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BASIC RESEARCH ARTICLE

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Understanding the link between maternal childhood maltreatment and mother-infant bonding: postpartum depressive symptoms as a mediator

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ABSTRACT

Background: Impairments in mother-infant bonding (MIB) during the postpartum period were shown to adversely affect a child's development. Research suggests that such impairments are associated with mothers' own childhood experiences of maltreatment. Hence, understanding factors that mediate this relationship is essential for developing targeted preventive interventions to support mothers who experienced maltreatment in their own childhood during the perinatal period.

Objective: As postpartum depression is associated with maternal experiences of childhood maltreatment and impairments in MIB, we aimed to examine the mediating effect of postpartum depression in the relationship between maternal experiences of childhood maltreatment and impairments in MIB.

Methods: Longitudinal data from $N = 128$ mothers in the control group of an eHealth preventive intervention (*I-PREGNO*) were analysed. Using a path model, we investigated whether the association between maternal childhood maltreatment (measured by the Childhood Trauma Screener) and MIB (measured by the Postpartum Bonding Questionnaire) was mediated by postpartum depressive symptoms (measured by the Edinburgh Postnatal Depression Scale).

Results: Postpartum depressive symptoms fully mediated the relationship between maternal experiences of childhood maltreatment and impairments in MIB (indirect effect [*ab*]: $b = .44$, $p = .001$, 95% *CI* [.18, .70]; direct effect [*c'*]: $b = .01$, $p = .953$, 95% *CI* [−.38, .41]; total effect [*c*]: $b = .45$, $p = .041$, 95% *CI* [.02, .89]).

Conclusion: Our results highlight the importance of addressing postpartum depression in mothers with childhood maltreatment experiences to promote MIB and to support a healthy start for the child.

Trial registration: German Clinical Trials Register identifier: DRKS00031067.

Comprensión del vínculo entre el maltrato infantil materno y el vínculo madre-infante: síntomas depresivos posparto como mediador

Antecedentes: Se ha demostrado que las dificultades en el vínculo madre-infante durante el periodo posparto afectan negativamente el desarrollo infantil. La evidencia sugiere que dichas dificultades se asocian con experiencias de maltrato en la infancia de las propias madres. Por lo tanto, comprender los factores que median esta relación es esencial para desarrollar intervenciones preventivas focalizadas que apoyen a las madres con antecedentes de maltrato infantil durante el periodo perinatal.

Objetivo: Dado que la depresión posparto se asocia tanto con experiencias maternas de maltrato infantil como con dificultades en el vínculo madre-infante, nos propusimos examinar el efecto mediador de la depresión posparto en la relación entre experiencias de maltrato infantil materno y dificultades en el establecimiento del vínculo madre-infante.

Métodos: Se analizaron datos longitudinales de $N = 128$ madres pertenecientes al grupo control de una intervención preventiva digital (I-PREGNO). Mediante un modelo de trayectorias se investigó si la asociación entre maltrato infantil materno (evaluado con el Cuestionario de Tamizaje de Trauma Infantil, CTS) y el vínculo madre-infante (evaluado con el Cuestionario de Vínculo Posparto, PBQ) estaba mediada por síntomas depresivos posparto

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Vínculo madre-infante; depresión posparto; análisis de mediación; maltrato infantil; transmisión intergeneracional de la crianza

HIGHLIGHTS

- The current article examines the mediating effect of postpartum depression in the relationship between maternal experiences of childhood maltreatment and impairments in MIB during the postpartum period.
- Postpartum depressive symptoms fully mediated the relationship between childhood maltreatment and impairments in MIB.
- The results of the current article highlight the importance of addressing postpartum depression in mothers with childhood maltreatment experiences to promote MIB and to support a healthy start for the child.

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(medidos con la Escala de Depresión Postnatal de Edimburgo, EPDS).
Resultados: Los síntomas depresivos posparto mediaron completamente la relación entre experiencias maternas de maltrato infantil y dificultades en el vínculo madre-infante (efecto indirecto [ab]: $b = 0.44$, $p = 0.001$, *IC* 95% [0.18, 0.70]; efecto directo [c']: $b = 0.01$, $p = 0.953$, *IC* 95% [−0.38, 0.41]; efecto total [c]: $b = 0.45$, $p = 0.041$, *IC* 95% [0.02, 0.89]).
Conclusión: Nuestros hallazgos resaltan la importancia de abordar la depresión posparto en madres con antecedentes de maltrato infantil con el fin de favorecer el vínculo madre-infante y promover un inicio saludable en el desarrollo del niño.

1. Background

Mother-infant bonding (MIB) during the first year postpartum is a crucial psychological process that has a significant impact on the infant's healthy cognitive, emotional, and social development (Le Bas et al., 2020). MIB is defined as the emotional and physical connection between a mother and her infant, fostering feelings of closeness and promoting the development of attachment (Bicking Kinsey & Hupcey, 2013; Nakić Radoš et al., 2024). MIB already begins during pregnancy (defined as the engagement in 'behaviors that represent an affiliation and interaction with their unborn child'; Cranley, 1981, p. 282) and continues to develop after birth (Bicking Kinsey & Hupcey, 2013; Tichelman et al., 2019). A strong and positive MIB has been shown to promote both physical and mental health in infants while laying the foundation for functional interpersonal relationships until adulthood (Puig et al., 2013; Waters et al., 2000). Conversely, impairments in MIB (e.g. experiencing anger or anxiety towards the infant, being irritated by the infant; Brockington et al., 2001) after birth can disrupt the mother–child interaction (e.g. reduced maternal emotional availability and sensitivity), and increase the risk of problems in the infant's socio-emotional development (Lux et al., 2023; Mason et al., 2011). Research estimates that approximately 7% of women with newborn children experience MIB impairments in the first year postpartum, with prevalence rates rising to 17 - 29% in clinical samples (Brockington et al., 2001; Kerstis et al., 2016; Reck et al., 2006).

Parents' own childhood experiences evidently influence subsequent parenting styles, a process known as the intergenerational transmission of parenting (Madden et al., 2015). A well-known example of the intergenerational transmission is a phenomenon called 'cycle of abuse'. Mothers who have experienced maltreatment in their own childhood (maternal experiences of childhood maltreatment) show an increased risk of maltreating their own children (Savage et al., 2019). This is particularly meaningful given that childhood maltreatment represents a global problem with serious life-long consequences (Hillis et al., 2016). In Germany, for example, the prevalence rates for experiencing at least one subtype of childhood maltreatment (emotional, physical, and sexual abuse, emotional, and physical neglect) range from 28 to 35% in the general population (Bernstein et al., 2003; Klinger-König et al., 2023; Witt et al., 2018).

