHO 2020). To slow the rate of transmission of the virus, governmental responses around the world ranged from physical distancing to partial or complete lockdowns of their populations. While physical distancing and lockdown measures helped reduce community-based transmissions, they were also detrimental to family life (Cluver et al., 2020). Many parents attempted to work remotely from home while caring for their children. Parents with school-going children had to adapt to the new challenges of home-based schooling. The demands were even greater for parents who had to care for children with chronic behavioral problems, special needs, or disabilities. In addition, given the high degree of economic uncertainty faced by many families, parents often cared for their children under stressful conditions with limited resources. Many parents experienced what Coyne et al. (2020) described as a stressful “collision of roles, responsibilities, and expectations” (p. 1092) as they faced significant uncertainty about the future.

Various studies have documented how the COVID-19 pandemic affected the daily lives and well-being of parents and children. Reduced social contact, long-term physical confinement to the home led to “cabin fever”, which refers to the psychological stress and various mental health challenges faced by individuals in prolonged confinement or isolation (Crawford, 2021). Moreover, anxieties about contracting the virus were linked to reduced outdoor activities and exercise, increased involvement in online gambling and gaming, increased use of substance and alcohol at home, and sleep problems among parents and older children (Avena et al., 2021; Singh

et al., 2021). Among youths, those who felt more socially isolated during the pandemic showed more behavioral issues, particularly in the form of internalizing problems (Lehmann et al., 2022).

The pandemic had a significant toll on parents' mental health. A review of ten studies by Vescovi and colleagues (2021) found that the prevalence of anxiety and depression symptoms among pregnant women and parents increased during the pandemic versus the pre-pandemic period. Difficulties in coping with mental health issues in turn affected parents' ability to care for their children. This was exacerbated by reduced contact and social support from extended families, friends, and the community due to quarantines or lock-down circumstances. Unsurprisingly, several studies on the pandemic found an increased use of harsh parenting and corporal punishment (Chung et al., 2022; Lee et al., 2022), coercive parenting (Lucassen et al., 2021), as well as poorer parent-child relationship and attachment (Chung et al., 2022; Manuela et al., 2021), and greater interpersonal conflict between parents and their adolescent children (Low & Mounts, 2022).

To support parents and children during a pandemic, interventions could potentially target outcomes such as alleviating mental health symptoms or improving children's behaviors (outcome-focused approach). An alternative approach is to identify the processes leading to these outcomes (process-focused approach). This social intervention approach, as described by Fraser and Galinsky (2010), argues that identifying the risk mechanisms that lead to adverse outcomes is a fundamental milestone in developing interventions because these risk mechanisms become the key targets for change in interventions. Hence, understanding the family risk processes exacerbated by the pandemic is an important first step in developing effective interventions focused on improving the well-being and functioning of parents and children.

Based on prior studies, parenting stress is a potential key risk mechanism that can be targeted in parenting interventions to prevent downstream mental and behavioral problems among parents and their children. This has been supported by reviews of interventions with parents experiencing high stress levels such as parents of children with developmental disabilities (Lindo et al., 2016). Moreover, there is broad consensus in the literature that parenting interventions, especially when implemented as a population-wide strategy, are among the most efficacious and cost-effective interventions that promote the mental health and well-being of youth (Prinz, 2019). In the rest of this section, we review the evidence for the role of parenting stress and its effects on various aspects of parents and children functioning, with a focus on its significance during the pandemic.

### **Parenting Stress**

Parenting stress is an aversive psychological response experienced by parents when engaging in their parenting role (Deater-Deckard, 1998). This response often arises when the demands of parenting tasks or a parent's role and responsibilities are inconsistent with their expectations, or when the resources that parents have to meet these parenting demands are insufficient. Parenting stress is distinct from other forms of stress that parents may experience in their daily life such as stress at work or from financial difficulties, though they are often associated with one another.

In the parental stress model (Abidin, 1992, see Figure 1), parenting stress arises from relevant stressors in the parent's ecological system, including the marital relationship, parent or child characteristics (e.g., demographics), the environment, or large-scale life events. When these stressors are experienced, parents assess or appraise the threat or challenge in relation to the demands made of their role as parents. The result of these appraisals contributes to the social or

emotional stress that parents experience (Abidin, 1992). This can include (a) parents' mental or emotional distress, (b) their perceived difficulties in parent-child relationships, and (c) difficulties in managing the behaviors of the child (Abidin, 2012). Other researchers have also described parenting stress with respect to parents' feelings about raising their children, their sense of control, or their level of satisfaction with their parental role (Berry & Jones, 1995).

