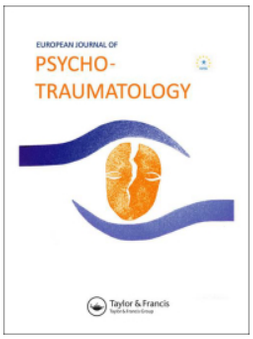

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The role of prenatal stress and maternal trauma responses in predicting children's mental health during war

Karen Yirmiya [a,b], Amit Klein[c], Shir Atzil [d], Noa Yakirevich-Amir[e], Rena Bina[f] and Inbal Reuveni[c]

[a]Research Department of Clinical, Educational and Health Psychology, University College London, London, UK; [b]Anna Freud National Centre for Children and Families, London, UK; [c]Psychiatric Division, Sourasky Medical Center, Tel Aviv-Yafo, Israel; [d]Department of Psychology, The Hebrew University of Jerusalem, Jerusalem, Israel; [e]Department of Psychiatry, Hadassah Medical Center, Jerusalem, Israel; [f]The Louis and Gabi Weisfeld School of Social Work, Bar Ilan University, Ramat Gan, Israel

ABSTRACT

Background: The negative effects of prenatal stress on children's development and the buffering effects of maternal behaviour are well documented. However, specific maternal responses to trauma, particularly among families experiencing cumulative stressors during pregnancy and early childhood, remain less understood.

Objective: This study investigated the interplay between prenatal stress in the context of the coronavirus disease 2019 (COVID-19) pandemic and consequent maternal trauma responses and children's difficulties in the context of war-related trauma.

Methods: We recruited 318 pregnant women in Israel during the first wave of the COVID-19 pandemic (Time 1). Prenatal depression, anxiety, and COVID-related stress symptoms were assessed. When children were approximately 3.5 years old ($SD = 0.02$), the mothers were asked to report on parental responses related to the ongoing war and their child's emotional and behavioural difficulties (Time 2). Structural equation modelling was used to examine how maternal trauma responses mediate the association between prenatal stress-related mental health symptoms and children's difficulties during war.

Results: Maternal prenatal depressive, anxious, and COVID-19-related stress symptoms predicted maladaptive maternal trauma responses during the war, which in turn were associated with increased emotional and behavioural problems in their children. Among the specific maternal trauma-related responses examined, cognitive avoidance and overprotectiveness were the only behavioural responses during the war significantly associated with children's difficulties.

Conclusions: Our study highlights the impact of pandemic-related prenatal stress on maternal responses and children's difficulties during war, emphasizing the importance of identifying at-risk families as well as developing targeted interventions that mitigate negative parenting responses, particularly avoidance and overprotection.

El papel del estrés prenatal y las respuestas maternas al trauma en la predicción de la salud mental infantil durante la guerra

Antecedentes: Los efectos negativos del estrés prenatal en el desarrollo infantil y los efectos amortiguadores del comportamiento materno están bien documentados. Sin embargo, las respuestas maternas específicas al trauma, particularmente entre las familias que experimentan factores estresantes acumulativos durante el embarazo y la primera infancia, siguen siendo menos comprendidos.

Objetivo: Este estudio investigó la interacción entre el estrés prenatal en el contexto de pandemia de la enfermedad por coronavirus 2019 (COVID-19) y las consiguientes respuestas maternas al trauma, y dificultades infantiles en el contexto del trauma relacionado con la guerra.

Métodos: Reclutamos a 318 mujeres embarazadas en Israel durante la primera ola de la pandemia de COVID-19 (Tiempo 1). Se evaluaron síntomas de depresión prenatal, ansiedad y estrés relacionado con el COVID. Cuando los niños tenían aproximadamente 3,5 años de edad ($DE = 0{,}02$), se pidió a las madres que informaran sobre las respuestas parentales relacionadas con la guerra en curso y las dificultades emocionales y conductuales de sus hijos (Tiempo 2). Se utilizó un modelo de ecuaciones estructurales para examinar cómo las respuestas maternas al trauma median la relación entre los síntomas de salud mental relacionados con el estrés prenatal y las dificultades infantiles durante la guerra.

Resultados: Los síntomas maternos de depresión prenatal, ansiedad y estrés relacionado al COVID-19 predijeron respuestas maternas desadaptativas al trauma durante la guerra, las que, a su vez, se asociaron con un aumento de los problemas emocionales y conductuales en sus

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Guerra; trauma; estrés prenatal; comportamiento materno; COVID-19; salud mental infantil

HIGHLIGHTS

- This study investigates how pandemic-related prenatal stress and maternal trauma responses affect children's mental health in the context of war-related trauma during early childhood.
- COVID-19-related prenatal stress, depressive, and anxious symptoms were associated with specific maternal responses to subsequent war-related trauma during childhood, particularly overprotectiveness. These maternal responses mediated the effects of pandemic-related prenatal stress on increased emotional and behavioural difficulties in war-exposed children.
- During wars or other traumatic events, it is important to identify mothers who experienced prenatal stress and develop targeted interventions to reduce negative maternal responses that adversely influence their children's mental health.

CONTACT Karen Yirmiya k.yirmiya@ucl.ac.uk Research Department of Clinical, Educational and Health Psychology, University College London, London WC1E 6BT, UK

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hijos. Entre las respuestas maternas específicas relacionadas con el trauma examinadas, la evitación cognitiva y la sobreprotección fueron las únicas respuestas conductuales durante la guerra que se asociaron significativamente con las dificultades de los niños.
Conclusiones: Nuestro estudio refleja el impacto del estrés prenatal relacionado con la pandemia en las respuestas maternas y las dificultades infantiles durante la guerra, enfatizando la importancia de identificar a las familias en riesgo, así como desarrollar intervenciones específicas que mitiguen las respuestas parentales negativas, particularmente la evitación y la sobreprotección.

1. Introduction

The complex interplay between prenatal stress, maternal behaviour, and children's mental health during time of wartime is gaining increased attention in the field of psychotraumatology. War-related events, which involve mass trauma that typically affects the entire family simultaneously, pose both immediate and long-term clinical challenges. These challenges demand substantial personal and societal resources, particularly in vulnerable populations such as mothers who experience stress during their pregnancy, where the consequences are profound for both maternal and child mental health. Despite growing recognition of these issues, a critical gap remains in the literature concerning the specific mechanisms through which prenatal stress affects subsequent maternal and child outcomes in trauma-affected populations.

Prenatal stress has long been associated with detrimental psychological outcomes for children and adolescents, including an increased risk of anxiety and affective disorders (Graignic-Philippe et al., 2014; Kleinhaus et al., 2013). Moreover, it negatively impacts maternal mental health, which in turn influences child development (Glover et al., 2018). Some studies suggest that pregnant and postpartum women are resilient, exhibiting fewer mental health symptoms than the general population when faced with significant stressors such as natural disasters or the coronavirus disease 2019 (COVID-19) pandemic (Glynn et al., 2001; Yirmiya, Yakirevich-Amir, et al., 2021). However, other studies have found that COVID-19-related stress during pregnancy had a significant negative impact on both maternal mental health and the early development of children born during the pandemic (Nazzari et al., 2024; Vardi et al., 2022; Weiner et al., 2024). These mixed findings may be attributed to variations in study methodology, the extent and severity of the COVID-19 pandemic in different countries, and factors related to the healthcare systems. Nevertheless, stress experienced during pregnancy may increase the risk of adverse maternal and child mental health outcomes, especially when compounded by additional stressors such as trauma exposure (Van den Bergh et al., 2020).