Maternal experiences of childhood maltreatment are associated with negative parenting during the first year after birth (Fuchs et al., 2015; Souch et al., 2022) and later problems in caregiving (Dixon et al., 2005; Nuttall et al., 2012; Vaillancourt et al., 2017). Additionally, mothers who survived maltreatment during their own childhood often exhibit less sensitive behaviour in interactions with their children (Bödeker et al., 2019; Rahma et al., 2018), a pattern that may be explained by impairments in MIB, and are considered as a potential mechanism underlying the intergenerational cycle of abuse (Mielke et al., 2020). Hence, experiences of maltreatment during one's own childhood may profoundly affect a mother's ability to form a connection with her own child (Leite Ongilio et al., 2023). Consistent with this theory, previous studies found a link between maternal childhood experiences of maltreatment and impairments in MIB during the first year postpartum (Lara-Cinisomo et al., 2018; Williams et al., 2022). In particular, emotional neglect and abuse in a mother's own childhood appear to contribute to difficulties in MIB during the first year postpartum (Bergunde et al., 2024; Lehnig et al., 2019).

Given the high prevalence of childhood maltreatment and existing evidence suggesting that experiences of childhood maltreatment can lead to substantial impairments in later MIB, the question arises as to which mechanisms might mediate this relationship. Postpartum depressive symptoms have been shown to be strongly associated with impairments in MIB (Tichelman et al., 2019), indicating that mothers experiencing depressive symptoms face several challenges in mother-infant relationships such as reduced emotional involvement (Goodman, 2007; Löchner, Ulrich, et al., 2024), and heightened negative parenting behaviour (Lovejoy et al., 2000). These factors, in turn, may contribute to further impairments in MIB later on (Aran et al., 2022; De Palma et al., 2023; Wendelboe et al., 2021). Moreover, studies have shown a relationship between experiences of childhood maltreatment and postpartum depressive symptoms in mothers (Racine et al., 2021; Vogel et al.,

2025). Hence, postpartum depressive symptoms may act as a mediator in the relationship between experiences of childhood maltreatment and impairments in postpartum MIB. The results of a recent study by Bergunde et al. (2024) demonstrate that maternal experiences of childhood maltreatment lost significance as a predictor of impairments in MIB when considering postpartum depressive symptoms as a predictor in the regression model. In another study, mothers with a history of mental illness (i.e. a current or previous mental disorder) and experiences of childhood maltreatment showed reduced emotional availability compared to mothers with childhood maltreatment but without a history of mental illness and healthy controls (Mielke et al., 2020). Mothers without a history of mental illness did not differ from healthy controls (Mielke et al., 2020). The aforementioned findings were corroborated by a cross-sectional online study conducted in Australia, which identified postpartum depressive symptoms as a mediator in the relationship between psychological childhood abuse and impairments in MIB (Chau et al., 2023). However, the cross-sectional design of the study limits the ability to determine the direction of the relationships between the variables and hinders causal inferences.

Building on these findings, the current study aimed to deepen the understanding of the relationship between maternal childhood maltreatment and impairments in MIB by investigating postpartum depressive symptoms as mediator within a 12-week longitudinal study of mothers with infants up to 12 months postpartum. Based on previous findings, we hypothesised that

(1) maternal experiences of childhood maltreatment are significantly related to more impairments in MIB,
(2) maternal experiences of childhood maltreatment are significantly related to more postpartum depressive symptoms,
(3) postpartum depressive symptoms are significantly related to more impairments in MIB, and
(4) postpartum depressive symptoms significantly mediate the association between maternal experiences of childhood maltreatment and impairments in MIB.

2. Methods

The present study is a secondary analysis of a randomised controlled trial (RCT) conducted within the *I-PREGNO* project. A detailed description of the trial was published in a study protocol (Henning et al., 2023). The trial was preregistered at the German register for clinical trials (DRKS; DRKS00031067) and received ethical approval from the ethical committee of the University in Bamberg (No. 2022-02/09). *I-PREGNO* is an mHealth intervention developed to prevent unhealthy weight gain and to reduce postpartum stress and depression in parents during the transition to parenthood (Vogel et al., 2023; 2024).

For the current analyses, we used longitudinal data (comprising the baseline and post-assessment 12 weeks after baseline) of the RCT investigating the efficacy of *I-PREGNO* as a self-guided digital intervention in mothers during the first year postpartum. Maternal experiences of childhood maltreatment (assessed retrospectively) and symptoms of postpartum depression were measured at baseline, while MIB was assessed 12 weeks later at post-assessment. Analyses of the current manuscript included exclusively data from mothers receiving the control condition to rule out potential intervention effects. The analyses of the present manuscript were preregistered at Open Science Framework OSF: https://osf.io/rzfjg.

2.1. Study design & participants

Recruitment for the two-arm RCT lasted from March 2023 until the end of July 2023. We recruited mothers and fathers of children aged between zero and 12 months using press releases, social media advertisements, and the distributions of leaflets and posters at paediatricians, kindergartens, and child guidance counselling services in Germany and Austria. Interested mothers and their partners were able to register by completing an online questionnaire screening for inclusion and exclusion criteria. Parents were only included if they (1) had a child aged zero to 12 months, (2) owned a smartphone (android or iOS), (3) were at least 16 years old, and (4) had sufficient proficiency in the German language. Participants were excluded when they endorsed suicidal ideation (measured via item 9 of the Patient Health Questionnaire 9; Kroenke et al., 1999), or chronic diseases influencing behaviour related to energy balance (e.g. diabetes, see Henning et al., 2023) that hampered the ability of participating.

In case of inclusion, parents were randomly assigned to one of two study arms (either intervention or waiting control condition) and informed regarding the study condition and study procedure via a telephone call lasting between 15 and 20 min. After the phone call, participants in the control group received an e-mail with an invitation to complete the online baseline assessment. Twelve weeks after the completion of the baseline assessment, participants in the control group were invited for the post-assessment via e-mail. They received shopping vouchers to the value of 20 Euros for the completion of the post-assessment. To prevent dropouts, participants were reminded via e-mail one, two, and three weeks following the initial invitation.

2.2. Measures

Amongst other measures, childhood maltreatment and postpartum depressive symptoms were assessed at baseline (t0). MIB was assessed 12-weeks later at the post-assessment (t1). All assessments were performed online using self-reported questionnaires using Limesurvey version 5.6.57 (LimeSurvey Project Team / Carsten Schmitz, 2012). Sociodemographic variables were assessed using self-reported questions that were originally developed for a previous study (Opitz et al., 2023), and adapted for the current baseline questionnaire. An overview of all the measurement instruments included in the study can be found in the study protocol (Henning et al., 2023).