### **Impact of stress on parents' mental health and parenting.**

Parents who experience higher levels of parenting stress tend to show parenting behaviors that are more authoritarian and harsh (Crnic et al., 2005; Deater-Deckard, 1998; Deater-Deckard & Scarr, 1996; Jackson & Choi, 2018), intrusive parenting (Ispa et al., 2004), or adopt more ineffective disciplinary styles (Chung et al., 2021; Deater-Deckard & Scarr, 1996). In terms of the relationship between parent and children, Deater-Deckard (1998) reviewed studies and found that parenting stress could also lead to poorer parent-child relationship quality. Crnic et al. (2005) also found that parenting stress predicted fewer observed maternal positive behaviors and less positive dyadic interactions while Ponnet and colleagues (2013) found among parents with higher levels of stress, lower qualities of openness in parents' communication with their adolescents. Studies have found associations between elevated parenting stress and subsequent mental health problems among parents (Kwok & Wong, 2000) but the associations seem salient for groups of parents experiencing specific challenges. For instance, for new parents transiting to parenthood, stress levels were associated with later reported symptoms of depression and anxiety symptoms among parents of newborns (Rollè et al., 2017). Parents who were stressed in caring for children with developmental disabilities were more likely to have poorer mental health-related quality of life (Enea & Rusu, 2020).

### **Impact of stress on children's behaviors.**

Parenting stress is also notably linked to child behavioral adjustment, specifically increased internalizing and externalizing symptoms and behavior issues, as reported by both parents and teachers (see review in Deater-Deckard, 1998). Anthony et al. (2005) found that when exposed to their parents' stress, preschool children in the United States were more likely to report behavioral and emotional problems and poorer social competence. Jackson and Choi, (2018) linked single mothers' stress when their children were at preschool age to subsequent children behavioral problems (internalizing and externalizing symptoms) at age 9. In a review of studies of children from various clinical groups (e.g., chronic illness, developmental disabilities), Barroso et al. (2018) found strong associations between parenting stress and children's externalizing and internalizing behaviors.

[Figure 1 here]

### **The Significance of Parenting Stress During the Pandemic**

The focus on parenting stress during the pandemic is important because the COVID-19 pandemic marked an unprecedented global crisis that introduced levels of uncertainties, disruptions, and stress distinct from more routine stressors experienced by parents. According to the parental stress model (Abidin, 2012; see Figure 1), large-scale stressor events can elevate parenting stress. Previous research has linked major stressor events like economic recessions, wars, and natural disasters to negative parenting effects. For example, during the 2008 Great Recession, decreased consumer confidence led to increased harsh parenting in the United States (Brooks-Gunn et al., 2013). Eltanamly et al. (2021)'s meta-analysis of studies found that war-exposed parents exhibited less warmth and more harshness toward their children. Notably, in these studies, the parenting quality was key to supporting children's adjustment and recovery following war experiences.

A large-scale stressor event like the COVID-19 pandemic can lead to an array of stressors, including health concerns, economic instability, and extended periods of isolation, which combined, can have a profound impact on families' daily lives that can contribute to heightened parenting stress. For instance, social distancing measures led to reduced social support and other resources that typically buffer the effects of parenting stress. This is because parents have less contact and access to their usual support groups such as churches, peers, and the community. Some studies have found that the pandemic disrupted the daily routines and work-family balance, which created additional stress for parents (Billing et al., 2023). For instance, Chung and colleagues (2022) found that "stay-home orders" in Singapore made it difficult for parents to get their daily necessities (e.g., medicine, food, and groceries) and also led to financial problems due to unemployment.

The focus on parenting stress is crucial not only because it plays a key role in affecting parenting behaviors as illustrated in the parental stress model (Abidin, 1992, Figure 1) and in the studies reviewed earlier, but also due to its potential direct impact on children's mental health and behaviors. Children's experience of their parents' stress could be a contributing factor for the observed deterioration in mental health among children and youths during the pandemic (Kauhanen et al., 2023). Sustained levels of parenting stress from pandemic to the post-pandemic phases could also have intensified the current mental health crisis among the younger populations, a concern raised by Shidhaye (2023).

### **Aims of the study.**

Taken together, our review of existing studies suggest that it is important to examine the role of parenting stress and its links with the psychological and behavioral adjustment of parents and children during the pandemic. Thus, the purpose of this meta-analysis was to summarize and

synthesize the existing literature related to associations between parenting stress with the following domains of parental and child outcomes: (1) parents' mental health functioning, (2) parents' behavioral engagement with child, (3) parent-child relationships, and (4) child behavioral adjustment (i.e., externalizing, and internalizing behaviors). These domains were used to group the outcomes in this review because they are similar to those looked at in existing empirical reviews of parenting stress or parenting-related constructs (e.g., Deater-Deckard, 1998; Pinquart, 2018). Prolonged stress can be a risk for subsequent development of parents' mental health problems (Hammen, 2015). Parents' behavioral engagement refer to parents' engagement with children that provide for child's general health and physical, social, and psychological development. These can include child-rearing behaviors, monitoring of child's activities, discipline, and engagement of child in activities. Children's adjustment outcomes refer to a child's externalizing and internalizing behaviors, serving as indicators of the child's ability to engage appropriately in interpersonal relationships at work, home, play, or in academic activities. These behaviors reflect the child's ability to align their conduct or emotional responses with the specific demands of each setting (Achenbach & Rescorla, 2001).