The impact of war-related traumatic events on children varies and is partly related to the child's age, gender, and developmental stage (Slone & Mann, 2016). Furthermore, the effects of war on young children are pervasive, with potential long-term sequelae that stem from direct exposure to violence or related adversities such as displacement, separation, or loss of loved ones (Bürgin et al., 2022) as well as from indirect effects, mainly from indirect effects, dependent on how their caregivers' mediate and buffer these effects. Throughout children's development, parents play a crucial role in buffering the negative effects of exposure to stressful life events, mainly by providing safe, attentive, and sensitive caregiving (Feldman et al., 2014; Slone & Mann, 2016; Yirmiya et al., 2018; Yirmiya, Motsan, et al., 2021). However, exposure to stressors such as war-related trauma events affect parenting behaviours and parental representations of the child. For instance, mothers struggling with their own issues during wartime were more likely to have a negative view of their children, and refugee mothers suffering from depression were more likely to report depressive symptoms in their children compared with non-depressed mothers (Dybdahl, 2001; Locke, 1996).

War-exposed parents generally show less sensitivity (Yirmiya et al., 2018; Yirmiya, Motsan, et al., 2021) and warmth (Slone & Shoshani, 2017) and more authoritarian and permissive parenting styles (Abu Baker et al., 2021), harshness, and control (Tangir et al., 2017) toward their children than control individuals. Furthermore, parents living in constant fear of their children being exposed to trauma may become overprotective, imposing age-inappropriate restrictions (Eltanamly et al., 2021). These maladaptive parenting practices are suggested to mediate, at least partially, the effects of war exposure on children's difficulties (Eltanamly et al., 2021). While much of the existing literature has focused on general parenting responses to trauma, recent advancements have introduced a more trauma-specific measure. The Parent Trauma Response Questionnaire (PTRQ) (Williamson et al., 2018) was developed to assess parental behaviours directly related to children's traumatic experiences and related symptomatology. Previous studies using this novel self-report questionnaire have focused on acute trauma (e.g. motor vehicle accidents and accidental injury) or the COVID-19 pandemic and have largely involved children aged 5–12 years (Cohodes et al., 2021; Hiller et al., 2018;

Jones et al., 2022). The present study is, to the best of our knowledge, the first to implement this questionnaire in the context of war-related trauma exposure and the first to use it in a preschool sample (Hiller et al., 2018; Williamson et al., 2018).

Our study aimed to address critical gaps in the literature by investigating the combined effects of prenatal stress, maternal trauma-related behaviours, and children's mental health outcomes in the context of large-scale stressful events. Using a cohort of Israeli pregnant women recruited during the early COVID-19 pandemic (Time 1) and followed up 3 years later during the Iron Swords War (Time 2), we examined how COVID-19-related prenatal stress symptoms predicted maternal trauma responses and child outcomes during the war. To achieve this overall aim, we first assessed the structure and validity of the Hebrew version of the PTRQ (Williamson et al., 2018). Second, we defined the following specific aims: (1) to determine the association between prenatal depression, anxiety, and COVID-19-related stress with subsequent child behavioural and emotional outcomes during wartime and (2) to assess whether maternal trauma-specific responses mediate the relationship between COVID-19-related prenatal stress symptoms and children's mental health during wartime. We hypothesised that prenatal mental health problems are directly and indirectly associated with child outcomes, such that prenatal symptomatology predicts maladaptive maternal trauma responses during wartime, which in turn are associated with increased emotional and behavioural problems in children (mediation model). Identifying high-risk maternal behaviours following trauma could inform the development of targeted interventions and support systems to mitigate these effects.

2. Methods

2.1. Participants

In the present study, we examined a unique cohort of Israeli women who were pregnant during the early phases of the COVID-19 pandemic (Time 1). All participants were recruited during a 2-week period in May 2020 through advertisements in social media groups and public pages related to women and pregnancy, asking them to participate in a study focusing on stress related to pregnancy and the COVID-19 pandemic (for more details on the COVID-19 Pregnancy Experiences [COPE] study, see Preis, Mahaffey, and Lobel, 2020; Preis, Mahaffey, Heiselman, et al., 2020; Yirmiya, Yakirevich-Amir, et al., 2021). During this period, Israel was experiencing the first wave of the pandemic, with the government implementing measures to control the spread of the virus, including lockdowns, movement restrictions, and social distancing protocols. Cities with high infection rates were quarantined. Despite the widespread disruptions, the fatality rate remained relatively low at approximately 26.45 deaths per million people, a fact attributed to Israel's younger population and high compliance with public health measures (Birenbaum-Carmeli & Chassida, 2020). The study inclusion criteria stipulated that participants must be pregnant, 18 years or older, and able to read in Hebrew to complete the online questionnaires. At recruitment, the average age of the participants was 31.88 years ($SD = 4.22$). The majority of participants (86.6%) identified as being born in Israel, and 96.5% were married or cohabiting. On average, participants had 16.10 years of education ($SD = 2.62$).

In February 2024, a few months after the beginning of the Iron Swords War, participants from the original sample were invited via email to participate in another stage of the study (Time 2). The Iron Swords War began after a surprise attack launched by the terrorist organisation Hamas on 7 October 2023, during which over 240 hostages were taken captive, and which resulted in the death of over 1,200 children, men, and women. The events of 7 October and the subsequent war has led to significant suffering and stress due to direct exposure to the events, displacement, and loss of loved ones. A total of 326 participants completed the questionnaires (29% of the original COPE cohort). Of these, one participant reported pregnancy loss since the initial stage of the study, and seven mothers reported that their children have intellectual or developmental disabilities. These participants were excluded to avoid potential differences in stress levels, coping mechanisms, and overall experiences that could significantly differ from those of mothers with typically developing children, resulting in a final sample size of 318 mother–child dyads for the present study. To analyse the representativeness of the sub-sample, we compared baseline mental health variables between participants who continued in the study and those who did not. Independent t-tests revealed no significant differences between the groups for any baseline variables, including depressive symptoms, anxiety symptoms, and stress related to pregnancy during COVID-19 (all p values>.12). Ethical approval for this research was obtained from the Bar Ilan University Institutional Review Board on January 25, 2024 (Approval Number: 012407).

2.2. Measurements

2.2.1. Time 1: COVID-19-related prenatal stress symptoms

COVID-19-related prenatal stress symptoms were assessed by measuring depressive and anxiety symptoms as well as stress symptoms specifically related to pregnancy and the COVID-19 pandemic. Depressive symptoms were evaluated using the Patient Health

Questionnaire-2 (PHQ-2; Kroenke et al., 2003), which includes the first two items of the PHQ-9 (Spitzer, 1999). These items were related to the frequency of depressed mood and anhedonia over the past 2 weeks, rated on a scale of 0 (Not at all) to 3 (Nearly every day). The final scores ranged from 0 to 6, with a higher score indicating a greater risk of depressive disorder. The PHQ-2 has been shown to be efficient in ruling out depression in 96%–99% of pregnant women (Vlenterie et al., 2017). In pregnant women, the sensitivity and specificity of the PHQ-2 was 69%–84% and 79%–84%, respectively (Vlenterie et al., 2017). Anxiety levels were evaluated using the Generalized Anxiety Disorder-7 (GAD-7) questionnaire, which assesses anxiety symptoms over the past 2 weeks, including seven items rated on a scale ranging from 0 (Not at all) to 4 (Nearly every day) (Spitzer et al., 2006). The scale has been found suitable for measuring anxiety in pregnancy (Zhong et al., 2015). The GAD and PHQ subscales exhibited Cronbach's alpha values of .92 and .79, respectively, indicating good internal consistency.