2.2.1. Childhood maltreatment

Mothers' childhood experiences of maltreatment were assessed with the Childhood Trauma Screener (CTS; Grabe et al., 2012), a validated German short form of the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003). According to Bernstein et al. (2003) childhood maltreatment comprises five forms of neglect and abuse (emotional, physical, and sexual abuse, emotional, and physical neglect) experienced under the age of 18. The CTS consists of five items, each covering one form of childhood maltreatment (e.g. *emotional abuse:* 'I felt that somebody in my family hated me'; *physical abuse:* 'People in my family hit me so hard, it left me with bruises or marks') on a 5-point Likert scale ranging from 1 ('not at all') to 5 ('very frequently'). Due to a technical issue in the baseline assessment, the physical neglect item had to be assessed in a follow-up survey. The sum-score of the five items measures the severity of overall childhood maltreatment. Cut-off values were specified for the subtypes of childhood maltreatment: emotional and physical abuse ≥ 3, sexual abuse ≥ 2, and emotional and physical neglect ≥ 4 (Glaesmer et al., 2013). In the present study, we used cut-off scores to calculate the prevalence rates of the different subtypes in our sample, and used the total sum-score for the main analyses. Validation studies of the CTS report satisfactory psychometric properties (Cronbachs $\alpha = .76$; Grabe et al., 2012; Witt et al., 2022). In our sample, Cronbach's α for the full CTS was satisfactory ($\alpha = .78$).

2.2.2. Postpartum depressive symptoms

Maternal postpartum depressive symptoms were measured using the German version of the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). The EPDS represents a 10-item self-report questionnaire that screens for symptoms of postpartum depression in mothers after birth. Each item is rated on a 4-point Likert scale ranging from 0 to 3 with different response options across the items (e.g. from 'yes, most of the time' to 'no, never' for the item 'I have blamed myself unnecessarily when things went wrong') and added together for a sum-score. Studies investigating the questionnaires' psychometric properties have shown good internal consistency (Cronbach's $\alpha = .81$), as well as good construct validity (Bergant et al., 2008; Cox et al., 1987; Heller et al., 2022). Analyses of our data indicated good internal consistency ($\alpha = .87$).

2.2.3. Mother-infant bonding

Impairments in MIB was assessed by the German version of the Postpartum Bonding Questionnaire (PBQ-16; Brockington et al., 2001; German version: Reck et al., 2006). The German version consists of 16 items (e.g. 'I feel close to my baby'; 'I enjoy playing with my baby'). Each item is rated on a 6-point Likert scale ranging from 0 ('always') to 5 ('never'). According to Reck et al. (2006), we calculated a sum-score of the 16 items, with higher scores indicating more problems. The 16-item version of the PBQ showed an internal consistency of $\alpha = .85$ (Reck et al., 2006), which was replicated in our sample ($\alpha = .85$).

2.3. Statistical analyses

The purpose of the study was to investigate whether postpartum depressive symptoms mediated the association between maternal childhood maltreatment and impairments in MIB. Childhood maltreatment was retrospectively assessed at baseline, current levels of depressive symptoms were also measured at baseline, and MIB was assessed 12 week later at the post-assessment, which is why we consider all time points as time-lagged. Statistical analyses were performed in R version 4.3.1. (R Core Team, 2021) with $\alpha = .05$ (one-sided). We handled missing data using Full Information Maximum Likelihood (FIML) estimation (Enders & Bandalos, 2001). After data inspection and quality checks, bivariate correlations among all variables of interest (i.e. sum score of CTS, EPDS, and PBQ) were examined using Pearson FIML correlations investigating hypotheses (1) to (3) (Baron & Kenny, 1986). In a next step, a path model was performed for the investigation of postpartum depressive symptoms (EPDS sum score) as a mediator for the relationship between childhood maltreatment (CTS sum score) and MIB (PBQ sum score) by using the delta-method and lavaan package (Rosseel, 2012). Sensitivity analyses adjusting for associations with potential confounding factors (i.e. mother's age, infant's age and level of education) were conducted and are provided in the supplementary material (Figure S2).

3. Results

In total, we included $N = 128$ mothers in the current analyses. Only one mother dropped out between baseline and post-assessment. Therefore, no comparison

between completers and non-completers could be conducted. A study flowchart of the original RCT is provided in the supplementary material. Information on the sample description is presented in Table 1. On average, mothers reported a CTS sum-score of $M = 6.84$ ($SD = 2.69$). Out of a total of 128 participants, 25% ($n = 32$) reported having experienced at least one subtype of childhood maltreatment (i.e. scored above the cut-off scores). Three percent ($n = 4$) reported emotional neglect, 5% ($n = 6$) physical abuse, 15% ($n = 19$) emotional abuse, 14% ($n = 18$) sexual abuse, and 1% ($n = 1$) physical neglect. The average EPDS sum-score was $M = 6.47$ ($SD = 5.05$) and the average PBQ-16 sum-score was $M = 11.31$ ($SD = 6.88$).

Table 1. Sample's descriptive information.

Mothers ($N = 128$)	
	M (SD)
Age (years)	33.41 (4.23)
	Range [22–48]
	***n* (%)**
Origin	
German speaking country (Austria & Germany)	122 (95%)
Other	6 (5%)
Educational level	
Graduation after 9 years of schooling	1 (1%)
Graduation after 10 years of schooling	9 (7%)
Degree qualifying for university or university of applied science	25 (20%)
University degree	93 (73%)
Receipt of social welfare	5 (4%)
Primiparous	78 (61%)
Planned Pregnancy	113 (88%)
Infants	
	M (SD)
Age (months)	4.83 ($SD = 3.39$)
	Range [0–13]
	***n* (%)**
Sex	
Male	66 (52%)
Female	61 (48%)
Preterm birth (gestational age <37 weeks)	5 (4%)

Note. Sample's description. The sample included $N = 128$ mothers. In one family, the information regarding the child's sex was unavailable. Age was rounded up to full months, meaning infants at the age of 12.5–12.9 months were recorded as 13 months old.

3.1. Correlations

Testing hypothesis 1, correlation analyses revealed a significant small positive association between the CTS sum score and PBQ-16 sum-score ($r = .18$, $p = .048$, 95% *CI* [.01, .35]). In addition, the CTS sum score correlated significantly with the EPDS sum score (in line with hypothesis 2), showing a moderate correlation ($r = .32$; $p < .001$, 95% *CI* [.17, .48]). Lastly, there was a significant moderate to high positive correlation between EPDS and PBQ-16 sum score (hypothesis 3, $r = .54$, $p < .001$, 95% *CI* [.41, .66]).