This study expects that across studies, parents who experienced higher parenting stress levels would likely report poorer outcomes. It's essential to note, however, that this expectation does not rule out the possibility that some parents may still thrive under stressful conditions or possess protective factors and resilience enabling them to effectively manage their stress. Nonetheless, our study is important because it has the potential to optimally highlight the role of parenting stress as an important target for family services and interventions focused on supporting families during the pandemic, as well as efforts to help parents and children to recover after the pandemic. The results of this review may also guide future research and help

yield new insights that inform public health measures and the work of family-serving practitioners. This is especially salient for communities that may encounter pandemics or other large-scale stressful events which can trigger similar challenges and stresses for families in the coming decades. Investigating these effects can help us prepare for future large-scale crises and support families in times of need.

## **Methods**

The current meta-analytic review followed the Preferred Reporting Items for Systematic Reviews & Meta-analyses (PRISMA) guidelines (Page et al., 2021) and best practices in meta-analytical procedures given by Harrer et al. (2021).

### **Information Sources and Search.**

Our literature search incorporated the following eight electronic databases: Applied Social Sciences Index & Abstracts (ASSIA), Social Service Abstracts, Sociological Abstracts, Social science database, ERIC, Proquest Dissertation & Theses Global, Cumulated Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO. Google Scholar and the WHO COVID-19 database were also used to gather additional studies related to the pandemic. We limited the publishing date of the studies to after 14<sup>th</sup> January 2020 when the first global case of COVID-19 was reported. Our initial search for studies in the above databases was in May 2022. A second search of the databases was completed on the 30<sup>th</sup> of June 2022 to update our dataset of studies.

The following search terms related to parenting stress and pandemic were used across all databases: (covid\* OR pandemic) AND (parent\* stress OR parent\* burnt\* OR mater\* stress OR pater\* stress OR mater\* burnt\* OR pater\* burnt\*).

### **Studies Selection Based on Inclusion Criteria.**

Studies were included in the meta-analysis if they met the following inclusion criteria: (a) the study focused on the associations between parenting stress and an outcome(s), (b) the study examined the effects of the COVID-19 pandemic on the family and utilized quantitative data collected during the pandemic, (c) the study used a standardized parenting stress scale (Holly et al., 2019), (d) outcomes for parents of children age 0+ to 18 years old, and (e) the papers were published in the English language. To ensure construct validity, we excluded studies where the stress construct studied was not related to parenting (e.g., general-, traumatic-, or work-related stress) or if the study used non-standardized instruments or self-constructed items to measure parenting stress.

The results of the study selection and review process are summarized in Figure 2. In total, 1,164 studies were found from the database search. After removing 288 duplicates, we screened the titles and abstracts of 876 studies to assess their relevance. From this initial screen, 628 studies were excluded. The remaining 248 studies were subjected to a screening of their abstract and full-text and a further 206 articles were excluded from the study. A majority of the articles were excluded because they did not look at parenting-related stress (78 studies), whereas the rest were excluded because they (1) were not pandemic-related (55 studies), (2) did not analyze the associations between parenting stress and any relevant parent or child outcomes (45 studies), (3) used non-standardized measures of parenting stress (13 studies), and (4) were not published in English (5 studies). We also excluded 5 studies where there was no available full-text and 5

studies that were duplicates. After the two-stage screening process, a total of 42 studies were included in the meta-analyses.

[Figure 2 here]

### **Data Collection Process and Data Items.**

Various data items related to study information, sample characteristics, child and parent characteristics, and outcome measures were extracted from each of the 42 studies. Specifically, the following information was extracted from studies: (a) first author last name and study year, (b) source type (e.g., journal article, dissertation), (c) study location, (d) data source and sample size, (e) longitudinal or cross-sectional study design, (f) sociodemographic of study participants (e.g., sex of parent and child, age of parent and child, marital status), (g) parenting stress measures and reporters (e.g., self-report, child report), (h) outcome domains, which represent higher-order constructs into which specific outcome measures could be conceptually clustered (e.g., different parenting behavior measures such as harsh parenting were grouped into the parenting behaviors domain), and (i) bivariate correlations (i.e., Pearson correlation coefficient) between parenting stress and the relevant outcome domains.

**Outcomes.** The outcomes represented in the included studies were broadly grouped into one of five higher-order outcome domains related to children or parents: (1) child Internalizing behaviors, (2) child externalizing behaviors, (3) parent's relationship quality with child, (4) parents' behavioral engagement with child, and (5) parents' mental health functioning. *Child internalizing* and *externalizing* behaviors are common indicators of the child's adjustment and is common associated with a child's ability to engage appropriately and successfully in interpersonal relationships and in activities related to school, sports, or play (Buehler et al.,

1997). Maladjustment may be a result of difficulties faced by children when they are unable to match their emotional and behavioral responses to demands across time, people, and settings. Internalizing and externalizing problem behaviors are important broad-band indicators of maladjustment that are key to understanding children mental health and well-being. Examples of internalizing problems typically include depression, anxiety, somatic, and complaints; whereas externalizing problems include aggression, antisocial behaviors, delinquency, and substance abuse. *Parent–child relationship quality* include an indication of perceived levels of closeness, conflict, bonding, and attachment, or affective quality between parent and child. *Parental behavioral engagement*, on the other hand, reflected a more behavioral dimension of the parent-child relationship, such as their perceptions about the frequency and types of interaction or engagement between parents and children, corporal discipline, or parents’ involvement with children. For *parents’ mental health*, parents generally reported on specific symptoms using validated measures related to depression or anxiety (e.g., the Depression, Anxiety, and Stress scale, DASS) or with measures that broadly tap on parents’ perceptions of their general mental well-being.