Stress specifically related to pregnancy during the COVID-19 pandemic was assessed using the Pandemic-Related Pregnancy Stress Scale (PREPS) developed by Preis et al. (Preis, Mahaffey, & Lobel, 2020). The PREPS comprises 15 items rated on a 5-point scale, delineating three distinct factors: stress associated with birth preparations and the postpartum period, due to changes in guidelines and protocols caused by the pandemic (PREPS- Preparedness Stres); concerns about prenatal COVID-19 infection (PREPS- Perinatal Infection Stress); and positive aspects of the pandemic in the pregnancy context (PREPS-Positive Appraisal) (Preis, Mahaffey, & Lobel, 2020; Schaal et al., 2021). The Preparedness-Stress, Infection-Stress, and Positive Appraisal subscales demonstrated good internal consistency with Cronbach's alpha values of .82, .88, and .69, respectively. We created a latent variable called COVID-19-related prenatal stress symptoms using the PHQ-2, GAD-7, and the three PREPS subscales. These measures, while distinct, were combined into a single latent variable to capture a broader construct of prenatal psychiatric and COVID-19-related stress symptomatology.

2.2.2. Time 2: mental health during wartime

2.2.2.1. Exposure to war trauma. Exposure to war trauma was computed by aggregating 11 dichotomous variables indicating the occurrence of specific events, based on the War Events Questionnaire (WEQ; Karam et al., 1999). These events include damage to one's own home or the home of a close associate, physical injury to oneself or a close associate, personal acquaintance with a kidnapping victim, financial impact due to the war, evacuation from home for safety concerns, inability to relocate to a safer location, involvement in the military or having a partner recruited to the army or having someone close involved in the military. The resulting War Events variable offers a cumulative factor of these diverse exposures, facilitating a comprehensive evaluation of overall exposure levels.

2.2.2.2. Parent trauma response questionnaire – support scale (PTRQ-S). The PTRQ comprises two main parts: the Parental Maladaptive Appraisal Scale and the Parental Support for Child Coping Scale (Williamson et al., 2018). In line with the study's aims to explore maternal trauma-related responses mediating the relationship between COVID-19-related prenatal stress and children's mental health during the war, we focused exclusively on parental behaviours assessed by the Parental Support for Child Coping Scale. This scale evaluates parents' supportive behaviours towards their child following trauma and consists of 20 items organised into five subscales: (a) Promotion of behavioural avoidance, (b) Promotion of cognitive avoidance, (c) Overprotection, (d) Routine Maintenance, and (e) Approach coping. Items in the Continuing Normal Routines and Approach coping subscales were reverse-coded so that higher scores consistently reflected less supportive behaviour. Participants rated each item on a scale ranging from 0 (not at all) to 3 (a lot). The questionnaire was translated and back-translated and adjusted to the war context. The total reliability of the support-style scale was determined using Cronbach's alpha (.72).

2.2.2.3. Child emotional and behavioural problems. Children's symptoms were evaluated using mother-reported Strengths and Difficulties Questionnaire (SDQ) Total Difficulties Score (Goodman, 1997). This widely used 25-item instrument assesses mental health disorders by providing a broad-based indication of a child's emotional and behavioural problems. It consists of five subscales: Emotional Symptoms, Conduct Problems, Hyperactivity–Inattention, Peer Problems, and Prosocial Behavior. Each subscale contains five items rated on a 3-point scale, where higher scores on the prosocial subscale signify strengths and higher scores on the other subscales indicate difficulties. Consistent with standard scoring practices, the total difficulties score is calculated as the sum of scores on the four difficulties subscales (Emotional Symptoms, Conduct Problems, Hyperactivity–Inattention, and Peer Problems) and does not include the prosocial behaviour subscale score. The psychometric properties of the SDQ have been established in numerous studies worldwide (Goodman & Goodman, 2011; Mieloo et al., 2014). The Hebrew version has been previously validated and reported to have acceptable-to-good internal consistency (α = 0.51–0.72) and good construct, concurrent, and

discriminant validity (Mansbach-Kleinfeld et al., 2010). In the present study, the internal consistency of the SDQ total difficulties score was good, with a Cronbach's alpha coefficient of .85.

2.3. Statistical analysis

Descriptive statistics, including mean, median, standard deviation, and interquartile range, were computed for continuously distributed measures, whereas frequencies and percentages were calculated for categorical measures. Internal consistency of the PTRQ-S was assessed using Cronbach's coefficient alpha (α), accompanied by a 95% confidence interval (CI). Acceptable internal consistency was defined as $\alpha \geq .6$ and good internal consistency as $\alpha \geq .8$. To characterise the structure of the PTRQ-S, we conducted confirmatory factor analyses using hierarchical and correlated models, as detailed in the Supplementary Methods. This analysis aimed to identify subscales that could support a latent variable capturing maternal trauma-related behaviours. The proposed measurement model of the PTRQ-S Hebrew version generally confirmed the original English version structure (see Supplementary Figure 1). Confirmatory factor analyses showed that a hierarchical model including the subscales Behavioural Avoidance, Cognitive Avoidance, and Overprotection provided the best fit to our data (Supplementary Tables 1–3). Consequently, this model was used in subsequent analyses. Nevertheless, we also examined the two subscales of positive parental responses (Continuing Normal Routines and Approach Coping) in the final structural equation model (SEM) to assess whether positive parental responses mitigated the negative effects of maternal trauma-related behaviours on child outcomes.

Next, an SEM was developed to determine the mediating role of PTRQ-S in the link between prenatal psychiatric and stress symptomatology and child emotional difficulties. Prenatal PHQ-2, GAD-7, and the three PREPS subscales were loaded onto an independent latent variable, and the PTRQ-S subscales were loaded onto another latent variable. Goodness of fit was assessed using various indicators for all confirmatory factor analyses and SEMs, including χ^2 and degrees of freedom (df), comparative fit index (CFI), Tucker–Lewis index (TLI), and root mean square error of approximation (RMSEA) with a 90% CI. Adequate model fit was determined by a non-significant χ^2, CFI $\geq$0.90, TLI $\geq$0.90, and RMSEA $\leq$0.060. To explore the potential mediation of the relationship between prenatal psychiatric and stress symptomatology during COVID-19 (X) and child symptoms during the war (Y) by maternal supportive behaviours (M), we employed an SEM, with war exposure and child's age and gender added as covariates. We then replaced the total PTRQ-S score with each of its subscales to further identify which specific behaviours mediated the described relationship. To ascertain the significance of both direct and indirect effects, we conducted 5,000 bias-corrected and accelerated bootstrapping analyses to estimate 95% confidence intervals (CIs) (Hayes, 2017; Tofighi & MacKinnon, 2016). Effects were considered significant if the CIs did not include zero. All analyses were performed with R statistical software, version 4.3.0 (R Program for Statistical Computing); factor analyses and structural equation modelling were performed using the Lavaan package in R Studio (version 2023.06.0 + 421).