3.2. Mediation analysis

A mediation model was performed to investigate whether the association between maternal experiences of childhood maltreatment (indicated by the CTS sum score) and impairments in MIB (indicated by the PBQ-16 sum score) were mediated by postpartum depressive symptoms (indicated by EPDS sum score). Results are presented in Figure 1. The path model revealed a significant indirect effect ($ab = .44$, $p = .001$, 95% *CI* [.18, .70]) with postpartum depressive symptoms as a mediator between childhood maltreatment and MIB. The direct effect was not significant ($c' = .01$, $p = .953$, 95% *CI* [−.38, .41]) indicating a full mediation of the relationship between childhood maltreatment and MIB impairments. Overall, the model explained 29% of the variance of impairments in MIB ($R^2 = .29$). Sensitivity Analyses adjusting for confounding sociodemographic factors (i.e. level of education, age of mothers and infants) revealed robust findings (see Figure S2).

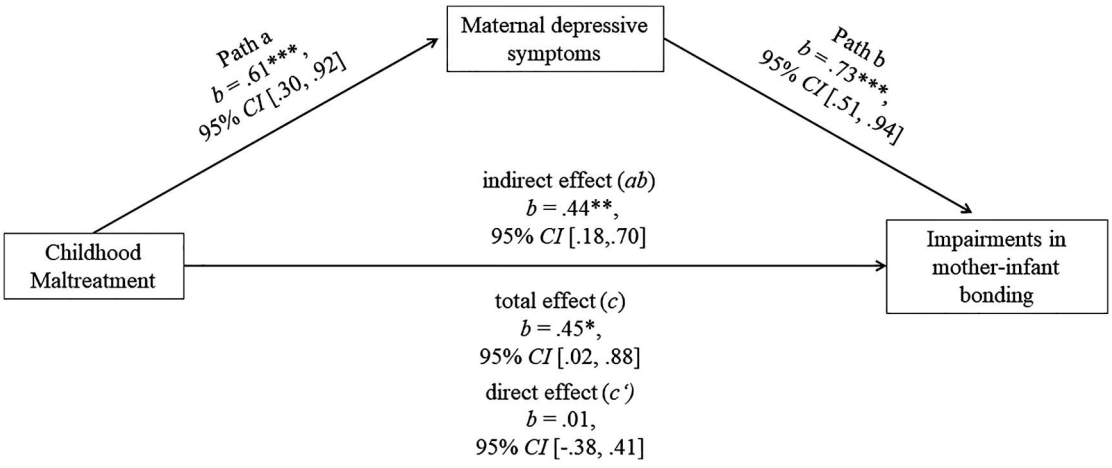

Figure 1. Results of the path-model: maternal depressive symptoms mediating the relationship between childhood maltreatment and impairments in MIB

Note. Childhood maltreatment was measured by the five-item Childhood Trauma Screener (Grabe et al., 2012); maternal depressive symptoms by the Edinburgh Postnatal Depression Scale (Cox et al., 1987); impairments in MIB by the Postpartum Bonding Questionnaire (Reck et al., 2006). b = regression coefficient; CI = confidence interval. *** $p < .001$, ** $p < .01$, * $p < .05$.

4. Discussion

In the current study, we examined the mediating role of maternal depressive symptoms in the relationship between maternal experiences of childhood maltreatment and impairments in MIB during the postpartum period using data from the *I-PREGNO* project. In line with previous research (see Bergunde et al., 2024; Lehnig et al., 2019) and our hypotheses, our study showed a positive, although weak, association between childhood maltreatment and impairments in MIB, and a moderate positive association between childhood maltreatment and maternal postpartum depressive symptoms (see also Racine et al., 2021). Furthermore, a moderate to strong correlation between maternal depressive symptoms and impairments in MIB was found, which is consistent with earlier findings (Doyle et al., 2023; Tichelman et al., 2019). This highlights the fundamental role of postpartum depressive symptoms for impairments in MIB. Due to our longitudinal design (postpartum depressive symptoms were measured 12 weeks before impairments of MIB), our results highlight the lasting negative influence of maternal symptoms of depression on MIB during the postpartum period. The quality of MIB during the first year of an infant's life plays a crucial role in shaping the overall mother-infant relationship and is considered as a fundamental component of healthy infant development (Brockington et al., 2001; Reck et al., 2006). Given this, our findings emphasise the importance of early identification and intervention for postpartum depression to support both maternal well-being and optimal child development.

Confirming our key hypothesis, postpartum depressive symptoms fully mediated the relationship between maternal experiences of childhood maltreatment and impairments in MIB. Consequently, the results of our study endorse findings from other studies in which experiences of childhood maltreatment lost significance as a predictor for impairments in MIB after controlling for maternal depressive symptoms (Bergunde et al., 2024; Mielke et al., 2020). Overall, the mediation model explained 29% of the variance in MIB, highlighting the substantial contribution of the examined factors to the understanding of MIB. Other factors, such as the infant's temperament or adverse experiences during birth may also play a role (Doyle et al., 2023; Junge-Hoffmeister et al., 2022). Since we included mothers during the entire postpartum phase (until 12.9 months after birth), our findings can be interpreted not only in the context of the first few weeks after birth but also across the entire first year of the child's life.

Our findings are consistent with the assumption that maternal mental health may be one pathway linking maternal childhood maltreatment to impairments in MIB (Bergunde et al., 2024; Chau et al., 2023). This insight is crucial for designing targeted preventive and therapeutic interventions. First, the finding that experiences of childhood maltreatment may not directly lead to impairments in MIB offer reassurance to mothers who have experienced maltreatment during their own childhood. Therefore, incorporating this information into psychoeducational interventions for this target group could be beneficial. Second, interventions aiming to improve MIB in childhood maltreatment survivors should not only focus on MIB itself, but may benefit of treating co-occurring maternal depressive symptoms. This is even more important when considering the fact that depressive symptoms also occur independently from experiences of childhood maltreatment. Third, based on the moderate to strong correlation between depressive symptoms and MIB, we suggest that (preventive) interventions focusing on postpartum depressive symptoms in turn should also consider problems in MIB by adding interventions fostering MIB if necessary. Therefore, future studies on interventions targeting maternal postpartum depression should assess their efficacy in improving MIB.