### **Synthesis of Studies Using Meta-Analysis**

Since continuous measures of parenting stress and outcomes were prominently used among the studies, we selected Pearson product-moment correlation coefficient,  $r$  as the optimal effect-size metric, which quantifies the direction and strength of the linear relationship between parenting stress and a measure of the outcome.

We extracted a total of 114 relevant effect-size estimates of unadjusted  $r$ . If the study provided an effect size for two or more mutually exclusive subsamples (e.g., different age groups of children such as in Dillmann, 2022), we included all the effect sizes. When effect sizes for

both cross-sectional and longitudinal associations were available, the longitudinal effect size was favored as a more robust estimate for inclusion in meta-analyses. When effect sizes at different temporal waves in longitudinal studies were available to selection, the effect sizes for the shortest duration after the baseline collection were favored to align with the aim of this study to capture the immediate effects of parenting stress during the pandemic period.

Given the limited bounds of the Pearson's  $r$  (i.e. from -1 to 1), it is best practice in meta-analytical procedures to transform Pearson's  $r$  into Fisher's  $Z$  and its variance for the meta-analysis (Harrer et al., 2021). The synthesized value can thereafter be converted back to correlation  $r$  for result interpretation. Transforming Pearson's  $r$  to Fisher's  $Z$  was done using the following formula:

$$Z = 0.5 \times \ln \left( \frac{1 + r}{1 - r} \right)$$

Separate meta-analyses using random-effects (RE) model were conducted for effect sizes associated between parenting stress and the same outcome domain. An RE model allows the true effect to vary from study to study because of sampling error and sample differences such as differences in age and gender of participants, and other clinical characteristics of the study participants. As we expected the included studies to come from different countries, study designs, and samples with different population characteristics, the RE model was appropriate to account for these differences in clinical and methodological characteristics. Studies that had more precise estimates of the effect size (i.e., error variance) were given more weight which was determined by the inverse of each study's overall error variance.

Our analysis reported the summary effect estimate of Pearson's  $r$  (converted back from Fisher's  $Z$ ) and its 95% confidence interval. The confidence interval quantifies the precision of

the mean effect estimate. Cohen's (1992) criteria for evaluating the strength of effect sizes were used to guide interpretation, such that  $r = .10$  indicates a small effect,  $r = .30$  indicates a medium effect, and  $r = .50$  indicates a large effect.

Meta-regression with moderators (e.g., average age of children, gender of child, study design) was not possible because all the outcomes had insufficient number of effect sizes except for parents' mental health functioning outcome. Given the lack of data, we only reported the meta-regression results for this outcome in our supplement results.

All analyses were done in the R programming language (4.2.2.) using the R package "Metafor" (Viechtbauer, 2010) for the meta-analyses. Management of study articles was done using Covidence.

## **Results**

### **Descriptive Overview of Studies.**

Table 1 highlights various descriptive characteristics of the studies included in the meta-analysis, such as (a) source of study articles, (b) country (location of study), (c) study design (i.e., cross-sectional or not), (d) time period of study (i.e., first data collection), (e) caregiver and child sample characteristics, and (f) parenting measures used.

All the included studies were journal articles, with most of the investigations ( $n = 39$ ; 93%) occurring in 2020 – the first year of the pandemic. In addition, most studies ( $n = 31$ , 74%) collected data during the April – July 2020 period, likely because this period reflected a critical moment in which lockdowns and school closures were instituted due to an increasing infection rate. In terms of study source, most of the studies were conducted either in Italy ( $n = 11$ , 26%) or

the USA ( $n = 11$ , 26%). The remaining studies were conducted in countries from Asia (China, South Korea, Singapore), Europe (Spain, Germany, Norway, Switzerland), Middle East (Saudi Arabia), and Australasia (Australia). The diverse study locations highlight the far-reaching effects of the global pandemic. In addition, most of the studies ( $n = 35$ , 83%) were cross-sectional studies while the remaining seven studies were longitudinal.

[Table 1 here]

Parenting stress was predominantly measured with either the Parenting Stress Index (PSI; Abidin, 2012), with many studies ( $n = 18$ , 42%) using the shorter form version of PSI (PSI-SF), or with the Parenting Stress Scale (PSS; Berry & Jones, 1995). The PSI (or PSI-F) and PSS scales are commonly used in the parenting literature as they have strong psychometric properties when measuring parenting stress across diverse populations (Holly et al., 2019). They are also popular because they have been translated into various languages and validated. The PSS scale is also available in the public domain for research use.