3. Results

3.1. Cohort characteristics

The sociodemographic and main characteristics of the Iron Swords War cohort are presented in Table 1. On average, children were 3.5 years old ($SD = 0.02$), and 38% of them were female. The average maternal age was 35.59 years ($SD = 4.11$); the majority held a higher academic degree (52%) and reported having an above-average financial status (52%).

3.2. Correlations between COVID-19-related prenatal stress symptoms, maternal trauma-related responses, and child outcomes during the war

Pearson's correlation matrix revealed significant associations among the variables measured in the

Table 1. Participant characteristics at Time 2 ($N = 313$).

Measure	Total score Count (%) / *M* (±*SD*)
Child characteristics	
Child age (months)	42.06 (2.40) range 29.44–46.23
Child gender (female)	$N = 153$ (47.66%)
SDQ total difficulties score	10.85 (6.50)
Mother characteristics	
Mother age (years)	35.58 (4.11) range 25–47
Number of children under 18	2.19 (1.02) range 1–8
Education:	
High school diploma or equivalent	13 (4.1%)
Bachelor's degree or vocational certificate	140 (44%)
Master's degree or higher	165 (51.9%)
Current financial status:	
Below average	71 (22.5%)
Average	79 (25%)
Above average	166 (52.5%)
Employment status:	
Currently employed	237 (74.5%)
Not employed or homemaker	27 (8.5%)
Student or other	54 (17%)
GAD-7	5.80 (4.10)
PHQ-2	1.27 (1.41)
PREPS-prepare	2.93 (0.98)
PREPS-infect	2.65 (1.07)
PREPS-positive	2.18 (0.98)
Exposure events (0–11)	3.93 (1.62)

Note: GAD-7: Generalized Anxiety Disorder-7; PHQ-2: Patient Health Questionnaire-2; PREPS: pandemic-related Pregnancy Stress Scale; SDQ: Strengths and Difficulties Questionnaire.

study (Table 2). Notably, the PREPS Preparedness and Infection subscales during pregnancy demonstrated positive correlations with other mental health measures at that time point (Time 1), including PHQ-2 and GAD-7 scores, indicating an association between COVID-19 perceived stress related to pregnancy and general maternal mental health symptoms. Moreover, strong positive correlations were observed among the maternal prenatal mental health variables at Time 1 and the SDQ total difficulties score of children during wartime (Time 2). This finding suggests that maternal depressive, anxiety, and COVID-19-related stress symptoms have a longitudinal association with subsequent emotional and behavioural difficulties in their children. Additionally, the Maternal Overprotection subscale score during wartime correlated positively with the Cognitive Avoidance and Behavioral Avoidance subscale scores and negatively with the Approach Coping subscale score. This finding suggests a cohesive pattern of parenting trauma responses as measured using the PTRQ-S. Being exposed to more war-related events was positively correlated with higher Maternal Overprotection subscale scores and lower Approach Coping subscale scores. After applying a Bonferroni correction with a p-value threshold of 0.000549, the correlations between variables related to psychiatric and stress symptoms during pregnancy and different subscale scores of the PTRQ remained significant. Additionally, the Preparedness and Infection subscale scores of the PREPS at Time 1 were significantly correlated with the war-related Overprotection subscale scores at Time 2.

3.3. Maternal trauma responses as mediators between COVID-19-related prenatal psychiatric (Time 1) and stress symptomatology and children's outcomes during wartime (Time 2)

Next, we used an SEM to examine the predictive relationship between COVID-19-related prenatal stress symptoms and child SDQ total difficulties scores, both directly and indirectly via specific maternal behaviours (including Overprotection, Cognitive Avoidance, and Behavioral Avoidance) during wartime (Figure 1). Child age, gender, and level of exposure were included as covariates. The model demonstrated adequate fit to the data (Table 3, and Supplementary Table 4). The mediation path from COVID-19-related prenatal stress symptoms to children's mental health symptoms as mediated by maternal maladaptive trauma responses was statistically significant (B = 0.90, $\beta = 0.11$, $p = .029$, CI: 0.81, 0.99). This pathway fully mediated the link between COVID-19-related prenatal stress symptoms at Time 1 and child SDQ total difficulties scores at Time 2. When the total PTRQ-S score was substituted with each of the five subscale scores, respectively, the mediation pathway remained significant only in the model involving maternal overprotection (Table 3, Supplementary Table 5). Here, COVID-19-related prenatal stress symptoms positively predicted child mental health symptoms during the war through maternal overprotective behaviour ($\beta = 0.10$, $p = .046$). Notably, while exposure did not significantly predict the total PTRQ-S score or child SDQ total difficulties score at Time 2 in these models, the effect of exposure on overprotection was small yet significant ($\beta = 0.16$, $p = .02$). Moreover, child gender had a significant effect on the total SDQ total difficulties score, with boys showing higher SDQ scores than girls ($\beta = -0.13$, $p = .02$). Finally, to further validate our suggested model, we examined an alternative model in which COVID-19-related prenatal stress symptoms predicted children's outcomes, which in turn influenced more negative parenting behaviours related to trauma and stress. Although this model provided an adequate fit to the data (Table 3, Supplemented Table 5), the mediation pathway was not significant ($\beta = 0.03$, $p = .08$). In all models, child gender had a significant effect on the SDQ total difficulties score but not on COVID-19-related prenatal stress symptoms or maternal trauma responses, such that boys had higher SDQ total difficulties scores than girls.

4. Discussion

In this study, we investigated the relationship between COVID-19-related prenatal stress symptoms, subsequent maternal responses to war trauma, and children's emotional and behavioural symptoms using a longitudinal cohort of women who were pregnant during the COVID-19 pandemic and were subsequently exposed to the Iron Swords War. Consistent with our hypotheses, the results demonstrated an association between COVID-19-related prenatal stress symptoms and maternal trauma-related responses, showing that mothers who were stressed during pregnancy were more vulnerable during subsequent stressful times, exhibiting increased avoidance and overprotective behaviours towards their children. Several studies have investigated the psychosocial and biological mechanisms linking prenatal stress to postpartum mental health issues and parenting styles by examining the hormones and brain regions involved in emotional regulation and stress responses (Fassaie & McAloon, 2020; Gonzalez et al., 2012). Previous studies have also reported a direct link between prenatal maternal psychological distress and child outcomes in general (Monk et al., 2019) and specifically during the COVID-19 pandemic (Vardi et al., 2022; Weiner et al., 2024). In the present study, we observed a significant correlation between COVID-19-related prenatal stress symptoms and children's outcomes

Table 2. Correlations among study's variables at time points T1 (COVID-19 pandemic) and T2 (war exposure).