Although our study has several strengths, such as low attrition and using longitudinal data, there are some important limitations. First, our sample was highly educated with generally low psychosocial burden and low symptoms of depression, limiting the representativeness of the sample. As expected the prevalence rates of childhood maltreatment in mothers were lower than in the general German population (25% vs. 35%, Witt et al., 2018), potentially compromising external validity. This limitation has been noted in other studies as well (e.g. Bergunde et al., 2024), suggesting that reaching psycho-socially burdened parents represents a general challenge that should be carefully considered in future research. Due to the selective sample, which showed the abilities to enroll and participate in a longitudinal and self-guided eHealth study, the results of this study might underestimate the true effects. Participating mothers showed substantial self-organizational and motivational aspects (e.g. reliably completing long questionnaires and adhering to the intervention), which is hardly seen in parents with more severe depressive symptoms. Future research within psycho-socially burdened families may further corroborate our results (Löchner, Ulrich, et al., 2024; Ulrich et al., 2023). In addition, we did not collect information on which part of Germany or Austria participants lived in or whether it was an urban or rural area. This lack of contextual data further restricts generalizability. Second, we used self-reported questionnaires for the assessments of our variables which introduces the possibility of response bias and may not fully capture the complexities of the assessed constructs. In addition, in other studies parents with depressive symptoms were

shown to be biased in assessing their children's psychopathology symptoms (Löchner et al., 2024). For this reason, influences of recall bias and state-dependent memory cannot be ruled out (Seizer et al., 2024). Although the CTS is a common screening tool for childhood maltreatment in Germany, it is retrospective and asks about events that, in most cases, occurred several years ago. Hence, there is an ongoing debate about whether retrospective reporting on childhood maltreatment is influenced by recall bias and state-dependent memory (e.g. Baldwin et al., 2019). As mentioned above, the item assessing physical neglect had to be assessed in a follow-up survey due to a technical error in the baseline assessment. This may have affected the consistency of the CTS data. MIB was assessed by the PBQ-16 that represents a common measure for postpartum MIB. However, in the context of bonding and mother–child interaction, standardised observational instruments represent the gold standard of assessments. This was not possible due to our online recruitment throughout all of Germany and Austria. Third, we cannot rule out that the associations between the variables are influenced by other variables and confounding factors which were not assessed in our study (e.g. sociodemographic variables, delivery related factors, trauma in adulthood). Although we found a full mediation of postpartum depression for the relationship between maternal experiences of childhood maltreatment and impairments in MIB, we cannot rule out the possibility that depressive symptoms reflect or overlap with other underlying factors. For instance, maternal post-traumatic stress disorder (PTSD) symptoms or other mental health conditions, which were not assessed and controlled for in our analysis, but might underlie or influence the observed mediation effect (Muzik et al., 2013). Therefore, future studies should investigate whether the mediation effect is specific to depressive symptoms or also applies to other psychological mechanisms and symptoms. We aim to address these limitations in future studies with larger samples allowing to include more confounding factors and underlying mechanisms in statistical analyses.

Since our analyses represent exploratory secondary analyses of an RCT with mostly highly educated, low psycho-socially burdened mothers, future studies should examine our model in larger, more representative samples using standardised observational tools to assess impairments in MIB. Since our model explains 29% of the variance of impairments in MIB, future studies should extend the model and include other factors affecting MIB (e.g. social support, temperament of the child) and investigate the interaction of these factors with childhood maltreatment and maternal depressive symptoms. Moreover, the identification of mechanisms mediating the relationship between postpartum depressive symptoms and MIB in maternal experiences of childhood maltreatment could improve interventions targeting MIB in mothers with postpartum depression. In the aforementioned cross-sectional study from Chau et al. (2023), maternal self-efficacy was found to mediate the relationship between postpartum depressive symptoms and impairments in MIB. Thus, enhancing parenting competences of mothers and strengthening self-efficacy of mothers could represent a target within interventions aiming to prevent impaired MIB in mothers with histories of childhood maltreatment and depressive symptoms. Further potential mediators could include maternal emotion regulation or sensitivity (Goodman, 2007) and other external factors (e.g. intimate partner violence; Langevin et al., 2025).

With respect to maternal childhood experiences of maltreatment, it would be interesting to examine whether all five subtypes of childhood maltreatment correlate with impairments in MIB and whether depressive symptoms mediate the relationship for all five subtypes. Studies that investigated single subtypes are inconclusive on this question. However, there is emerging evidence that emotional abuse and emotional neglect in particular are associated with postpartum depressive symptoms (Vogel et al., 2025) and impairments in MIB (Bergunde et al., 2024; Chau et al., 2023; Lehnig et al., 2019). Moreover, the timing, chronicity, and co-occurrence of different types and severity of childhood maltreatment experiences might also play a role in the relationship between childhood maltreatment and impairments in MIB (Langevin et al., 2025). The involvement of fathers is another key element which is often neglected in perinatal research and in the development of interventions for parents – although it is demanded by the target group (Versele et al., 2022).

5. Conclusion

Our study revealed a positive correlation between maternal experiences of childhood maltreatment and impairments in MIB, with depressive symptoms fully mediating this relationship. This finding may suggest that impairments in MIB are not directly attributable to the experience of childhood maltreatment itself, but could rather be related to its psychological consequences (i.e. the development of depressive symptoms) in mothers. However, this interpretation should be viewed with caution, given the limitations of the current study. If future longitudinal studies with causal designs support these findings, preventive approaches during pregnancy and interventions aimed at fostering MIB might benefit from also addressing maternal depressive symptoms, as this could help support maternal bonding capacities and promote a healthy start in life for infants.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Data availability statement

Due to ongoing analyses, data will not be publicly available prior to the year 2026. In 2026, the I-PREGNO data will be published on the OSF platform as part of the I-PREGNO project. If there is a legitimate interest in the data in advance, the data can be requested from the corresponding author.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used ChatGPT 4.0 in order to improve the grammar, readability and language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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References

Aran, P., Lewis, A., Watson, S., & Galbally, M. (2022). Major depression and generalised anxiety disorder: An analysis of the effects of remission status and comorbidity on mother-infant emotional availability in the perinatal period. *Journal of Clinical Psychology*, *78*(4), 570–589. https://doi.org/10.1002/jclp.23235

Baldwin, J. R., Reuben, A., Newbury, J. B., & Danese, A. (2019). Agreement between prospective and retrospective measures of childhood maltreatment: a systematic review and meta-analysis. *JAMA psychiatry*, *76*(6), 584–593. doi:10.1001/jamapsychiatry.2019.0097