Of the 39 studies that reported on the backgrounds of the focal parent/caregiver, the proportion of parents/caregivers identifying as female ranged from 46% to 100% ( $M = 82.8\%$ ). Using available information from 32 studies, the average sample age of the parents/caregivers ranged from 33 to 45 years old ( $M = 38.7$ ). Majority of the parents/caregivers across the studies were married (range = 50% to 100%;  $M = 80.35\%$ ). In terms of focal children, most children were boys (ranging from 45% to 86%;  $M = 54\%$ ). The ages of the children ranged from 1 to 15 years ( $M = 6.69$ ); however, most studies (65%) included school-going children from ages 5 to 12. Only two studies focused on adolescents. Eight of the studies (19%) were clinical samples

that included children with developmental disabilities or those receiving interventions for behavioral issues.

### **Meta-analytic Findings.**

The study findings are organized by outcome domain where key substantive findings are reviewed, followed by a summary of the meta-analytic findings related to the outcome domain.

#### ***Child Internalizing Behaviors***

All the studies found significant positive associations between parenting stress and child internalizing behaviors. The studies found that higher levels of parenting stress were associated with more emotional symptoms (per the Strengths and Difficulties Questionnaire, SDQ), internalizing problems (per the Behavior Assessment System for Children or the Child Behavioral Checklist, CBCL), and depressive symptoms in children (e.g., Andrés-Romero et al., 2021; Babore et al., 2023; Cimino et al., 2021; Cohodes et al., 2021; Low & Mounts, 2022; Operto, 2022; Spinelli et al., 2020; Zambrana & Hart, 2022).

Some studies also explored if the associations between parenting stress and child internalizing behaviors were a consequence of the effects of the pandemic (i.e., parenting stress as a mediating factor). In an online survey of 272 families living in the USA with adolescents aged between 12 and 18 (Low & Mounts, 2022), higher parents' financial stress was related to higher levels of parenting stress, which in turn was linked to increased adolescent loneliness and internalizing behaviors. In another online survey study of families in Italy with younger children aged 5 – 11 (Cimino et al., 2021), pandemic-related psychological distress led to higher parenting stress which was associated with an increase in children's emotional problems. In both

studies, the study samples comprised both mothers and fathers (fathers constituted 26% in the first study and 43% in the second study), suggesting that the effects of the pandemic on parenting stress were significant for both mothers and fathers. That is, fathers' as well as mothers' parenting stress can be linked to children's internalizing behaviors.

As shown in Table 2, our meta-analysis found strong evidence for a medium average effect for the positive associations between parenting stress and child internalizing behaviors (mean  $r = .48$ , 95% confidence interval [CI] = [0.33, 0.60],  $k$  [number of effect sizes] = 13). Positive associations here mean that an increase in parenting stress is associated with an increase in child internalizing behaviors.

[Table 2 here]

### ***Child Externalizing Behaviors***

The findings were similar with regards to the positive associations between parenting stress and child externalizing behaviors. A mix of cross-sectional and longitudinal studies found consistent associations between higher parenting stress levels and more child externalizing behaviors. Specifically, higher parenting stress were associated with more frequent child disruptive behaviors (Eyberg Child Behavior Inventory; ECBI), higher externalizing behaviors as measured by CBCL, and greater expression of hyperactivity, impulsivity, and conduct problems in children (Andrés-Romero et al., 2021; Bentenuto et al., 2021; Chen et al., 2021; Cimino et al., 2021; Cohodes et al., 2021; Giannotti et al., 2021; Marzilli et al., 2021; Spinelli et al., 2020; Zambrana & Hart, 2022). In some studies, the associations between parenting stress and child externalizing behaviors were found to vary depending on child or parental factors such

as child temperament (Lionetti et al., 2022), self-efficacy of parents (Zambrana & Hart, 2022), or perceived social support (Chen et al., 2021).

Consistent with previous findings with respect to the mediating role of parenting stress in its associations with child internalizing behaviors, some studies found that parenting stress mediated the effects of the pandemic such as COVID-19-related traumatic distress (Marzilli et al., 2021), psychological distress (Cimino et al., 2021), and household chaos (Spinelli et al., 2021) on child externalizing behaviors.

In terms of the meta-analytic results (see Table 2), we also found a medium average effect for the positive association between parenting stress and child externalizing behaviors (mean  $r = .41$ , 95% confidence interval [CI] = [0.30, 0.51],  $k$  [number of effect sizes] = 17).