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. PREPS prepare T1	–												
2. PREPS infect T1	**0.65*****	–											
3. PREPS positive T1	**0.19*****	**0.19*****	–										
4. PHQ2 T1	**0.42*****	**0.29*****	0.04	–									
5. GAD7 T1	**0.45*****	**0.35*****	0.06	**0.77*****	–								
6. PS maintaining routines T2	0.02	−0.01	−0.04	−0.04	−0.03	–							
7. PS behavioural avoidance T2	**0.18****	**0.13***	−0.06	**0.15***	0.10	**0.17****	–						
8. PS Cognitive avoidance T2	**0.21*****	**0.20*****	**0.13***	0.11	0.09	0.06	**0.27*****	–					
9. PS Overprotection T2	**0.27*****	**0.33*****	**0.12***	**0.12***	**0.17****	0.02	**0.26*****	**0.38*****	–				
10. PS approach coping T2	0.09	0.10	0.05	0.06	0.04	0.06	0.00	0.04	**0.23*****	–			
11. SDQ total difficulties score T2	**0.12***	**0.12***	**0.19****	**0.20*****	**0.18****	0.05	0.09	**0.17****	**0.16****	0.08	–		
12. Child age (months) T2	**0.17****	**0.13***	0.03	0.01	0.01	0.01	0.02	0.08	0.02	0.05	−0.02	–	
13. exposure index (1–8) T2	0.08	**0.13***	0.05	0.11	0.09	0.03	0.01	0.11	**0.13***	**0.23*****	0.08	−0.02	–

Note: Maintaining pre-trauma routines and approach coping subscales were reversed in calculating the total score. *$p < .05$, **$p < .01$, ***$p < .001$.

during the war. Notably, this association, as hypothesised, was fully mediated by maternal trauma-related responses, which highlights the importance of these responses and their potential in targeted psychological interventions. Specifically, prenatal depressive, anxious, and COVID-19-related stress symptoms predicted maternal maladaptive trauma responses during wartime, which were associated with children's emotional and behavioural problems.

The mediation model that combined all three negative behaviour subscales – that is, Overprotection, Cognitive Avoidance, and Behavioral Avoidance – fitted our data better than the alternative models, each using an individual subscale as a mediator. Among these alternative models, only the mediation pathway incorporating the Maternal Overprotection subscale remained statistically significant, whereas pathways incorporating the Cognitive Avoidance, Behavioral Avoidance, Routine Maintenance, and Approach Coping subscales, respectively, did not mediate this association. Previous research indicates that maternal overprotection is associated with intrusive monitoring, excessive restriction of activities, and immediate intervention in minor problems (Spada et al., 2012). These behaviours may instill feelings of anxiety and self-doubt in children, affecting their perceived competence, reinforcing their perception of the world as dangerous (Laurin et al., 2015), and inhibiting their ability to develop coping skills and autonomy (Clarke et al., 2013). While many studies suggest a link between maternal overprotection and the development of child anxiety, a meta-analysis indicates that the overall impact is moderate, with parenting behaviours explaining only a small percentage of the variance in child anxiety (McLeod et al., 2007). However, this conclusion is restricted to studies that primarily focused on non-trauma-exposed populations. In contrast, in trauma-exposed populations, the role of overprotection and its association with prenatal psychiatric symptoms and children's outcomes is more established (Afzal et al., 2023). A meta-analysis of relevant studies found a significant link between negative parenting behaviours – such as hostility and overprotection – and child post-traumatic symptoms during wars or events related to armed conflicts (Williamson et al., 2017). A recent meta-analysis on parenting during wartime reported that in highly dangerous settings, parents exhibit increased harshness, hostility, and inconsistency and decreased warmth. However, when living under threat with less direct exposure to war events, parents tend to show higher levels of both warmth and overprotection (Eltanamly et al., 2021). This highlights that the level of exposure to trauma and stress has an important role in parenting behaviours and that finding the balance between keeping children safe and granting them independence and autonomy is challenging.

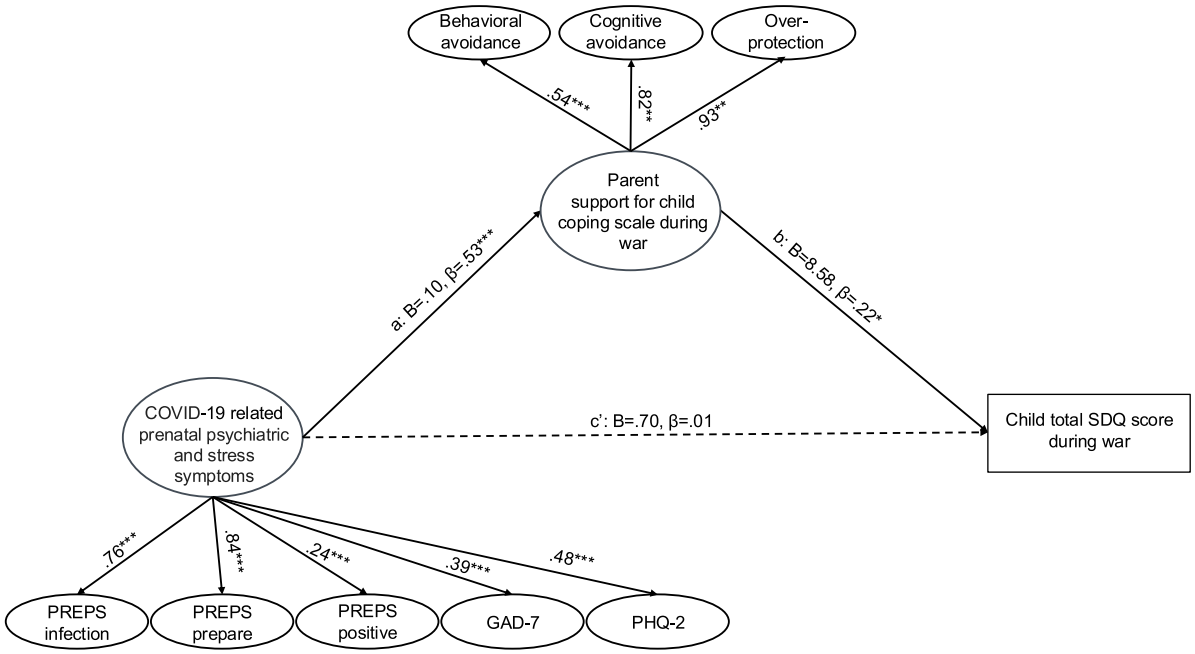

Figure 1. Mediation model showing the impact of prenatal mental health on children's emotional and behavioural difficulties during war, mediated by parental support.

Note: This structural equation model (SEM) investigates the prediction of child symptoms during war from COVID-19-related prenatal stress symptomatology, mediated by maternal trauma-related responses. The analysis is controlled for child age, gender, and level of war exposure. Key variables include GAD-7 (Generalized Anxiety Disorder-7), PHQ (Patient Health Questionnaire), PTRQ-S (Parent Trauma Response Questionnaire support scale), PREPS (Pandemic-Related Pregnancy Stress Scale), and SDQ (Strengths and Difficulties Questionnaire). Total indirect path (a × b mediation effect): B = 0.90, $\beta = .11$, $p = .029$. *$p < .05$, **$p < .01$, ***$p < .001$. Full model output is available in Supplementary Table 4.

Therefore, we suggest that the focus should be directed to the nuanced signals that parents transmit to their children about their coping abilities and strengths.

Furthermore, our model suggests that gender, used as a covariate, had a significant effect on children's reported symptoms, with boys characterised by more emotional and behavioural problems. This finding is consistent with previous reports of boys exhibiting heightened levels of difficulties in preschool years (Loeber & Hay, 1997). Moreover, in the present study, mothers of boys and girls showed no differences in maternal mental health symptoms or response to trauma, suggesting that while boys are reported to experience more emotional and behavioural problems during this age, this could be because of the externalising nature of their behaviour (Wu et al., 2012). Nonetheless, prenatal stress and maternal behaviour are important factors to consider for both genders.