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bergant, A. M., Nguyen, T., Heim, K., Ulmer, H., & Dapunt, O. (2008). Deutschsprachige Fassung und Validierung der »Edinburgh postnatal depression scale«. *DMW - Deutsche Medizinische Wochenschrift*, *123*(03), 35–40. https://doi.org/10.1055/s-2007-1023895

Bergunde, L., Karl, M., Borrmeister, M., Jaramillo, I., Weise, V., Mack, J. T., Weidner, K., Gao, W., Steudte-Schmiedgen, S., & Garthus-Niegel, S. (2024). The effect of maternal childhood maltreatment on postpartum mother–child bonding and maternal hair glucocorticoids. *European Journal of Psychotraumatology*, *15*(1), 2317674. https://doi.org/10.1080/20008066.2024.2317674

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., Stokes, J., Handelsman, L., Medrano, M., Desmond, D., & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, *27*(2), 169–190. https://doi.org/10.1016/S0145-2134(02)00541-0

Bicking Kinsey, C., & Hupcey, J. E. (2013). State of the science of maternal–infant bonding: A principle-based concept analysis. *Midwifery*, *29*(12), 1314–1320. https://doi.org/10.1016/j.midw.2012.12.019

Bödeker, K., Fuchs, A., Führer, D., Kluczniok, D., Dittrich, K., Reichl, C., Reck, C., Kaess, M., Hindi Attar, C., Möhler, E., Neukel, C., Bierbaum, A.-L., Zietlow, A.-L., Jaite, C., Lehmkuhl, U., Winter, S. M., Herpertz, S., Brunner, R., Bermpohl, F., & Resch, F. (2019). Impact of maternal early life maltreatment and maternal history of depression on child psychopathology: Mediating role of maternal sensitivity? *Child Psychiatry & Human Development*, *50*(2), 278–290. https://doi.org/10.1007/s10578-018-0839-z

Brockington, I. F., Oates, J., George, S., Turner, D., Vostanis, P., Sullivan, M., Loh, C., & Murdoch, C. (2001). A Screening Questionnaire for mother-infant bonding disorders. *Archives of Women's Mental Health*, *3*(4), 133–140. https://doi.org/10.1007/s007370170010

Chau, V., Dryer, R., & Brunton, R. (2023). Examining the relationship between maternal childhood abuse history and mother-infant bonding: The mediating roles of postpartum depression and maternal self-efficacy. *Child Abuse & Neglect*, *145*, 106439. https://doi.org/10.1016/j.chiabu.2023.106439

Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry*, *150*(6), 782–786. https://doi.org/10.1192/bjp.150.6.782

Cranley, M. S. (1981). Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing Research*, *30*(5), 281–284.

De Palma, M., Rooney, R., Izett, E., Mancini, V., & Kane, R. (2023). The relationship between parental mental health, reflective functioning coparenting and social emotional development in 0-3 year old children. *Frontiers in*

Psychology, *14*, 1054723. https://doi.org/10.3389/fpsyg.2023.1054723

Dixon, L., Hamilton-Giachritsis, C., & Browne, K. (2005). Attributions and behaviours of parents abused as children: A mediational analysis of the intergenerational continuity of child maltreatment (Part II). *Journal of Child Psychology and Psychiatry*, *46*(1), 58–68. https://doi.org/10.1111/j.1469-7610.2004.00340.x

Doyle, F. L., Dickson, S. J., Eapen, V., Frick, P. J., Kimonis, E. R., Hawes, D. J., Moul, C., Richmond, J. L., Mehta, D., & Dadds, M. R. (2023). Towards preventative psychiatry: Concurrent and longitudinal predictors of postnatal maternal-infant bonding. *Child Psychiatry & Human Development*, *54*(6), 1723–1736. https://doi.org/10.1007/s10578-022-01365-0

Enders, C., & Bandalos, D. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling: A Multidisciplinary Journal*, *8*(3), 430–457. https://doi.org/10.1207/S15328007SEM0803_5

Fuchs, A., Möhler, E., Resch, F., & Kaess, M. (2015). Impact of a maternal history of childhood abuse on the development of mother–infant interaction during the first year of life. *Child Abuse & Neglect*, *48*, 179–189. https://doi.org/10.1016/j.chiabu.2015.05.023

Glaesmer, H., Schulz, A., Häuser, W., Freyberger, H., Brähler, E., & Grabe, H.-J. (2013). Der Childhood Trauma Screener (CTS)—Entwicklung und Validierung von Schwellenwerten zur Klassifikation. *Psychiatrische Praxis*, *40*(04), 220–226. https://doi.org/10.1055/s-0033-1343116

Goodman, S. H. (2007). Depression in Mothers. *Annual Review of Clinical Psychology*, *3*(1), 107–135. https://doi.org/10.1146/annurev.clinpsy.3.022806.091401

Grabe, H., Schulz, A., Schmidt, C., Appel, K., Driessen, M., Wingenfeld, K., Barnow, S., Spitzer, C., John, U., Berger, K., Wersching, H., & Freyberger, H. (2012). Ein Screeninginstrument für Missbrauch und Vernachlässigung in der Kindheit: Der Childhood Trauma Screener (CTS). *Psychiatrische Praxis*, *39*(03), 109–115. https://doi.org/10.1055/s-0031-1298984

Heller, H. M., Draisma, S., & Honig, A. (2022). Construct validity and responsiveness of instruments measuring depression and anxiety in pregnancy: a comparison of EPDS, HADS-A and CES-D. *International Journal of Environmental Research and Public Health*, *19*(13), 7563. doi:10.3390/ijerph19137563

Henning, C., Wolstein, J., Boehlke, E., Fischer, U. C., Liel, C., Lux, U., Opitz, A., Seiferth, C., Van Poppel, M. N. M., Vogel, L., & Löchner, J. (2023). A cognitive behavioural mHealth intervention for families in the postpartum period to enhance weight management, mental well-being and resilience – A study protocol for a randomised controlled trial (I-PREGNO). *Open Research Europe*, *3*, 190. https://doi.org/10.12688/openreseurope.16446.1

Hillis, S., Mercy, J., Amobi, A., & Kress, H. (2016). Global prevalence of past-year violence against children: A systematic review and minimum estimates. *Pediatrics*, *137*(3), e20154079. https://doi.org/10.1542/peds.2015-4079

Junge-Hoffmeister, J., Bittner, A., Garthus-Niegel, S., Goeckenjan, M., Martini, J., & Weidner, K. (2022). Subjective birth experience predicts mother–infant bonding difficulties in women with mental disorders. *Frontiers in Global Women's Health*, *3*, 812055. https://doi.org/10.3389/fgwh.2022.812055