### ***Parent-Child Relationship Quality.***

Most of the studies found consistent significant associations between higher levels of parenting stress and poorer relationship quality between parents and children. Specifically, higher individual levels of parenting stress were associated with reduced parent-child relationship closeness (Chung et al., 2022), poorer mother-infant bonding (Fernandes et al., 2021; Provenzi et al., 2021), more frequent conflicts between parents and their adolescents (Low & Mounts, 2022), and weaker attachment between mothers and their pre-term infants (Manuela et al., 2021). However, interpretations of these findings are limited as most studies focused on infants with mothers. An exception to this is a study of parents of primarily school-going children from Singapore which showed that parents who experienced more negative effects of COVID-19 reported higher parenting stress, which in turn affected relationship closeness with their children (Chung et al., 2022).

As shown in Table 2, results from the meta-analysis yielded a significant and large average effect for the positive association between parenting stress and poor relationship quality (mean  $r = .55$ , 95% confidence interval [CI] = [0.29, 0.73],  $k$  [number of effect sizes] = 6).

### ***Parents' Behavioral Engagement with Child***

Findings from these studies suggest that higher levels of parenting stress are associated with reduced parents' engagement in play or literacy activities with their children (Stienwandt et al., 2022; Zambrana & Hart, 2022), verbal interactions (Spinelli et al., 2021), attentive listening (Fernandes et al., 2021), positive parenting behaviors such as limit setting, guidance, or responsiveness (Kim & Chae, 2022), less disciplinary involvement (Liu et al., 2022), and greater use of corporal punishment and harsh parenting behaviors used (Chung et al., 2022).

Across the studies, it was common not to distinguish parenting between fathers or mothers in the sample. An exception was a study by Liu et al (2022) (Liu et al., 2022) which concurrently tested fathers' and mothers' parenting stress and parent involvement to determine if there were group differences in these associations for fathers and mothers. Using data reported by Chinese mainland parents living with adolescents aged between 10 to 18 years, they found that both fathers' and mothers' parenting stress negatively affected their behavioral engagement with their children.

Associations between higher parenting stress and negative parents' behavioral engagement were consistent among parents of varying sociodemographic characteristics. A study focused on low-income Latino mothers whose children were enrolled in Early Head Start Centres in the USA found that parenting stress was negatively associated with mothers' home literacy involvement, but not with home math involvement. Studies with more economically-

advantaged families (i.e., parents with high levels of education and/or incomes) similarly found consistent associations between parenting stress and parents' engagement with their children (Chung et al., 2022; Fernandes et al., 2021; Stienwandt et al., 2022)

Results from the meta-analysis yielded a significant and medium average effect for the positive association between parenting stress and negative parenting behavioral engagements (mean  $r = .41$ , 95% confidence interval [CI] = [0.29, 0.52],  $k$  [number of effect sizes] = 14). However, subsequent Eggers' regression test indicated publication bias might have overestimated the average effect-size estimation. Bias corrections in the estimation of the effect size using trim and fill method yielded an effect size that was smaller but remained statistically significant and close to medium in average effect (mean  $r = .29$ , 95% confidence interval [CI] = [0.18, 0.39]). More information on publication bias will be discussed below.

### ***Parents' Mental Health Functioning***

All the studies found consistent associations between higher parenting stress and poorer parents' mental health. Specifically, higher parenting stress was associated with more severe or frequent depressive and anxiety symptoms in parents as measured by the Depression, Anxiety, and Stress Scale (Chen et al., 2022), higher state anxiety on the State-Trait Anxiety Inventory (STAI; Grumi et al., 2021; Ren et al., 2020), greater psychological distress on the Kessler Psychological Distress Scale (Park et al., 2021), psychological well-being and happiness (Mazumdar et al., 2021), more postnatal depression on the Edinburgh Postnatal Depression Scale (EPDS; Manuela et al., 2021), more severe depressive symptoms as measured by scales such as the Beck's Depression Inventory (Fernandes et al., 2021; Grumi et al., 2021), greater parent burn-out (Hai Ninh Nguyen, 2021; Jeong-Hyo Seo & Kim, 2022; Skjerdingsstad et al., 2021), and

poorer mental health on the General Health Questionnaire (Alhuzimi, 2021; Dionisi et al., 2022). The majority of these studies used cross-sectional designs with a few exceptions: (Fernandes et al., 2021)'s study of 125 Portuguese mothers of first-year infants in April 2020 found that higher parenting stress predicted higher levels of anxious and depressive symptoms two months later. Another study with 1,488 parents from Norway (Skjerdingsstad et al., 2021) found that higher individual parenting stress during the early phase of the pandemic in March 2020 was associated with more reported parent burnout three months later.

Results from our meta-analysis (see Table 2) found a medium effect for the positive association between parenting stress and parents' mental health problems (mean  $r = .46$ , 95% confidence interval [CI] = [0.40, 0.52],  $k$  [number of effect sizes] = 40).

### **Assessment of Publication Bias**

Publication bias is a threat in meta-analyses when studies with null findings or contradictory findings are omitted from publication so that the mean effect-size estimates do not correctly reflect the actual value. In this study, we assessed for bias by using the Egger's regression test to test for funnel plot asymmetry, along with funnel contour plots to visually examine for missing studies in areas of low statistical significance. We found no indications of publication bias for all outcomes except for parents' engagement outcome. For parents' engagement, we found slight indications of funnel plot asymmetry with visual inspections of the funnel plot indicating that one possible small-size study might be missing, thus overestimating the effect size (see Supplement). Although bias corrections with trim and fill imputation method yielded a smaller effect size, the results were similar to the unadjusted effect size. These findings

suggest that the mean effect-size estimates in this meta-analytic review did not appear to be significantly affected by publication bias.