To realise the research objectives, we validated the Hebrew version of the PTRQ in the present study cohort, and our findings generally supported the proposed measurement model for the original English version. While previous studies have used general parenting behaviour measures, the PTRQ is specifically tailored to assess parental appraisals and support styles following child trauma exposure. Our study extended the use of this measurement to a war-related context involving preschoolers. We used only the Parental Support for Child Coping scale and not the Parental Maladaptive Appraisal scale, as the former was deemed more relevant to our study population owing to the collective, ongoing nature of the traumatic event. Similarly, previous studies have used modified versions of the PTRQ; for example, Cohodes et al. (2021) used a subset of the PTRQ to investigate the buffering effects of parental behaviours on the impact of COVID-19-related stress on children's

Table 3. Evaluation Structural Equation Model (SEM) using fit indices to compare and determine optimal model fit.

SEM			
Final model	$\chi^2 = 254.54$, df = 173, $p < .001$; CFI = .927; TLI = .913; RMSEA = .038	17793.93	18091.13
Only behavioural avoidance	$\chi^2 = 98.48$, df = 45, $p < .001$; CFI = .899; TLI = .859; RMSEA = .061	12247.24	12416.53
Only cognitive avoidance	$\chi^2 = 93.70$, df = 45, $p < .001$; CFI = .892; TLI = .849; RMSEA = .058	11618.81	11788.10
Only overprotection	$\chi^2 = 135.93$, df = 79, $p < .001$; CFI = .946; TLI = 929; RMSEA = .038	13840.99	14055.43
Only maintaining routines	$\chi^2 = 66.88$, df = 34, $p = .001$; CFI = .919; TLI = 893; RMSEA = .055	9516.18	9632.80
Only Approach coping	$\chi^2 = 103.92$, df = 34, $p < .001$; CFI = 891; TLI = 856; RMSEA = .080	9746.81	9863.43
Reverse alternative model	$\chi^2 = 254.54$, df = 173, $p < .001$; CFI = .927; TLI = .913; RMSEA = .038	17793.93	18091.13

Note: Fit indices including Chi-squared (χ^2), degrees of freedom (df), significance level (p), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion) values are also provided for model comparison purposes. PTRQ-S (Parent Trauma Response Questionnaire support scale).

symptomatology, specifically assessing parents' beliefs and responses to children's COVID-19-related stress. In another study, mothers completed only the four items of the Routine Maintenance subscale (Jones et al., 2022). While the significant subscales of the PTRQ varied across these studies, it is reasonable that different stressors necessitate different techniques to improve children's mental health.

Our results indicate that the two positive trauma-related maternal responses – routine maintenance and approach coping – failed to converge with the overall support scale or predict children's mental health outcomes. This finding suggests that negative behaviours following trauma exposure have a more substantial impact than positive behaviours. This is consistent with other studies indicating that negative feedback tends to be more influential than praise (Ehlers & Clark, 2000; McLeod et al., 2007) and aligns with the findings of the original PTRQ study (Hiller et al., 2018). In the latter study, the authors of the questionnaire also found that encouragement of avoidant coping was a robust longitudinal predictor of children's post-traumatic symptoms, whereas more adaptive parenting behaviours had no significant impact on children's psychological recovery (Hiller et al., 2018). Taken together, one of the strengths of the present study is that it demonstrated the robustness of the PTRQ, suggesting that it can be used flexibly and remains relevant for various populations and trauma types.

Several limitations of the study are worth noting. First, the children's mental health symptoms were evaluated using parent-reporting scores for their children's emotional and behavioural problems, relying on maternal reports for symptom assessment. The absence of direct observation introduces potential biases owing to the lack of objective reporting. Nonetheless, given the young age of the participants, this method is consistent with standard practices in similar studies (Croft et al., 2015). Furthermore, the PTRQ and parental SDQ were completed at the same time point, which raises the possibility of informant bias, as parents' perceptions of their own parenting behaviours may have influenced their reporting of their child's symptoms. Another limitation is the unique nature of the pandemic's effects on the mental well-being of pregnant women, raising questions about its generalizability to other prenatal stressors and to other regions worldwide. Therefore, caution is warranted in extrapolating findings from pandemic-induced stress to broader prenatal stress contexts. Additionally, the present study cohort was highly educated and had above-average income levels, which may also affect the generalizability of the study results to more diverse populations. Lastly, the nature of parental responses and children's outcomes are cross-sectional, and we could not exclude the possibility that having children with more symptoms causes the parents to be more cautious, avoidant, and overprotective. However, this possibility was assessed statistically, and the suggested mediation pathway was found to be non-significant.

In conclusion, our study demonstrates that while COVID-19-related prenatal stress symptoms contribute to children's emotional and behavioural problems during exposure to war-related traumatic events, this association is critically dependent on the mediating role of parental responses. Given that nearly a quarter of the world's children live in countries impacted by mass trauma events, with the majority related to armed conflict (UNICEF, 2016), it has become increasingly important to address these issues. Empowering parents with the tools and support needed to effectively navigate traumatic experiences holds promise for fostering resilient family environments and improving therapeutic outcomes for both parents and children. However, during mass trauma, such as war, it is important to identify women who exhibited mental health symptoms during pregnancy and utilise proactive approaches for reducing avoidant and overprotective parental behaviours in these vulnerable mothers, while noting the limited benefits of maintaining routine and promoting approach coping. The present findings elucidate the intricate interplay between prenatal stress, subsequent parenting behaviours, and children's outcomes, suggesting opportunities for targeted interventions for mitigating emotional and behavioural problems in war-exposed children.

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Author contributions (CRediT)

KY: Conceptualization, methodology, formal analysis, project administration, data curation, supervision, visualization, writing (original draft), writing (review & editing); AK: Project administration, writing (original draft), writing (review & editing). SA: Conceptualization, methodology, writing (review & editing); NYA: Project administration, data curation, writing (review & editing); RB: Writing (review & editing); IR: Conceptualization, supervision, methodology, writing (original draft), writing (review & editing).

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

Data can be made available upon request from the correspondence author.