Kerstis, B., Aarts, C., Tillman, C., Persson, H., Engström, G., Edlund, B., Öhrvik, J., Sylvén, S., & Skalkidou, A. (2016). Association between parental depressive symptoms and impaired bonding with the infant. *Archives of Women's Mental Health*, *19*(1), 87–94. https://doi.org/10.1007/s00737-015-0522-3

Klinger-König, J., Streit, F., Erhardt, A., Kleineidam, L., Schmiedek, F., Schmidt, B., NAKO Investigators, Wagner, M., Deckert, J., Rietschel, M., Berger, K., Grabe, H. J., Peters, A., Fischer, B., Leitzmann, M., Kaaks, R., Greiser, H., Michels, K. B., Franzke, C.-W., … Stübs, G. (2023). The assessment of childhood maltreatment and its associations with affective symptoms in adulthood: Results of the German National Cohort (NAKO). *The World Journal of Biological Psychiatry*, *24*(10), 897–908. https://doi.org/10.1080/15622975.2021.2011406

Kroenke, K., Spitzer, R. L., Williams, J. B., & Löwe, B. (1999). Patient Health Questionnaire-9 (PHQ-9). *APA PsycTests*, *10*.

Langevin, R., Abou Chabake, S., & Beaudette, S. (2025). Intergenerational cycles of maltreatment: An updated scoping review of psychosocial risk and protective factors. *Trauma, Violence, & Abuse*, 15248380251316908. https://doi.org/10.1177/15248380251316908

Lara-Cinisomo, S., Zhu, K., Fei, K., Bu, Y., Weston, A. P., & Ravat, U. (2018). Traumatic events: Exploring associations with maternal depression, infant bonding, and oxytocin in Latina mothers. *BMC Women's Health*, *18*(1), 31. https://doi.org/10.1186/s12905-018-0520-5

Le Bas, G. A., Youssef, G. J., Macdonald, J. A., Rossen, L., Teague, S. J., Kothe, E. J., McIntosh, J. E., Olsson, C. A., & Hutchinson, D. M. (2020). The role of antenatal and postnatal maternal bonding in infant development: A systematic review and meta-analysis. *Social Development*, *29*(1), 3–20. https://doi.org/10.1111/sode.12392

Lehnig, F., Nagl, M., Stepan, H., Wagner, B., & Kersting, A. (2019). Associations of postpartum mother-infant bonding with maternal childhood maltreatment and postpartum mental health: A cross-sectional study. *BMC Pregnancy and Childbirth*, *19*(1), 278. https://doi.org/10.1186/s12884-019-2426-0

Leite Ongilio, F., Gaspardo, C. M., & Linhares, M. B. M. (2023). Maternal history of adversity and subsequent mother–child interactions at early ages: A systematic review. *Trauma, Violence, & Abuse*, *24*(5), 3412–3432. https://doi.org/10.1177/15248380221130355

LimeSurvey Project Team/Carsten Schmitz. (2012). *LimeSurvey: An open source survey tool*. [Software]. LimeSurvey Project. http://www.limesurvey.org

Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior. *Clinical Psychology Review*, *20*(5), 561–592. https://doi.org/10.1016/s0272-7358(98)00100-7

Löchner, J., Hämmerle, S., Ghezih, S., Starman-Wöhrle, K., Schulte-Körne, G., & Platt, B. (2024). Parent-child agreement on children's psychopathology and the impact of parental depression. *International Journal of Methods in Psychiatric Research*, *33*(1), e1993. https://doi.org/10.1002/mpr.1993

Löchner, J., Ulrich, S. M., & Lux, U. (2024). The impact of parents' stress on parents' and young childrens' mental health—Short- and long-term effects of risk and resilience factors in families with children aged 0–3 in a representative sample. *Stress and Health*, *40*(4), e3400. https://doi.org/10.1002/smi.3400

Lux, U., Müller, M., Reck, C., Liel, C., & Walper, S. (2023). Linking maternal psychopathology to children's excessive crying and sleeping problems in a large representative German sample—The mediating role of social isolation and bonding difficulties. *Infancy*, *28*(2), 435–453. https://doi.org/10.1111/infa.12514

Madden, V., Domoney, J., Aumayer, K., Sethna, V., Iles, J., Hubbard, I., Giannakakis, A., Psychogiou, L., & Ramchandani, P. (2015). Intergenerational transmission of parenting: Findings from a UK longitudinal study. *The European Journal of Public Health*, *25*(6), 1030–1035. https://doi.org/10.1093/eurpub/ckv093

Mason, Z. S., Briggs, R. D., & Silver, E. J. (2011). Maternal attachment feelings mediate between maternal reports of depression, infant social–emotional development, and parenting stress. *Journal of Reproductive and Infant Psychology*, *29*(4), 382–394. https://doi.org/10.1080/02646838.2011.629994

Mielke, E. L., Neukel, C., Fuchs, A., Hillmann, K., Zietlow, A.-L., Bertsch, K., Reck, C., Möhler, E., & Herpertz, S. C. (2020). The cycle of abuse: Emotional availability in resilient and non-resilient mothers with early life maltreatment. *Psychopathology*, *53*(5-6), 298–305. https://doi.org/10.1159/000509904

Muzik, M., Bocknek, E. L., Broderick, A., Richardson, P., Rosenblum, K. L., Thelen, K., & Seng, J. S. (2013). Mother–infant bonding impairment across the first 6 months postpartum: The primacy of psychopathology in women with childhood abuse and neglect histories. *Archives of Women's Mental Health*, *16*(1), 29–38. https://doi.org/10.1007/s00737-012-0312-0

Nakić Radoš, S., Hairston, I., & Handelzalts, J. E. (2024). The concept analysis of parent-infant bonding during pregnancy and infancy: A systematic review and meta-synthesis. *Journal of Reproductive and Infant Psychology*, *42*(2), 142–165. https://doi.org/10.1080/02646838.2022.2162487

Nuttall, A. K., Valentino, K., & Borkowski, J. G. (2012). Maternal history of parentification, maternal warm responsiveness, and children's externalizing behavior. *Journal of Family Psychology*, *26*(5), 767–775. https://doi.org/10.1037/a0029470

Opitz, A., Vogel, L., Lux, U., Liel, C., & Löchner, J. (2023). Psychosocial stressors and resources in parents using home-visiting programs in early childhood: A Study protocol. *Praxis der Kinderpsychologie und Kinderpsychiatrie*, *72*(6), 515–528. doi:10.13109/prkk.2023.72.6.515

Puig, J., Englund, M. M., Simpson, J. A., & Collins, W. A. (2013). Predicting adult physical illness from infant attachment: A prospective longitudinal study. *Health Psychology*, *32*(4), 409–417. https://doi.org/10.1037/a0028889

R Core Team. (2021). R: A language and environment for statistical computing [Software]. https://www.R-project.org/.