## **Discussion**

The goal of the study was to address the gap in the current literature on how parenting stress can impact parent and child functioning and well-being during the challenging macro-related circumstances of the COVID-19 pandemic. Consistent with the broader parenting stress literature, the findings showed that parenting stress significantly affected aspects of parents' functioning during the pandemic such as their mental health functioning (e.g., depression, anxiety, burnt-out, general mental health), the quality of their relationship with their children, and their engagement with their children. Parenting stress also affected children's mental and behavioral functioning measured by externalizing (includes hyperactivity, impulsivity, and conduct) and internalizing symptoms (depression, anxiety, and somatic complains).

Specifically, our study found significant and medium-to-large effects, with positive associations between parenting stress and poor parent-child relationship quality (mean  $r = .55$ ; large average effect), reported parents' mental health problems (mean  $r = .46$ ), and negative parents' behavioral engagements with their children (adjusted mean  $r = .29$ ; small average effect). Positive associations here means that an increase in parenting stress is associated with an increase in the negative outcomes. For children's functioning, our results found positive associations between parenting stress and levels of child internalizing (mean  $r = .48$ ; medium average effect) and externalizing behaviors (mean  $r = .41$ ; medium average effect). In understanding these results, we need to consider that in this review 90% of the studies were conducted during the first year of the COVID-19 pandemic with 74% of studies collecting data

within the first six months of the onset of the pandemic. Thus, most of the associations found in these studies represent the effects in the initial phase of the coronavirus breakout.

The parental stress model (Abidin, 1992), which guided this study, is valuable not only in understanding parenting stress as a response to stressor events like the pandemic but also in recognizing how parenting stress can have subsequent effects on parents and children's well-being. During this initial phase, governments across the world were confronted with unprecedented circumstances and many responded with a mix of public health measures with varying levels of social and physical restrictions including mask-wearing, physical distancing, partial or full lockdowns, and the closing of leisure, educational, and employment activities to slow the rate of viral transmission. Despite being based on studies from more than 15 countries and across different continents, the studies' findings were consistent suggesting that they are robust, common responses to parenting stress that cut across different cultural and societal conditions. Certainly, there are nuanced variabilities between countries in what and how these measures were implemented, but at a broader level, there appear to be commonalities in how families in the community had to bear the brunt of the downstream collateral effects of these global public initiatives. Among families, it is the parents and the children who had to manage the long durations of physical and social isolations in their homes, and the concomitant stressful socioeconomic and well-being consequences.

Our review underscores the significance of the role of parenting stress as a key risk pathway for poor parent and child outcomes in the context of negative and stressful life events. This provides further support for the parental stress model (Abidin, 1992). As reviewed earlier, prior studies on macro-level stressor events, such as economic recessions, wars, and natural disasters, have shown that these events can negatively impact child outcomes through their

detrimental effects on parents and parenting behaviors (e.g., wars and economic recessions). However, despite the well-documented influence of parenting stress on family dynamics, this specific risk mechanism has yet to be examined in the context of a large-scale stressful event such as a global pandemic. The medium-to-large effects of parenting stress on parent and child outcomes indicate that further efforts to investigate the impact of parenting stress with various aspects of parents and child functioning in the context of large-scale stressful life events, and to develop interventions with this risk factor as a target, are likely to be fruitful ones.

In summary, this study finds that the COVID-19 pandemic has been more than just a situational event; as a large-scale stressor, it has significantly contributed to the intensification of parenting stress, which has had a subsequent impact on parents' ability to function. Crucially, this study has found that elevated levels parenting stress is implicated in the deterioration in behavioral and mental health among children and youths during the pandemic (Kauhanen et al., 2023) but might also be a substantial contributor to the current global mental health crisis among the younger populations (Shidhaye, 2023). Thus, addressing parenting stress emerges as a critical target in interventions, policies, and research.

### ***Implications for Practice and Research.***

Governments can play a key role in mitigating the impact of large-scale stressor events such as the COVID-19 pandemic on families and parents. During the COVID-19 pandemic, reducing parenting stress may be a particularly impactful way to support parents' and children's well-being and functioning. Cash payouts, remote schooling, and employment support measures during and after the pandemic were important to help families cope and reduce parenting stress (see Shek et al., 2023 for an international review of social policies during the pandemic). For instance, in Singapore, monthly cash grants were given to workers who lost their job during the

pandemic. Cash payouts of at least S\$300 (USD\$225) were also given during the immediate stage of the pandemic to all adult Singaporeans to cope with financial uncertainties (Cheng, 2020). Based on our findings, we expect that any efforts to mitigate COVID-19's negative impacts would have downstream protective effects in reducing the level of stress experienced by parents, which would in turn increase the likelihood of parental and parenting outcomes. However, there remains a gap in research concerning the precise mechanisms through which economic supports alleviate parenting stress. There is a need to investigate the extent of financial assistance required to significantly lower stress levels. Moreover, it is essential to explore the optimal blend of tangible supports, like financial aid, and other policy measures, such as remote schooling, to effectively reduce parenting stress. Employers can also make a difference by providing support to working parents who engage in remote work from home during the pandemic and helping them to maintain good work-family balance that can reduce parenting stress (Chung et al., 2023).