ORCID

Karen Yirmiya http://orcid.org/0000-0001-7580-3957
Shir Atzil http://orcid.org/0000-0002-4074-6777

References

Abu Baker, D., Calam, R., & El-Khani, A. (2021). Protective factors in the face of political violence: The role of caregiver resilience and parenting styles in Palestine. *Peace and Conflict: Journal of Peace Psychology*, *27*(3), 405–414. https://doi.org/10.1037/pac0000523

Afzal, N., Ye, S., Page, A. C., Trickey, D., Lyttle, M. D., Hiller, R. M., & Halligan, S. L. (2023). A systematic literature review of the relationship between parenting responses and child post-traumatic stress symptoms. *European Journal of Psychotraumatology*, *14*(1), 2156053. https://doi.org/10.1080/20008066.2022.2156053

Birenbaum-Carmeli, D., & Chassida, J. (2020). Covid-19 in Israel: Socio-demographic characteristics of first wave morbidity in Jewish and Arab communities. *International Journal for Equity in Health*, *19*(1), 153. https://doi.org/10.1186/s12939-020-01269-2

Bürgin, D., Anagnostopoulos, D., Anagnostopoulos, D., Doyle, M., Eliez, S., Fegert, J., Fuentes, J., Hebebrand, J., Hillegers, M., Karwautz, A., Kiss, E., Kotsis, K., Pejovic-Milovancevic, M., Räberg Christensen, A. M., Raynaud, J.-P., Crommen, S., Çetin, FÇ, Boricevic, V. M., Kehoe, L., … Fegert, J. M. (2022). Impact of war and forced displacement on children's mental health—multilevel, needs-oriented, and trauma-informed approaches. *European Child & Adolescent Psychiatry*, *31*(6), 845–853. https://doi.org/10.1007/s00787-022-01974-z

Clarke, K., Cooper, P., & Creswell, C. (2013). The parental overprotection scale: Associations with child and parental anxiety. *Journal of Affective Disorders*, *151*(2), 618–624. https://doi.org/10.1016/j.jad.2013.07.007

Cohodes, E. M., McCauley, S., & Gee, D. G. (2021). Parental buffering of stress in the time of COVID-19: Family-level factors may moderate the association between pandemic-related stress and youth symptomatology. *Research on Child and Adolescent Psychopathology*, *49*(7), 935–948. https://doi.org/10.1007/s10802-020-00732-6

Croft, S., Stride, C., Maughan, B., & Rowe, R. (2015). Validity of the strengths and difficulties questionnaire in preschool-aged children. *Pediatrics*, *135*(5), e1210–e1219. https://doi.org/10.1542/peds.2014-2920

Dybdahl, R. (2001). Children and mothers in War: An outcome study of a psychosocial intervention program. *Child Development*, *72*(4), 1214–1230. https://doi.org/10.1111/1467-8624.00343

Ehlers, A., & Clark, D. M. (2000). A cognitive model of post-traumatic stress disorder. *Behaviour Research and Therapy*, *38*(4), 319–345. https://doi.org/10.1016/S0005-7967(99)00123-0

Eltanamly, H., Leijten, P., Jak, S., & Overbeek, G. (2021). Parenting in times of War: A meta-analysis and qualitative synthesis of War exposure, parenting, and child adjustment. *Trauma, Violence, & Abuse*, *22*(1), 147–160. https://doi.org/10.1177/1524838019833001

Fassaie, S., & McAloon, J. (2020). Maternal distress, HPA activity, and antenatal interventions: A systematic review. *Psychoneuroendocrinology*, *112*, 104477. https://doi.org/10.1016/j.psyneuen.2019.104477

Feldman, R., Vengrober, A., & Ebstein, R. P. (2014). Affiliation buffers stress: Cumulative genetic risk in oxytocin–vasopressin genes combines with early caregiving to predict PTSD in war-exposed young children. *Translational Psychiatry*, *4*(3), e370–e370. https://doi.org/10.1038/tp.2014.6

Glover, V., O'Donnell, K. J., O'Connor, T. G., & Fisher, J. (2018). Prenatal maternal stress, fetal programming, and mechanisms underlying later psychopathology—A global perspective. *Development and Psychopathology*, *30*(3), 843–854. https://doi.org/10.1017/S095457941800038X

Glynn, L. M., Wadhwa, P. D., Dunkel-Schetter, C., Chicz-DeMet, A., & Sandman, C. A. (2001). When stress happens matters: Effects of earthquake timing on stress responsivity in pregnancy. *American Journal of Obstetrics and Gynecology*, *184*(4), 637–642. https://doi.org/10.1067/mob.2001.111066

Gonzalez, A., Jenkins, J. M., Steiner, M., & Fleming, A. S. (2012). Maternal early life experiences and parenting: The mediating role of cortisol and executive function. *Journal of the American Academy of Child & Adolescent Psychiatry*, *51*(7), 673–682. https://doi.org/10.1016/j.jaac.2012.04.003

Goodman, A., & Goodman, R. (2011). Population mean scores predict child mental disorder rates: Validating SDQ prevalence estimators in Britain. *Journal of Child Psychology and Psychiatry*, *52*(1), 100–108. https://doi.org/10.1111/j.1469-7610.2010.02278.x

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

Graignic-Philippe, R., Dayan, J., Chokron, S., Jacquet, A., & Tordjman, S. (2014). Effects of prenatal stress on fetal and child development: A critical literature review. *Neuroscience & Biobehavioral Reviews*, *43*, 137–162. https://doi.org/10.1016/j.neubiorev.2014.03.022

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.

Hiller, R. M., Meiser-Stedman, R., Lobo, S., Creswell, C., Fearon, P., Ehlers, A., Murray, L., & Halligan, S. L. (2018). A longitudinal investigation of the role of parental responses in predicting children's post-traumatic distress. *Journal of Child Psychology and Psychiatry*, *59*(7), 781–789. https://doi.org/10.1111/jcpp.12846

Jones, L. B., Kiel, E. J., Luebbe, A. M., & Hay, M. C. (2022). Resilience in mothers during the COVID-19 pandemic. *Journal of Family Psychology*, *36*(6), 815–826. https://doi.org/10.1037/fam0000985

Karam, E. G., Al-Atrash, R., Saliba, S., Melhem, N., & Howard, D. (1999). The war events questionnaire. *Social Psychiatry and Psychiatric Epidemiology*, *34*(5), 265–274. https://doi.org/10.1007/s001270050143

Kleinhaus, K., Harlap, S., Perrin, M., Manor, O., Margalit-Calderon, R., Opler, M., Friedlander, Y., & Malaspina, D. (2013). Prenatal stress and affective disorders in a population birth cohort. *Bipolar Disorders*, *15*(1), 92–99. https://doi.org/10.1111/bdi.12015

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2003). The patient health questionnaire-2. *Medical Care*, *41*(11), 1284–1292. https://doi.org/10.1097/01.MLR.0000093487.78664.3C

Laurin, J. C., Joussemet, M., Tremblay, R. E., & Boivin, M. (2015). Early forms of controlling parenting and the

development of childhood anxiety. *Journal of Child and Family Studies*, *24*(11), 3279–3292. https://doi.org/10.1007/s10826-015-0131-9

Locke, C. J. (1996). The psychological and medical sequelae of war in central American refugee mothers and children. *Archives of Pediatrics & Adolescent Medicine*, *150*(8), 822. https://doi.org/10.1001/archpedi.1996.02170330048008

Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology*, *48*(1), 371–410. https://doi.org/10.1146/annurev.psych.48.1.371

Mansbach-Kleinfeld, I., Apter, A., Farbstein, I., Levine, S. Z., & Ponizovsky, A. M. (2010). A population-based psychometric validation study of the strengths and difficulties questionnaire – Hebrew version. *Frontiers in Psychiatry*, *1*. https://doi.org/10.3389/fpsyt.2010.00151

McLeod, B. D., Wood, J. J., & Weisz, J. R. (2007). Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review*, *27*(2), 155–172. https://doi.org/10.1016/j.cpr.2006.09.002

Mieloo, C. L., Bevaart, F., Donker, M. C. H., van Oort, F. V. A., Raat, H., & Jansen, W. (2014). Validation of the SDQ in a multi-ethnic population of young children. *European Journal of Public Health*, *24*(1), 26–32. https://doi.org/10.1093/eurpub/ckt100