Racine, N., Devereaux, C., Cooke, J. E., Eirich, R., Zhu, J., & Madigan, S. (2021). Adverse childhood experiences and maternal anxiety and depression: A meta-analysis. *BMC Psychiatry*, *21*(1), 28. https://doi.org/10.1186/s12888-020-03017-w

Rahma, Alsarhi, K., Prevoo, M. J. L., Alink, L. R. A., & Mesman, J. (2018). Predictors of sensitive parenting in urban slums in Makassar, Indonesia. *Attachment & Human Development*, 1–9. doi:10.1080/14616734.2020.1828546

Reck, C., Klier, C. M., Pabst, K., Stehle, E., Steffenelli, U., Struben, K., & Backenstrass, M. (2006). The German version of the postpartum bonding instrument: Psychometric properties and association with postpartum depression. *Archives of Women's Mental Health*, *9*(5), 265–271. https://doi.org/10.1007/s00737-006-0144-x

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Savage, L-É, Tarabulsy, G. M., Pearson, J., Collin-Vézina, D., & Gagné, L.-M. (2019). Maternal history of childhood maltreatment and later parenting behavior: A meta-analysis. *Development and Psychopathology*, *31*(1), 9–21. https://doi.org/10.1017/S0954579418001542

Seizer, L., Schiepek, G., Cornelissen, G., & Löchner, J. (2024). A primer on sampling rates of ambulatory assessments. *Psychological Methods*, https://doi.org/10.1037/met0000656

Souch, A. J., Jones, I. R., Shelton, K. H. M., & Waters, C. S. (2022). Maternal childhood maltreatment and perinatal outcomes: A systematic review. *Journal of Affective Disorders*, *302*, 139–159. https://doi.org/10.1016/j.jad.2022.01.062

Tichelman, E., Westerneng, M., Witteveen, A. B., Van Baar, A. L., Van Der Horst, H. E., De Jonge, A., Berger, M. Y., Schellevis, F. G., Burger, H., & Peters, L. L. (2019). Correlates of prenatal and postnatal mother-to-infant bonding quality: A systematic review. *PLoS One*, *14*(9), e0222998. https://doi.org/10.1371/journal.pone.0222998

Ulrich, S. M., Renner, I., Lux, U., Walper, S., & Löchner, J. (2023). Familien mit erhöhtem elterlichen Stress undKonfliktpotential: Eine Zielgruppe für psychosoziale Unterstützungsangebote? *Das Gesundheitswesen*, *85*(05), 436–443. https://doi.org/10.1055/a-1867-4415

Vaillancourt, K., Pawlby, S., & Fearon, R. M. P. (2017). History of childhood abuse and mother-infant bonding: A systematic review of observational studies. *Infant Mental Health Journal*, *38*(2), 226–248. https://doi.org/10.1002/imhj.21634

Versele, V., Deforche, B., Aerenhouts, D., Clarys, P., Devlieger, R., Bogaerts, A., Liel, C., Löchner, J., Wolstein, J., Van Poppel, M., & Deliens, T. (2022). Recommendations for the development of family-based interventions aiming to prevent unhealthy changes in energy balance-related behavior during the transition to parenthood: A focus group study. *Nutrients*, *14*(11), 2346. https://doi.org/10.3390/nu14112346

Vogel, L., Färber, T., Hölzl, I., Deliens, T., Henning, C., Liel, C., Löchner, J., Lux, U., Opitz, A., Seiferth, C., Versele, V., Wolstein, J., & Van Poppel, M. N. M. (2023). I-PREGNO – prevention of unhealthy weight gain and psychosocial stress in families during pregnancy and postpartum using an mHealth enhanced intervention: A study protocol of two cluster randomized controlled trials. *BMC Pregnancy and Childbirth*, *23*(1), 418. https://doi.org/10.1186/s12884-023-05735-x

Vogel, L., Henning, C., Wolstein, J., Versele, V., Van Poppel, M. N. M., Steppan, K., Schlossbach, T., Opitz, A., Lux, U., Löchner, J., Färber, T., Deliens, T., Boehlke, E., & Seiferth, C. (2024). User-centered development process of an evidence-based mHealth intervention for psychosocially burdened families during the transition to parenthood. *Mental Health Science*, *2*(2), e58. https://doi.org/10.1002/mhs2.58

Vogel, L., Löchner, J., Opitz, A., Ehring, T., Lux, U., Liel, C., Henning, C., Seiferth, C., & Wittekind, C. E. (2025). Shadows of the past – Hierarchical regression analyses on the role of childhood maltreatment experiences for postpartum depression. *Journal of Affective Disorders*, *371*, 82–90. https://doi.org/10.1016/j.jad.2024.11.045

Waters, E., Merrick, S., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security in infancy

and early adulthood: A twenty-year longitudinal study. *Child Development*, *71*(3), 684–689. https://doi.org/10.1111/1467-8624.00176

Wendelboe, K. I., Smith-Nielsen, J., Stuart, A. C., Luyten, P., & Skovgaard Væver, M. (2021). Factor structure of the parental reflective functioning questionnaire and association with maternal postpartum depression and comorbid symptoms of psychopathology. *PLoS One*, *16*(8), e0254792. https://doi.org/10.1371/journal.pone.0254792

Williams, K., Moehler, E., Kaess, M., Resch, F., & Fuchs, A. (2022). Dissociation links maternal history of childhood abuse to impaired parenting. *Journal of Trauma & Dissociation*, *23*(1), 37–51. https://doi.org/10.1080/15299732.2021.1934938

Witt, A., Glaesmer, H., Jud, A., Plener, P. L., Brähler, E., Brown, R. C., & Fegert, J. M. (2018). Trends in child maltreatment in Germany: Comparison of two representative population-based studies. *Child and Adolescent Psychiatry and Mental Health*, *12*(1), 24. https://doi.org/10.1186/s13034-018-0232-5

Witt, A., Öz, Y., Sachser, C., Brähler, E., Glaesmer, H., & Fegert, J. M. (2022). Validation and standardization of the Childhood Trauma Screener (CTS) in the general population. *Child and Adolescent Psychiatry and Mental Health*, *16*(1), 73. doi:10.1186/s13034-022-00506-6