Efforts in recognizing the key role of parenting stress could especially benefit any ongoing efforts by family-serving organizations, family practitioners, or family interventionists to support parents. The effectiveness of family- and parenting-oriented interventions focused on supporting parents' needs may be compromised when parenting stress levels of the participants are high. While parenting stress may be a reason for parents to enroll in an intervention, the emotional and physiological arousal arising from high levels of stress could inadvertently affect program engagement (Kazdin & Wassell, 1999; Kazdin & Whitley, 2003). Stressed parents may feel overwhelmed and burnt-out; consequently, it may be difficult for parents to engage in intervention-related tasks such as scheduling treatment sessions, keeping their appointments, or completing take-home assignments. Parents may also be less active participants in the

interventions because of reduced mental and emotional resources (Staudt, 2007). Therefore, assessing and addressing the stress levels of parents, therefore, could be an essential step during the pre-treatment or early-treatment phases because of its implications for treatment outcomes as well as treatment engagement, barriers, and retention (Staudt, 2007). Adapting components of existing intervention to address stress levels of the parent participants could go a long way in promoting participants' program engagement and motivation.

Future research in this area could focus on understanding the long-term consequences of parenting stress during large-scale stressor events like the COVID-19 pandemic, as the current findings primarily pertain to the initial phase (i.e., first year) of the pandemic. It is essential to study how parenting stress may not only be a significant factor during the crisis but also for the potential lasting effects on children and youths' mental health in the post-pandemic era. This includes examining whether sustained and elevated levels of parenting stress from the pandemic to the post-pandemic phase can maintain or exacerbate negative effects on youths' mental health. Investigating the enduring effects and whether there are persistent repercussions on parent and child functioning is of paramount importance. Additionally, researchers should delve into the development of interventions aimed at alleviating parenting stress. These interventions can play a vital role in mitigating the adverse impacts on both parents and children, potentially offering a buffer against long-term psychological difficulties for younger populations.

### ***Limitations***

There are several limitations of this study worth highlighting. First, methodological characteristics of the included studies such as mostly cross-sectional studies, online survey data collection, caregiver self-reported outcomes, and samples that are not nationally representative need to be considered in the interpretations of the findings. The predominance of cross-sectional

studies is a significant limitation because it means that our study cannot definitively ascertain whether parenting stress leads to particular parent and child outcomes or if these outcomes contribute to parenting stress. Longitudinal research is warranted which can offer more insight into the complex interplay between parenting stress and the multifaceted parenting and child outcomes we have examined. However, this is difficult for researchers given the unexpected onset of the pandemic in 2021. A second key limitation is the clustering of various outcomes measures into conceptually related, higher-order outcome domains (e.g., internalizing behaviors, relationship quality). Since neither meta-analyzing each effect size on its own or meta-analyzing all the effect sizes together (ignoring their heterogeneity) is practical or feasible, we grouped these measures into these conceptually related higher-order domains. One advantage of doing this is that we can make conclusions on the associations between parenting stress and higher order outcome domains that can further our research understanding of the key role of parenting stress in affecting parents and children functioning. Future research should consider adopting a more detailed focus by examining specific outcome variables. A third notable limitation is our study's failure to account for regional variations in pandemic experiences. The global COVID-19 pandemic exhibited significant differences in infection rates, governmental responses, and healthcare infrastructure across regions. These regional disparities could impact parenting stress and related outcomes. Our analysis did not differentiate between these global contexts, potentially limiting the nuanced understanding of how the pandemic influenced the relationships we explored. Finally, prevailing sociodemographic characteristics of the samples in the included studies limit the interpretations of our findings. Most of the included studies comprised parents that were mothers or female caregivers, aged 33 to 45 years old, and of relatively higher

socioeconomic status (i.e., high education, employed). Most of the children in the study samples were in the school-going age group.

### **Conclusion**

This review offers a systematic and comprehensive review of studies that looked at the associations between parenting stress and various key parent and child outcomes. It contributes significant practical value to understanding the key role of parenting stress in affecting aspects of functioning of parents and children during a large-scale stressor event such as the COVID-19 pandemic. Such implications for practice include support and tangible assistance from government, external agencies, and policies can prevent parenting stress and may be an impactful means of supporting parents' and children's well-being and functioning. In light of the influence that parenting stress can have on treatment engagement, interventions that focus on helping parents improve their children's behaviors or that improve parents' parenting capabilities may be particularly effective.

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