Monk, C., Lugo-Candelas, C., & Trumpff, C. (2019). Prenatal developmental origins of future psychopathology: Mechanisms and pathways. *Annual Review of Clinical Psychology*, *15*(1), 317–344. https://doi.org/10.1146/annurev-clinpsy-050718-095539

Nazzari, S., Pili, M. P., Günay, Y., & Provenzi, L. (2024). Pandemic babies: A systematic review of the association between maternal pandemic-related stress during pregnancy and infant development. *Neuroscience & Biobehavioral Reviews*, *162*, 105723. https://doi.org/10.1016/j.neubiorev.2024.105723

Preis, H., Mahaffey, B., Heiselman, C., & Lobel, M. (2020). Pandemic-related pregnancy stress and anxiety among women pregnant during the coronavirus disease 2019 pandemic. *American Journal of Obstetrics & Gynecology MFM*, *2*(3), 100155. https://doi.org/10.1016/j.ajogmf.2020.100155

Preis, H., Mahaffey, B., & Lobel, M. (2020). Psychometric properties of the pandemic-related pregnancy stress scale (PREPS). *Journal of Psychosomatic Obstetrics & Gynecology*, *41*(3), 191–197. https://doi.org/10.1080/0167482X.2020.1801625

Schaal, N. K., La Marca-Ghaemmaghami, P., Preis, H., Mahaffey, B., Lobel, M., & Amiel Castro, R. (2021). The German version of the pandemic-related pregnancy stress scale: A validation study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *256*, 40–45. https://doi.org/10.1016/j.ejogrb.2020.10.062

Slone, M., & Mann, S. (2016). Effects of war, terrorism and armed conflict on young children: A systematic review. *Child Psychiatry & Human Development*, *47*(6), 950–965. https://doi.org/10.1007/s10578-016-0626-7

Slone, M., & Shoshani, A. (2017). Children affected by war and armed conflict: Parental protective factors and resistance to mental health symptoms. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.01397

Spada, M. M., Caselli, G., Manfredi, C., Rebecchi, D., Rovetto, F., Ruggiero, G. M., Nikčević, A. V., & Sassaroli, S. (2012). Parental overprotection and metacognitions as predictors of worry and anxiety. *Behavioural and Cognitive Psychotherapy*, *40*(3), 287–296. https://doi.org/10.1017/S135246581100021X

Spitzer, R. L. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA*, *282*(18), 1737. https://doi.org/10.1001/jama.282.18.1737

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder. *Archives of Internal Medicine*, *166*(10), 1092. https://doi.org/10.1001/archinte.166.10.1092

Tangir, G., Dekel, R., Lavi, T., Gewirtz, A. H., & Zamir, O. (2017). The contribution of maternal care and control, and community type to children's adjustment to political violence. *Psychological Trauma: Theory, Research, Practice, and Policy*, *9*(Suppl 1), 122–129. https://doi.org/10.1037/tra0000209

Tofighi, D., & MacKinnon, D. P. (2016). Monte carlo confidence intervals for complex functions of indirect effects. *Structural Equation Modeling: A Multidisciplinary Journal*, *23*(2), 194–205. https://doi.org/10.1080/10705511.2015.1057284

UNICEF. (2016). Nearly a quarter of the world's children live in conflict or disaster-stricken countries. *UNICEF*. Retrieved October 10, 2020.

Van den Bergh, B. R. H., van den Heuvel, M. I., Lahti, M., Braeken, M., de Rooij, S. R., Entringer, S., Hoyer, D., Roseboom, T., Räikkönen, K., King, S., & Schwab, M. (2020). Prenatal developmental origins of behavior and mental health: The influence of maternal stress in pregnancy. *Neuroscience & Biobehavioral Reviews*, *117*, 26–64. https://doi.org/10.1016/j.neubiorev.2017.07.003

Vardi, N., Zalsman, G., Madjar, N., Weizman, A., & Shoval, G. (2022). COVID-19 pandemic: Impacts on mothers' and infants' mental health during pregnancy and shortly thereafter. *Clinical Child Psychology and Psychiatry*, *27*(1), 82–88. https://doi.org/10.1177/13591045211009297

Vlenterie, R., van Ras, H. W. P., Roeleveld, N., Pop-Purceleanu, M., & van Gelder, M. M. H. J. (2017). Epidemiological evaluation of the Patient Health Questionnaire-2 in a pregnant population. *Journal of Psychosomatic Research*, *101*, 96–103. https://doi.org/10.1016/j.jpsychores.2017.08.008

Weiner, S., Wu, Y., Kapse, K., Vozar, T., Cheng, J. J., Murnick, J., Henderson, D., Teramoto, H., Limperopoulos, C., & Andescavage, N. (2024). Prenatal maternal psychological distress during the COVID-19 pandemic and newborn brain development. *JAMA Network Open*, *7*(6), e2417924. https://doi.org/10.1001/jamanetworkopen.2024.17924

Williamson, V., Creswell, C., Fearon, P., Hiller, R. M., Walker, J., & Halligan, S. L. (2017). The role of parenting behaviors in childhood post-traumatic stress disorder: A meta-analytic review. *Clinical Psychology Review*, *53*, 1–13. https://doi.org/10.1016/j.cpr.2017.01.005

Williamson, V., Hiller, R. M., Meiser-Stedman, R., Creswell, C., Dalgleish, T., Fearon, P., Goodall, B., McKinnon, A., Smith, P., Wright, I., & Halligan, S. L. (2018). The Parent Trauma Response Questionnaire (PTRQ): development and preliminary validation. *European Journal of Psychotraumatology*, *9*(1). https://doi.org/10.1080/20008198.2018.1478583

Wu, J., King, K. M., Witkiewitz, K., Racz, S. J., & McMahon, R. J. (2012). Item analysis and differential item functioning of a brief conduct problem screen. *Psychological Assessment*, *24*(2), 444–454. https://doi.org/10.1037/a0025831

Yirmiya, K., Djalovski, A., Motsan, S., Zagoory-Sharon, O., & Feldman, R. (2018). Stress and immune biomarkers interact with parenting behavior to shape anxiety symptoms in trauma-exposed youth. *Psychoneuroendocrinology*, *98*, 153–160. https://doi.org/10.1016/j.psyneuen.2018.08.016

Yirmiya, K., Motsan, S., Kanat-Maymon, Y., & Feldman, R. (2021). From mothers to children and back: Bidirectional processes in the cross-generational transmission of anxiety from early childhood to early adolescence. *Depression and Anxiety*, *38*(12), 1298–1312. https://doi.org/10.1002/da.23196

Yirmiya, K., Yakirevich-Amir, N., Preis, H., Lotan, A., Atzil, S., & Reuveni, I. (2021). Women's depressive symptoms during the COVID-19 pandemic: The role of pregnancy. *International Journal of Environmental Research and Public Health*, *18*(8), 4298. https://doi.org/10.3390/ijerph18084298

Zhong, Q.-Y., Gelaye, B., Zaslavsky, A. M., Fann, J. R., Rondon, M. B., Sánchez, S. E., & Williams, M. A. (2015). Diagnostic validity of the generalized anxiety disorder - 7 (GAD-7) among pregnant women. *PLoS One*, *10*(4), e0125096. https://doi.org/10.1371/journal.pone.0125096